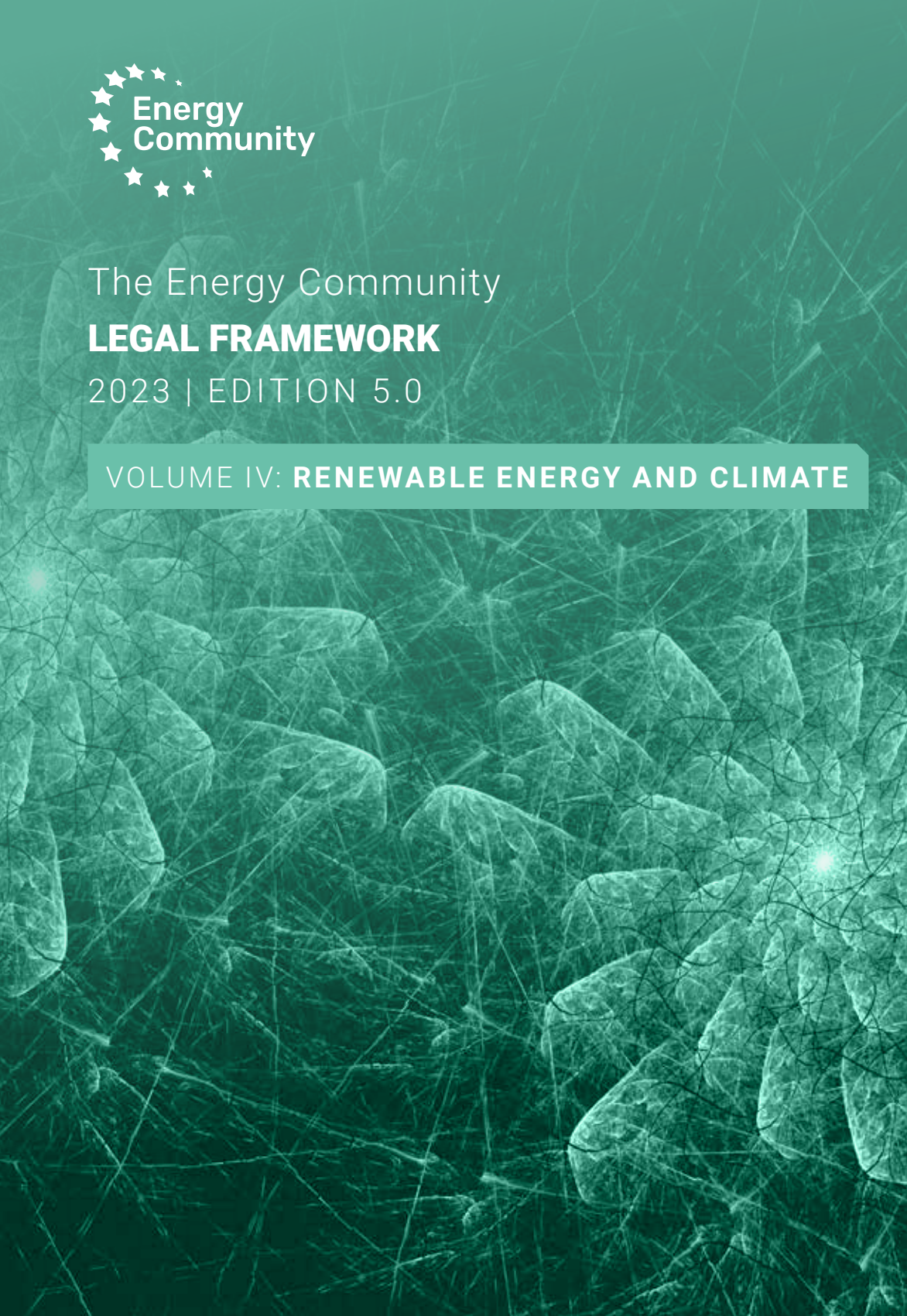
Energy Community

The Energy Community

LEGAL FRAMEWORK

2023 | EDITION 5.0

VOLUME IV: **RENEWABLE ENERGY AND CLIMATE**



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Published in October 2023, last update in April 2026
Editors: Dr. Marie-Therese Richter-Kuhnert and Dr. Heli Annika Lesjak
Layout: Medium d.o.o.

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I. PART

RENEWABLE ENERGY ACQUIS

DIRECTIVE (EU) 2018/2001 of 11 December 2018 on the promotion of the use of energy from renewable sources

Incorporated and adapted by the Ministerial Council Decision 2021/14/MC-EnC of 30 November 2021 on incorporating Directive (EU) 2018/2001 in the Energy Community acquis communautaire and amending Article 20 and Annex I of the Treaty and amended by the Ministerial Council Decision 2022/02/MC-EnC of 15 December 2022.

The adaptations made by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC are highlighted in ***bold and blue.***

Whereas it should be ensured, as early as possible,that Guarantees of origins issued by Contracting Parties of the Energy Community are recognised by Member States as referred to Article 19(11) of the Directive (EU) 2018/2001, either through the Energy Community Treaty or a separate agreement.

Article 1

Subject matter

This Directive establishes a common framework for the promotion of energy from renewable sources. It sets a target for the overall share of energy from renewable sources in the **Energy Community** gross final consumption of energy in 2030**, in line with Regulation (EU) 2018/1999, in particular Article 2, point (11), as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**. It also lays down rules on financial support for electricity from renewable sources, on self-consumption of such electricity, on the use of energy from renewable sources in the heating and cooling sector and in the transport sector, on regional cooperation between **Contracting Parties, between Contracting Parties and** Member States**, and between Contracting Parties** and third countries, on guarantees of origin, on administrative procedures and on information and training. It also establishes sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels.

Article 2

Definitions

For the purposes of this Directive, the relevant definitions in Directive 2009/72/EC**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, apply.

The following definitions also apply:

(1bis) '(overall) Energy Community 2030 target' means the value calculated on the basis of the targets for the Contracting Parties as regards the minimum share of renewable energy consumed in 2030, in the terms as referred to in Article 3(1) of this Directive".

(1) 'energy from renewable sources' or 'renewable energy' means energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas;

(2) 'ambient energy' means naturally occurring thermal energy and energy accumulated in the environment with constrained boundaries, which can be stored in the ambient air, excluding in exhaust air, or in surface or sewage water;

(3) 'geothermal energy' means energy stored in the form of heat beneath the surface of solid earth;

(4) 'gross final consumption of energy' means the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, the consumption of electricity and heat by the energy branch for electricity, heat and transport fuel production, and losses of electricity and heat in distribution and transmission;

(5) 'support scheme' means any instrument, scheme or mechanism applied by a **Contracting Party**, or a group of **Contracting Parties or** Member States, that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased, including but not restricted to, investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes including those using green certificates, and direct price support schemes including feed-in tariffs and sliding or fixed premium payments;

(6) 'renewable energy obligation' means a support scheme requiring energy producers to include a given share of energy from renewable sources in their production, requiring energy suppliers to include a given share of energy from renewable sources in their supply, or requiring energy consumers to include a given share of energy from renewable sources in their consumption, including schemes under which such requirements may be fulfilled by using green certificates;

(7) **<...>**

(8) 'SME' means a micro, small or medium-sized enterprise as defined in Article 2 of the Annex to Commission Recommendation 2003/361/EC;

(9) 'waste heat and cold' means unavoidable heat or cold generated as by-product in industrial or power generation installations, or in the tertiary sector, which would be dissipated unused in air or water without access to a district heating or cooling system, where a cogeneration process has been used or will be used or where cogeneration is not feasible;

(10) 'repowering' means renewing power plants that produce renewable energy, including the full or partial replacement of installations or operation systems and equipment for the purposes of replacing capacity or increasing the efficiency or capacity of the installation;

(11) 'distribution system operator' means an operator as defined in point (6) of Article 2 of Directive 2009/72/EC and in point (6) of Article 2 of Directive 2009/73/EC**, as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC**;

(12) 'guarantee of origin' means an electronic document which has the sole function of providing evidence to a final customer that a given share or quantity of energy was produced from renewable sources;

(13) 'residual energy mix' means the total annual energy mix for a **Contracting Party**, excluding the share covered by cancelled guarantees of origin;

(14) 'renewables self-consumer' means a final customer operating within its premises located within

confined boundaries or, where permitted by a **Contracting Party**, within other premises, who generates renewable electricity for its own consumption, and who may store or sell self-generated renewable electricity, provided that, for a non-household renewables self-consumer, those activities do not constitute its primary commercial or professional activity;

(15) 'jointly acting renewables self-consumers' means a group of at least two jointly acting renewables self-consumers in accordance with point (14) who are located in the same building or multi-apartment block;

(16) 'renewable energy community' means a legal entity:

(a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;

(b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;

(c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits;

(17) 'renewables power purchase agreement' means a contract under which a natural or legal person agrees to purchase renewable electricity directly from an electricity producer;

(18) 'peer-to-peer trading' of renewable energy means the sale of renewable energy between market participants by means of a contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator. The right to conduct peer-to-peer trading shall be without prejudice to the rights and obligations of the parties involved as final customers, producers, suppliers or aggregators;

(19) 'district heating' or 'district cooling' means the distribution of thermal energy in the form of steam, hot water or chilled liquids, from central or decentralised sources of production through a network to multiple buildings or sites, for the use of space or process heating or cooling;

(20) 'efficient district heating and cooling' means efficient district heating and cooling as defined in point (41) of Article 2 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC**;

(21) 'high-efficiency cogeneration' means high-efficiency cogeneration as defined in point (34) of Article 2 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decision Decision 2015/08/MC-EnC**;

(22) 'energy performance certificate' means energy performance certificate as defined in point (12) of Article 2 of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2009/05/MC-EnC**;

(23) 'waste' means;waste as defined in point (1) of Article 3 of Directive 2008/98/EC, excluding substances that have been intentionally modified or contaminated in order to meet this definition;

(24) 'biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin;

(25) 'agricultural biomass' means biomass produced from agriculture;

(26) 'forest biomass' means biomass produced from forestry;

(27) 'biomass fuels' means gaseous and solid fuels produced from biomass;

(28) 'biogas' means gaseous fuels produced from biomass;

(29) 'biowaste' means biowaste as defined in point (4) of Article 3 of Directive 2008/98/EC ;

(30) 'sourcing area' means the geographically defined area from which the forest biomass feedstock is sourced, from which reliable and independent information is available and where conditions are sufficiently homogeneous to evaluate the risk of the sustainability and legality characteristics of the forest biomass;

(31) 'forest regeneration' means the re-establishment of a forest stand by natural or artificial means following the removal of the previous stand by felling or as a result of natural causes, including fire or storm;

(32) 'bioliquids' means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass;

(33) 'biofuels' means liquid fuel for transport produced from biomass;

(34) 'advanced biofuels' means biofuels that are produced from the feedstock listed in Part A of Annex IX;

(35) 'recycled carbon fuels' means liquid and gaseous fuels that are produced from liquid or solid waste streams of non-renewable origin which are not suitable for material recovery in accordance with Article 4 of Directive 2008/98/EC, or from waste processing gas and exhaust gas of non-renewable origin which are produced as an unavoidable and unintentional consequence of the production process in industrial installations;

(36) 'renewable liquid and gaseous transport fuels of non-biological origin' means liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, the energy content of which is derived from renewable sources other than biomass;

(37) 'low indirect land-use change-risk biofuels, bioliquids and biomass fuels' means biofuels, bioliquids and biomass fuels, the feedstock of which was produced within schemes which avoid displacement effects of food and feed-crop based biofuels, bioliquids and biomass fuels through improved agricultural practices as well as through the cultivation of crops on areas which were previously not used for cultivation of crops, and which were produced in accordance with the sustainability criteria for biofuels, bioliquids and biomass fuels laid down in Article 29;

(38) 'fuel supplier' means an entity supplying fuel to the market that is responsible for passing fuel through an excise duty point or, in the case of electricity or where no excise is due or where duly justified, any other relevant entity designated by a **Contracting Party**;

(39) 'starch-rich crops' means crops comprising mainly cereals, regardless of whether the grains alone or the whole plant, such as in the case of green maize, are used; tubers and root crops, such as potatoes, Jerusalem artichokes, sweet potatoes, cassava and yams; and corm crops, such as taro and cocoyam;

(40) 'food and feed crops' means starch-rich crops, sugar crops or oil crops produced on agricultural land as a main crop excluding residues, waste or ligno-cellulosic material and intermediate crops, such as catch crops and cover crops, provided that the use of such intermediate crops does not trigger demand for additional land;

(41) 'ligno-cellulosic material' means material composed of lignin, cellulose and hemicellulose, such as biomass sourced from forests, woody energy crops and forest-based industries' residues and wastes;

(42) 'non-food cellulosic material' means feedstock mainly composed of cellulose and hemicellulose, and having a lower lignin content than ligno-cellulosic material, including food and feed crop residues, such as straw, stover, husks and shells; grassy energy crops with a low starch content, such as ryegrass, switchgrass, miscanthus, giant cane; cover crops before and after main crops; ley crops; industrial residues, including from food and feed crops after vegetal oils, sugars, starches and protein have been extracted; and material from biowaste, where ley and cover crops are understood to be temporary, short-term sown pastures comprising grass-legume mixture with a low starch content to obtain fodder for livestock and improve soil fertility for obtaining higher yields of arable main crops;

(43) 'residue' means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it;

(44) 'agricultural, aquaculture, fisheries and forestry residues' means residues that are directly generated by agriculture, aquaculture, fisheries and forestry and that do not include residues from related industries or processing;

(45) 'actual value' means the greenhouse gas emissions savings for some or all of the steps of a specific biofuel, bioliquid or biomass fuel production process, calculated in accordance with the methodology laid down in Part C of Annex V or Part B of Annex VI;

(46) 'typical value' means an estimate of the greenhouse gas emissions and greenhouse gas emissions savings for a particular biofuel, bioliquid or biomass fuel production pathway, which is representative of the **Energy Community** consumption;

(47) 'default value' means a value derived from a typical value by the application of pre-determined factors and that may, in circumstances specified in this Directive, be used in place of an actual value.

Article 3

Overall Energy Community target for 2030

1. **Contracting Parties** shall ensure that the share of energy from renewable sources in the **Contracting Parties'** gross final consumption of energy in 2030 **contributes to the overall Energy Community target set in part A of Annex I.**

2. **Contracting Parties** shall set national contributions **not lower than the share included in the third column of the table in part A of Annex I**, to meet the overall **Energy Community** target set in paragraph 1 of this Article as part of their integrated national energy and climate plans in accordance with Articles 3 to 5 and 9 to 14 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC.**

If, on the basis of the assessment of the draft integrated national energy and climate plans submitted pursuant to Article 9 of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**, the **Secretariat** concludes that the national contributions of the **Contracting Parties** are insufficient for the achievement of the overall **Energy Community** target, it shall follow the procedure laid down in Articles 9 and 31 of that Regulation, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC.**

3. **Contracting Parties** shall ensure that their national policies, including the obligations deriving from

Articles 25 to 28 of this Directive, and their support schemes, are designed with due regard to the waste hierarchy as set out in Article 4 of Directive 2008/98/EC to aim to avoid undue distortive effects on the raw material markets. **Contracting Parties** shall grant no support for renewable energy produced from the incineration of waste if the separate collection obligations laid down in that Directive have not been complied with.

4. From 1 January 202**2**, the share of energy from renewable sources in each **Contracting Party**'s gross final consumption of energy shall not be lower than the baseline share shown in the third column of the table in Part A of Annex I to this Directive. **Contracting Parties** shall take the necessary measures to ensure compliance with that baseline share. If a Contracting Party does not maintain its baseline share as measured over any one-year period, the first and second subparagraphs of Article 32(4) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC** shall apply.

5. The **European Union** shall **endeavour to** support the high ambition of **Contracting Parties** through an enabling framework comprising the enhanced use of **available** funds, including additional funds to facilitate a just transition of carbon intensive regions towards increased shares of renewable energy, in particular financial instruments, especially for the following purposes:

(a) reducing the cost of capital for renewable energy projects;

(b) developing projects and programmes for integrating renewable sources into the energy system, for increasing flexibility of the energy system, for maintaining grid stability and for managing grid congestions;

(c) developing transmission and distribution grid infrastructure, intelligent networks, storage facilities and interconnections in order to increase the technically feasible and economically affordable level of renewable energy in the electricity system;

(d) enhancing regional cooperation between **Contracting Parties, Member States and Contracting Parties, Contracting Parties** and third countries, through joint projects, joint support schemes and the opening of support schemes for renewable electricity to producers located in other **Contracting Parties or Member States**.

6. The **Contracting Parties may use the Union Renewable Development Platform established by delegated regulation** in order to support **Contracting Parties** that use cooperation mechanisms to contribute to the overall **Energy Community'** target set in paragraph 1.

Article 4

Support schemes for energy from renewable sources

1. In order to reach or exceed the **Contracting Parties** target set in Article 3(1), and each **Contracting Party's** contribution to that target set at a national level for the deployment of renewable energy, **Contracting Parties** may apply support schemes.

2. Support schemes for electricity from renewable sources shall provide incentives for the integration of electricity from renewable sources in the electricity market in a market-based and market-responsive way, while avoiding unnecessary distortions of electricity markets as well as taking into account possible system integration costs and grid stability.

3. Support schemes for electricity from renewable sources shall be designed so as to maximise the integration of electricity from renewable sources in the electricity market and to ensure that renewable energy producers are responding to market price signals and maximise their market revenues.

To that end, with regard to direct price support schemes, support shall be granted in the form of a market premium, which could be, *inter alia*, sliding or fixed.

Contracting Parties may exempt small-scale installations and demonstration projects from this paragraph, without prejudice to the applicable **Energy Community** law on the internal market for electricity.

4.**Contracting Parties** shall ensure that support for electricity from renewable sources is granted in an open, transparent, competitive, non-discriminatory and cost-effective manner.

Contracting Parties may exempt small-scale installations and demonstration projects from tendering procedures.

Contracting Parties may also consider establishing mechanisms to ensure the regional diversification in the deployment of renewable electricity, in particular to ensure cost-efficient system integration.

5. **Contracting Parties** may limit tendering procedures to specific technologies where opening support schemes to all producers of electricity from renewable sources would lead to a suboptimal result, in view of:

(a) the long-term potential of a particular technology;

(b) the need to achieve diversification;

(c) grid integration costs;

(d) network constraints and grid stability;

(e) for biomass, the need to avoid distortions of raw materials markets.

6. Where support for electricity from renewable sources is granted by means of a tendering procedure, **Contracting Parties** shall, in order to ensure a high project realisation rate:

(a) establish and publish non-discriminatory and transparent criteria to qualify for the tendering procedure and set clear dates and rules for delivery of the project;

(b) publish information about previous tendering procedures, including project realisation rates.

7. In order to increase the generation of energy from renewable sources in the outermost regions and small islands, **Contracting Parties** may adapt financial support schemes for projects located in those regions in order to take into account the production costs associated with their specific conditions of isolation and external dependence.

8. By 31 December 202**2** and every three years thereafter, the **Secretariat** shall report to the **Ministerial** Council on the performance of support for electricity from renewable sources granted by means of tendering procedures in the **Contracting Parties**, analysing in particular the ability of tendering procedures to:

(a) achieve cost-reduction;

(b) achieve technological improvement;

(c) achieve high realisation rates;

(d) provide non-discriminatory participation of small actors and, where applicable, local authorities;

(e) limit environmental impact;

(f) ensure local acceptability;

(g) ensure security of supply and grid integration.

9. This Article shall apply without prejudice to **Article 18 of Energy Community Treaty**.

Article 5

Opening of support schemes for electricity from renewable sources

1. **Contracting Parties** shall have the right, in accordance with Articles 7 to 13 of this Directive, to decide to which extent they support electricity from renewable sources which is produced in another **Contracting Party or Member State**. However, **Contracting Parties** may open participation in support schemes for electricity from renewable sources to producers located in other **Contracting Parties or Member States**, subject to the conditions laid down in this Article.

When opening participation in support schemes for electricity from renewable sources, **Contracting Parties** may provide that support for an indicative share of the newly-supported capacity, or of the budget allocated thereto, in each year is open to producers located in other **Contracting Parties or Member States**.

Such indicative shares may, in each year, amount to at least 5 % from 2023 to 2026 and at least 10 % from 2027 to 2030, or, where lower, to the level of interconnectivity of the **Contracting Party** concerned in any given year.

In order to acquire further implementation experience, **Contracting Parties** may organise one or more pilot schemes where support is open to producers located in other **Contracting Parties or Member States.**

2. **Contracting Parties** may require proof of physical import of electricity from renewable sources. To that end, **Contracting Parties** may limit participation in their support schemes to producers located in **Contracting Parties or Member States** with which there is a direct connection via interconnectors. However, **Contracting Parties** shall not change or otherwise affect cross-zonal schedules and capacity allocation due to producers participating in cross-border support schemes. Cross-border electricity transfers shall be determined only by the outcome of capacity allocation pursuant to **Energy Community** law on the internal market in electricity.

3. If a **Contracting Party** decides to open participation in support schemes to producers located in other **Contracting Parties or Member States**, the relevant **Contracting Parties or Member States** shall agree on the principles of such participation. Such agreements shall cover at least the principles of allocation of renewable electricity that is the subject of cross-border support.

4. The **Secretariat** shall, upon the request of the relevant **Contracting Party**, assist them throughout the negotiation process with the setting up of cooperation arrangements by providing information and analysis, including quantitative and qualitative data on the direct and indirect costs and benefits of cooperation, as well as with guidance and technical expertise. The **Secretariat** may encourage or facilitate the exchange of best practices and may develop templates for cooperation agreements in order to facilitate the negotiation process. The **Secretariat** shall assess, by 2025, the costs and benefits of the deployment of electricity from renewable sources in the **Energy Community** pursuant to this Article.

5. By 202**4**, the **Secretariat** shall carry out an evaluation of the implementation of this Article. That evaluation shall assess the need to introduce an obligation on **Contracting Parties** partially to open participation in their support schemes for electricity from renewable sources to producers located in other **Contracting**

Parties or Member States with a view to a 5 % opening by 2025 and a 10 % opening by 2030.

6. The Energy Community Secretariat shall coordinate with the European Commission in performing its tasks under paragraphs 4 and 5 of this article.

Article 6

Stability of financial support

1. Without prejudice to adaptations necessary to comply with Article **18 of Energy Community Treaty Contracting Parties** shall ensure that the level of, and the conditions attached to, the support granted to renewable energy projects are not revised in a way that negatively affects the rights conferred thereunder and undermines the economic viability of projects that already benefit from support.

2. **Contracting Parties** may adjust the level of support in accordance with objective criteria, provided that such criteria are established in the original design of the support scheme.

3. **Contracting Parties** shall publish a long-term schedule anticipating the expected allocation of support, covering, as a reference, at least the following five years, or, in the case of budgetary planning constraints, the following three years, including the indicative timing, the frequency of tendering procedures where appropriate, the expected capacity and budget or maximum unitary support expected to be allocated, and the expected eligible technologies, if applicable. That schedule shall be updated on an annual basis or, where necessary, to reflect recent market developments or expected allocation of support.

4. **Contracting Parties** shall, at least every five years, assess the effectiveness of their support schemes for electricity from renewable sources and their major distributive effects on different consumer groups, and on investments. That assessment shall take into account the effect of possible changes to the support schemes. The indicative long-term planning governing the decisions of the support and design of new support shall take into account the results of that assessment. Contracting Parties shall include the assessment in the relevant updates of their integrated national energy and climate plans and progress reports in accordance with Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC.**

Article 7

Calculation of the share of energy from renewable sources

1. The gross final consumption of energy from renewable sources in each **Contracting Party** shall be calculated as the sum of:

(a) gross final consumption of electricity from renewable sources;

(b) gross final consumption of energy from renewable sources in the heating and cooling sector; and

(c) final consumption of energy from renewable sources in the transport sector.

With regard to point (a), (b), or (c) of the first subparagraph, gas, electricity and hydrogen from renewable sources shall be considered only once for the purposes of calculating the share of gross final consumption of energy from renewable sources.

Subject to the second subparagraph of Article 29(1), biofuels, bioliquids and biomass fuels that do not fulfil the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) shall not be taken into account.

2. For the purposes of point (a) of the first subparagraph of paragraph 1, gross final consumption of electricity from renewable sources shall be calculated as the quantity of electricity produced in a **Contracting Party** from renewable sources, including the production of electricity from renewables self-consumers and renewable energy communities and excluding the production of electricity in pumped storage units from water that has previously been pumped uphill.

In multi-fuel plants using renewable and non-renewable sources, only the part of electricity produced from renewable sources shall be taken into account. For the purposes of that calculation, the contribution of each energy source shall be calculated on the basis of its energy content.

The electricity generated by hydropower and wind power shall be accounted for in accordance with the normalisation rules set out in Annex II.

3. For the purposes of point (b) of the first subparagraph of paragraph 1, gross final consumption of energy from renewable sources in the heating and cooling sector shall be calculated as the quantity of district heating and cooling produced in a **Contracting Party** from renewable sources, plus the consumption of other energy from renewable sources in industry, households, services, agriculture, forestry and fisheries, for heating, cooling and processing purposes.

In multi-fuel plants using renewable and non-renewable sources, only the part of heating and cooling produced from renewable sources shall be taken into account. For the purposes of that calculation, the contribution of each energy source shall be calculated on the basis of its energy content.

Ambient and geothermal energy used for heating and cooling by means of heat pumps and district cooling systems shall be taken into account for the purposes of point (b) of the first subparagraph of paragraph 1, provided that the final energy output significantly exceeds the primary energy input required to drive the heat pumps. The quantity of heat or cold to be considered to be energy from renewable sources for the purposes of this Directive shall be calculated in accordance with the methodology set out in Annex VII and shall take into account energy use in all end-use sectors.

Thermal energy generated by passive energy systems, under which lower energy consumption is achieved passively through building design or from heat generated by energy from non-renewable sources, shall not be taken into account for the purposes of point (b) of the first subparagraph of paragraph 1.

<...>

The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 7(3) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

4. For the purposes of point (c) of the first subparagraph of paragraph 1, the following requirements shall apply:

(a) Final consumption of energy from renewable sources in the transport sector shall be calculated as the sum of all biofuels, biomass fuels and renewable liquid and gaseous transport fuels of non-biological origin consumed in the transport sector. However, renewable liquid and gaseous transport fuels of non-biological

origin that are produced from renewable electricity shall be considered to be part of the calculation pursuant to point (a) of the first subparagraph of paragraph 1 only when calculating the quantity of electricity produced in a **Contracting Party** from renewable sources.

(b) For the calculation of final consumption of energy in the transport sector, the values regarding the energy content of transport fuels, as set out in Annex III, shall be used. For the determination of the energy content of transport fuels not included in Annex III, **Contracting Parties** shall use the relevant European Standards Organisation (ESO) standards in order to determine the calorific values of fuels. Where no ESO standard has been adopted for that purpose, **Contracting Parties** shall use the relevant International Organization for Standardisation (ISO) standards.

5. The share of energy from renewable sources shall be calculated as the gross final consumption of energy from renewable sources divided by the gross final consumption of energy from all energy sources, expressed as a percentage.

For the purposes of the first subparagraph of this paragraph, the sum referred to in the first subparagraph of paragraph 1 of this Article shall be adjusted in accordance with Articles 8, 10, 12 and 13.

<…>

6. The methodology and definitions used in the calculation of the share of energy from renewable sources shall be those provided for in Regulation (EC) No 1099/2008**, as adapted and adopted by Ministerial Council Decision 2015/02/MC-EnC.**

Contracting Parties shall ensure coherence of the statistical information used in calculating those sectoral and overall shares and of the statistical information reported to the **Secretariat** pursuant to that Regulation.

Article 8

Renewable development platform and statistical transfers between Contracting Parties

1. A **Contracting Party** may agree **with another Contracting Party** on the statistical transfer of a specified amount of energy from renewable sources from one **Contracting Party** to another **Contracting Party**. The transferred quantity shall be:

(a) deducted from the amount of energy from renewable sources that is taken into account in calculating the renewable energy share of the **Contracting Party** making the transfer for the purposes of this Directive; and

(b) added to the amount of energy from renewable sources that is taken into account in calculating the renewable energy share of the **Contracting Party** accepting the transfer for the purposes of this Directive.

2. In order to facilitate the achievement of the **Energy Community** target set in Article 3(1) of this Directive of each **Contracting Party's** contribution to that target in accordance with Article 3(2) of this Directive, and to facilitate statistical transfers in accordance with paragraph 1 of this Article, the **Contracting Parties** shall join the Union renewable development platform ('URDP'). **Contracting Parties** may, on a voluntary basis, submit to the **Energy Community Secretariat** annual data on their national contributions to the **Energy Community** target or any benchmark set for monitoring progress in Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**, including the amount by which they expect to fall short of or exceed their

contribution, and an indication of the price at which they would accept to transfer any excess production of energy from renewable sources from or to another **Contracting Party. The Energy Community Secretariat shall forward such data to the URDP.** The price of those transfers shall be set on a case-by-case basis based on the URDP demand-and-supply matching mechanism.

3. The **URDP shall** match the demand for and supply of the amounts of energy from renewable sources that are taken into account in the calculation of the renewable energy share of a **Contracting Party** based on prices or other criteria specified by the **Contracting Party** accepting the transfer.

<…>

The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 8(3) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

4. The arrangements referred to in paragraphs 1 and 2 may have a duration of one or more calendar years. Such arrangements shall be notified to the **Secretariat** or finalised on the URDP not later than 12 months after the end of each year in which they have effect. The information sent to the **Secretariat** shall include the quantity and price of the energy involved. For transfers finalised on the URDP, the parties involved and the information on the particular transfer shall be disclosed to the public.

5. Transfers shall become effective after all **Contracting Parties** involved in the transfer have notified the transfer to the **Secretariat** or after all clearing conditions are met on the URDP, as applicable.

Article 9

Joint projects between Contracting Parties or Contracting Parties and Member States

1. **One** or more **Contracting Parties** may cooperate **with one or more Contracting Parties or Member States** on all types of joint projects with regard to the production of electricity, heating or cooling from renewable sources. Such cooperation may involve private operators.

2. **Contracting Parties** shall notify the **Secretariat** of the proportion or amount of electricity, heating or cooling from renewable sources produced by any joint project in their territory that became operational after 25 June 2009, or by the increased capacity of an installation that was refurbished after that date, which is to be regarded as counting towards the renewable energy share of another **Contracting Party or Member State** for the purposes of this Directive.

3. The notification referred to in paragraph 2 shall:

(a) describe the proposed installation or identify the refurbished installation;

(b) specify the proportion or amount of electricity or heating or cooling produced from the installation which is to be regarded as counting towards the renewable energy share of the other **Contracting Party or** Member State;

(c) identify the **Contracting Party or** Member State in whose favour the notification is being made; and

(d) specify the period, in whole calendar years, during which the electricity or heating or cooling produced by the installation from renewable sources is to be regarded as counting towards the renewable energy

share of the other **Contracting Party or** Member State.

4. The duration of a joint project as referred to in this Article may extend beyond 2030.

5. A notification made under this Article shall not be varied or withdrawn without the joint agreement of **the Contracting Party** making the notification and the **Contracting Party or** Member State identified in accordance with point (c) of paragraph 3.

6. The **Secretariat** shall, upon the request of the **Contracting Parties** concerned, facilitate the establishment of joint projects **involving Contracting Parties**, in particular via dedicated technical assistance and project development assistance.

Article 10

Effects of joint projects between Contracting Parties, or Contracting Parties and Member States

1. Within three months of the end of each year falling within the period referred to in point (d) of Article 9(3), the **Contracting Party** that made the notification under Article 9 shall issue a letter of notification stating:

(a) the total amount of electricity or heating or cooling produced from renewable sources during that year by the installation which was the subject of the notification under Article 9; and

(b) the amount of electricity or heating or cooling produced from renewable sources during that year by that installation which is to count towards the renewable energy share of another **Contracting Party or** Member State in accordance with the terms of the notification.

2. The notifying **Contracting Party** shall submit the letter of notification to the **Contracting Party** or Member State in whose favour the notification was made and to the Secretariat.

3. For the purposes of this Directive, the amount of electricity or heating or cooling from renewable sources notified in accordance with point (b) of paragraph 1 shall be:

(a) deducted from the amount of electricity or heating or cooling from renewable sources that is taken into account in calculating the renewable energy share of the **Contracting Party** issuing the letter of notification pursuant to paragraph 1; and

(b) added to the amount of electricity or heating or cooling from renewable sources that is taken into account in calculating the renewable energy share of the **Contracting Party or** Member State receiving the letter of notification pursuant to paragraph 2.

Article 11

Joint projects between Contracting Parties and third countries

1. One or more **Contracting Parties** may cooperate with one or more third countries on all types of joint projects with regard to the production of electricity from renewable sources. Such cooperation may involve private operators and shall take place in full respect of international law.

2. Electricity from renewable sources produced in a third country shall be taken into account for the purposes of calculating the renewable energy shares of the **Contracting Parties** only where the following

conditions are met:

(a) the electricity is consumed in the **Contracting Party**, which is deemed to be met where:

(i) an equivalent amount of electricity to the electricity accounted for has been firmly nominated to the allocated interconnection capacity by all responsible transmission system operators in the country of origin, the country of destination and, if relevant, each third country of transit;

(ii) an equivalent amount of electricity to the electricity accounted for has been firmly registered in the schedule of balance by the responsible transmission system operator on the Energy Community side of an interconnector; and

(iii) the nominated capacity and the production of electricity from renewable sources by the installation referred to in point (b) refer to the same period of time;

(b) the electricity is produced by an installation that became operational after 25 June 2009 or by the increased capacity of an installation that was refurbished after that date, under a joint project as referred to in paragraph 1;

(c) the amount of electricity produced and exported has not received support from a support scheme of a third country other than investment aid granted to the installation; and

(d) the electricity has been produced in accordance with international law, in a third country that is a signatory to the Council of Europe Convention for the Protection of Human Rights and Fundamental Freedoms, or other international conventions or treaties on human rights.

3. For the purposes of paragraph 4, **Contracting Parties** may apply to the **Secretariat** for account to be taken of electricity from renewable sources produced and consumed in a third country, in the context of the construction of an interconnector with a very long lead-time between a **Contracting Party** and a third country where the following conditions are met:

(a) construction of the interconnector started by 31 December 2026;

(b) it is not possible for the interconnector to become operational by 31 December 2030;

(c) it is possible for the interconnector to become operational by 31 December 2032;

(d) after it becomes operational, the interconnector will be used for the export to the **Energy Community**, in accordance with paragraph 2, of electricity from renewable sources;

(e) the application relates to a joint project that fulfils the criteria set out in points (b) and (c) of paragraph 2 and that will use the interconnector after it becomes operational, and to a quantity of electricity that is no greater than the quantity that will be exported to the **Energy Community** after the interconnector becomes operational.

4. The proportion or amount of electricity produced by any installation in the territory of a third country, which is to be regarded as counting towards the renewable energy share of one or more **Contracting Parties** for the purposes of this Directive, shall be notified to the Secretariat. When more than one **Contracting Party** is concerned, the distribution between **Contracting Parties** of that proportion or amount shall be notified to the **Secretariat**. The proportion or amount shall not exceed the proportion or amount actually exported to, and consumed in, the **Contracting Party**, shall correspond to the amount referred to in point (a)(i) and (ii) of paragraph 2 and shall meet the conditions set out in point (a) of that paragraph. The notification shall be made by each **Contracting Party** towards whose overall national target the proportion or amount of electricity is to count.

5. The notification referred to in paragraph 4 shall:

(a) describe the proposed installation or identify the refurbished installation;

(b) specify the proportion or amount of electricity produced from the installation which is to be regarded as counting towards the renewable energy share of a Contracting Party as well as, subject to confidentiality requirements, the corresponding financial arrangements;

(c) specify the period, in whole calendar years, during which the electricity is to be regarded as counting towards the renewable energy share of the **Contracting Party**; and

(d) include a written acknowledgement of points (b) and (c) by the third country in whose territory the installation is to become operational and an indication of the proportion or amount of electricity produced by the installation which will be used domestically by that third country.

6. The duration of a joint project as referred to in this Article may extend beyond 2030.

7. A notification made under this Article shall be varied or withdrawn only where there is a joint agreement between the **Contracting Party** making the notification and the third country that has acknowledged the joint project in accordance with point (d) of paragraph 5.

8. **<...>**

Article 12

Effects of joint projects between Contracting Parties and third countries

1. Within 12 months of the end of each year falling within the period specified under point (c) of Article 11(5), the notifying **Contracting Party** shall issue a letter of notification stating:

(a) the total amount of electricity produced from renewable sources during that year by the installation which was the subject of the notification under Article 11;

(b) the amount of electricity produced from renewable sources during that year by that installation which is to count towards its renewable energy share in accordance with the terms of the notification under Article 11; and

(c) evidence of compliance with the conditions laid down in Article 11(2).

2. The **Contracting Party** referred to in paragraph 1 shall submit the letter of notification to the **Secretariat** and to the third country that has acknowledged the project in accordance with point (d) of Article 11(5).

3. For the purposes of calculating the renewable energy shares under this Directive, the amount of electricity from renewable sources notified in accordance with point (b) of paragraph 1 shall be added to the amount of energy from renewable sources that is taken into account in calculating the renewable energy shares of the **Contracting Party** issuing the letter of notification.

Article 13

Joint support schemes

1. Without prejudice to the obligations of **Contracting Parties** under Article 5, **one or more Contracting**

Parties may decide, on a voluntary basis, to join or partly coordinate their national support schemes **with one or more Contracting Parties or Member States**. In such cases, a certain amount of energy from renewable sources produced in the territory of one participating **Contracting Party** may count towards the renewable energy share of another participating **Contracting Party or Member State**, provided that the parties concerned:

(a) make a statistical transfer of specified amounts of energy from renewable sources from one **Contracting Party** to another **Contracting Party or** Member State in accordance with Article 8; or

(b) set up a distribution rule agreed by participating **Contracting Parties and** Member States that allocates amounts of energy from renewable sources between the participating parties.

A distribution rule as referred to in point (b) of the first subparagraph shall be notified to the Secretariatnot later than three months after the end of the first year in which it takes effect.

2. Within three months of the end of each year, each **Contracting Party** that has made a notification under the second subparagraph of paragraph 1 shall issue a letter of notification stating the total amount of electricity or heating or cooling from renewable sources produced during the year which is to be the subject of the distribution rule.

3. For the purposes of calculating the renewable energy shares under this Directive, the amount of electricity or heating or cooling from renewable sources notified in accordance with paragraph 2 shall be reallocated between the **parties** concerned in accordance with the notified distribution rule.

4. The **Energy Community Secretariat** shall disseminate guidelines and best practices, and, upon the request of the **Contracting Parties** concerned, facilitate the establishment of joint support schemes involving **Contracting Parties**.

Article 14

Capacity increases

For the purposes of Article 9(2) and point (b) of Article 11(2), units of energy from renewable sources imputable to an increase in the capacity of an installation shall be treated as if they were produced by a separate installation becoming operational at the moment at which the increase of capacity occurred.

Article 15

Administrative procedures, regulations and codes

1. **Contracting Parties** shall ensure that any national rules concerning the authorisation, certification and licensing procedures that are applied to plants and associated transmission and distribution networks for the production of electricity, heating or cooling from renewable sources, to the process of transformation of biomass into biofuels, bioliquids, biomass fuels or other energy products, and to renewable liquid and gaseous transport fuels of non-biological origin are proportionate and necessary and contribute to the implementation of the energy efficiency first principle.

Contracting Parties shall, in particular, take the appropriate steps to ensure that:

(a) administrative procedures are streamlined and expedited at the appropriate administrative level and predictable timeframes are established for the procedures referred to in the first subparagraph;

(b) rules concerning authorisation, certification and licensing are objective, transparent and proportionate, do not discriminate between applicants and take fully into account the particularities of individual renewable energy technologies;

(c) administrative charges paid by consumers, planners, architects, builders and equipment and system installers and suppliers are transparent and cost-related; and

(d) simplified and less burdensome authorisation procedures, including a simple-notification procedure, are established for decentralised devices, and for producing and storing energy from renewable sources.

2. **Contracting Parties** shall clearly define any technical specifications which are to be met by renewable energy equipment and systems in order to benefit from support schemes. Where European standards exist, including eco-labels, energy labels and other technical reference systems established by the European standardisation bodies, such technical specifications shall be expressed in terms of those standards. Such technical specifications shall not prescribe where the equipment and systems are to be certified and shall not impede the proper functioning of the internal market.

3. **Contracting Parties** shall ensure that their competent authorities at national, regional and local level include provisions for the integration and deployment of renewable energy, including for renewables self-consumption and renewable energy communities, and the use of unavoidable waste heat and cold when planning, including early spatial planning, designing, building and renovating urban infrastructure, industrial, commercial or residential areas and energy infrastructure, including electricity, district heating and cooling, natural gas and alternative fuel networks. **Contracting Parties** shall, in particular, encourage local and regional administrative bodies to include heating and cooling from renewable sources in the planning of city infrastructure where appropriate, and to consult the network operators to reflect the impact of energy efficiency and demand response programs as well as specific provisions on renewables self-consumption and renewable energy communities, on the infrastructure development plans of the operators.

4. **Contracting Parties** shall introduce appropriate measures in their building regulations and codes in order to increase the share of all kinds of energy from renewable sources in the building sector.

In establishing such measures or in their support schemes, **Contracting Parties** may take into account, where applicable, national measures relating to substantial increases in renewables self-consumption, in local energy storage and in energy efficiency, relating to cogeneration and relating to passive, low-energy or zero-energy buildings.

Contracting Parties shall, in their building regulations and codes or by other means with equivalent effect, require the use of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation in so far as technically, functionally and economically feasible, and reflecting the results of the cost-optimal calculation carried out pursuant to Article 5(2) of Directive 2010/31/EU **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** and in so far as this does not negatively affect indoor air quality. **Contracting Parties** shall permit those minimum levels to be fulfilled, *inter alia*, through efficient district heating and cooling using a significant share of renewable energy and waste heat and cold.

The requirements laid down in the first subparagraph shall apply to the armed forces only to the extent that its application does not cause any conflict with the nature and primary aim of the activities of the armed forces and with the exception of material used exclusively for military purposes.

5. **Contracting Parties** shall ensure that new public buildings, and existing public buildings that are subject to major renovation, at national, regional and local level, fulfil an exemplary role in the context of this Directive from 1 January 2012. **Contracting Parties** may, *inter alia*, allow that obligation to be fulfilled by complying with nearly zero-energy building provisions as required in irective 2010/31/EU **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** or by providing for the roofs of public or mixed private-public buildings to be used by third parties for installations that produce energy from renewable sources.

6. With respect to their building regulations and codes, **Contracting Parties** shall promote the use of renewable heating and cooling systems and equipment that achieve a significant reduction of energy consumption. To that end, **Contracting Parties** shall use energy or eco-labels or other appropriate certificates or standards developed at national or **Energy Community** level, where these exist, and ensure the provision of adequate information and advice on renewable, highly energy efficient alternatives as well as eventual financial instruments and incentives available in the case of replacement, with a view to promoting an increased replacement rate of old heating systems and an increased switch to solutions based on renewable energy in accordance with Directive 2010/31/EU **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC.**

7. **Contracting Parties** shall carry out an assessment of their potential of energy from renewable sources and of the use of waste heat and cold in the heating and cooling sector. That assessment shall, where appropriate, include spatial analysis of areas suitable for low-ecological-risk deployment and the potential for small-scale household projects and shall be included in the second comprehensive assessment required pursuant to Article 14(1) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC**, for the first time by 31 December 202**2** and in the subsequent updates of the comprehensive assessments.

8. **Contracting Parties** shall assess the regulatory and administrative barriers to long-term renewables power purchase agreements, and shall remove unjustified barriers to, and facilitate the uptake of, such agreements. **Contracting Parties** shall ensure that those agreements are not subject to disproportionate or discriminatory procedures or charges.

Contracting Parties shall describe policies and measures facilitating the uptake of renewables power purchase agreements in their integrated national energy and climate plans and progress reports pursuant to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**.

Article 16

Organisation and duration of the permit-granting process

1. **Contracting Parties** shall set up or designate one or more contact points. Those contact points shall, upon request by the applicant, guide through and facilitate the entire administrative permit application and granting process. The applicant shall not be required to contact more than one contact point for the entire process. The permit-granting process shall cover the relevant administrative permits to build, repower and operate plants for the production of energy from renewable sources and assets necessary for their connection to the grid. The permit-granting process shall comprise all procedures from the acknowledgment of the receipt of the application to the transmission of the outcome of the procedure referred to in paragraph 2.

2. The contact point shall guide the applicant through the administrative permit application process in a transparent manner up to the delivery of one or several decisions by the responsible authorities at the end of the process, provide the applicant with all necessary information and involve, where appropriate, other administrative authorities. Applicants shall be allowed to submit relevant documents also in digital form.

3. The contact point shall make available a manual of procedures for developers of renewable energy production projects and shall provide that information also online, addressing distinctly also small-scale projects and renewables self-consumers projects. The online information shall indicate the contact point relevant to the applicant's application. If a Contracting Party has more than one contact point, the online information shall indicate the contact point relevant to the applicant's application.

4. Without prejudice to paragraph 7, the permit-granting process referred to in paragraph 1 shall not exceed two years for power plants, including all relevant procedures of competent authorities. Where duly justified on the grounds of extraordinary circumstances, that two-year period may be extended by up to one year.

5. Without prejudice to paragraph 7, the permit-granting process shall not exceed one year for installations with an electrical capacity of less than 150 kW. Where duly justified on the grounds of extraordinary circumstances, that one-year period may be extended by up to one year.

Contracting Parties shall ensure that applicants have easy access to simple procedures for the settlement of disputes concerning the permit-granting process and the issuance of permits to build and operate renewable energy plants, including, where applicable, alternative dispute resolution mechanisms.

6. **Contracting Parties** shall facilitate the repowering of existing renewable energy plants by ensuring a simplified and swift permit-granting process. The length of that process shall not exceed one year.

Where duly justified on the grounds of extraordinary circumstances, such as on grounds of overriding safety reasons where the repowering project impacts substantially on the grid or the original capacity, size or performance of the installation, that one-year period may be extended by up to one year.

7. The deadlines established in this Article shall apply without prejudice to obligations under applicable **Energy Community** environmental law, to judicial appeals, remedies and other proceedings before a court or tribunal, and to alternative dispute resolution mechanisms, including complaints procedures, non-judicial appeals and remedies, and may be extended for the duration of such procedures.

8. **Contracting Parties** may establish a simple-notification procedure for grid connections for repowering projects as referred to in Article 17(1). Where **Contracting Parties** do so, repowering shall be permitted following notification to the relevant authority where no significant negative environmental or social impact is expected. That authority shall decide within six months of receipt of a notification whether this is sufficient.

Where the relevant authority decides that a notification is sufficient, it shall automatically grant the permit. Where that authority decides that the notification is not sufficient, it shall be necessary to apply for a new permit and the time-limits referred to in paragraph 6 shall apply.

Article 17

Simple-notification procedure for grid connections

1. **Contracting Parties** shall establish a simple-notification procedure for grid connections whereby installations or aggregated production units of renewables self-consumers and demonstration projects, with an

electrical capacity of 10,8 kW or less, or equivalent for connections other than three-phase connections, are to be connected to the grid following a notification to the distribution system operator.

The distribution system operator may, within a limited period following the notification, reject the requested grid connection or propose an alternative grid connection point on justified grounds of safety concerns or technical incompatibility of the system components. In the case of a positive decision by the distribution system operator, or in the absence of a decision by the distribution system operator within one month following the notification, the installation or aggregated production unit may be connected.

2. **Contracting Parties** may allow a simple-notification procedure for installations or aggregated production units with an electrical capacity of above 10,8 kW and up to 50 kW, provided that grid stability, grid reliability and grid safety are maintained.

Article 18

Information and training

1. **Contracting Parties** shall ensure that information on support measures is made available to all relevant actors, such as consumers including low-income, vulnerable consumers, renewables self-consumers, renewable energy communities, builders, installers, architects, suppliers of heating, cooling and electricity equipment and systems, and suppliers of vehicles compatible with the use of renewable energy and of intelligent transport systems.

2. **Contracting Parties** shall ensure that information on the net benefits, cost and energy efficiency of equipment and systems for the use of heating, cooling and electricity from renewable sources is made available either by the supplier of the equipment or system or by the competent authorities.

3. **Contracting Parties** shall ensure that certification schemes or equivalent qualification schemes are available for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps. Those schemes may take into account existing schemes and structures as appropriate, and shall be based on the criteria laid down in Annex IV. Each **Contracting Party** shall recognise the certification awarded by other **Contracting Parties** in accordance with those criteria.

4. **Contracting Parties** shall make information on certification schemes or equivalent qualification schemes as referred to in paragraph 3 available to the public. **Contracting Parties** may also make the list of installers who are qualified or certified in accordance with paragraph 3 available to the public.

5. **Contracting Parties** shall ensure that guidance is made available to all relevant actors, in particular to planners and architects so that they are able properly to consider the optimal combination of energy from renewable sources, of high-efficiency technologies, and of district heating and cooling when planning, designing, building and renovating industrial, commercial or residential areas.

6. Contracting Parties, where appropriate with the participation of local and regional authorities, shall develop suitable information, awareness-raising, guidance or training programmes in order to inform citizens of how to exercise their rights as active customers, and of the benefits and practicalities, including technical and financial aspects, of developing and using energy from renewable sources, including by renewables self-consumption or in the framework of renewable energy communities.

Article 19

Guarantees of origin for energy from renewable sources

1. For the purposes of demonstrating to final customers the share or quantity of energy from renewable sources in an energy supplier's energy mix and in the energy supplied to consumers under contracts marketed with reference to the consumption of energy from renewable sources, **Contracting Parties** shall ensure that the origin of energy from renewable sources can be guaranteed as such within the meaning of this Directive, in accordance with objective, transparent and non-discriminatory criteria.

2. To that end, **Contracting Parties** shall ensure that a guarantee of origin is issued in response to a request from a producer of energy from renewable sources, unless **Contracting Parties** decide, for the purposes of accounting for the market value of the guarantee of origin, not to issue such a guarantee of origin to a producer that receives financial support from a support scheme. **Contracting Parties** may arrange for guarantees of origin to be issued for energy from non-renewable sources. Issuance of guarantees of origin may be made subject to a minimum capacity limit. A guarantee of origin shall be of the standard size of 1 MWh. No more than one guarantee of origin shall be issued in respect of each unit of energy produced.

Contracting Parties shall ensure that the same unit of energy from renewable sources is taken into account only once.

Contracting Parties shall ensure that when a producer receives financial support from a support scheme, the market value of the guarantee of origin for the same production is taken into account appropriately in the relevant support scheme.

It shall be presumed that the market value of the guarantee of origin has been taken into account appropriately in any of the following cases:

(a) where the financial support is granted by way of a tendering procedure or a tradable green certificate system;

(b) where the market value of the guarantees of origin is administratively taken into account in the level of financial support; or

(c) where the guarantees of origin are not issued directly to the producer but to a supplier or consumer who buys the energy from renewable sources either in a competitive setting or in a long-term renewables power purchase agreement.

In order to take into account the market value of the guarantee of origin, **Contracting Parties** may, *inter alia*, decide to issue a guarantee of origin to the producer and immediately cancel it.

The guarantee of origin shall have no function in terms of a **Contracting Party'**s compliance with Article 3. Transfers of guarantees of origin, separately or together with the physical transfer of energy, shall have no effect on the decision of **Contracting Parties** to use statistical transfers, joint projects or joint support schemes for compliance with Article 3 or on the calculation of the gross final consumption of energy from renewable sources in accordance with Article 7.

3. For the purposes of paragraph 1, guarantees of origin shall be valid for 12 months after the production of the relevant energy unit. **Contracting Parties** shall ensure that all guarantees of origin that have not been cancelled expire at the latest 18 months after the production of the energy unit. **Contracting Parties** shall include expired guarantees of origin in the calculation of their residual energy mix.

4. For the purposes of disclosure referred to in paragraphs 8 and 13, **Contracting Parties** shall ensure that energy companies cancel guarantees of origin at the latest six months after the end of the validity of the guarantee of origin.

5. **Contracting Parties** or designated competent bodies shall supervise the issuance, transfer and cancellation of guarantees of origin. The designated competent bodies shall not have overlapping geographical responsibilities, and shall be independent of production, trade and supply activities.

6. **Contracting Parties** or the designated competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin are issued, transferred and cancelled electronically and are accurate, reliable and fraud-resistant. **Contracting Parties** and designated competent bodies shall ensure that the requirements they impose comply with the standard CEN - EN 16325.

7. A guarantee of origin shall specify at least:

(a) the energy source from which the energy was produced and the start and end dates of production;

(b) whether it relates to:

(i) electricity;

(ii) gas, including hydrogen; or

(iii) heating or cooling;

(c) the identity, location, type and capacity of the installation where the energy was produced;

(d) whether the installation has benefited from investment support and whether the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme;

(e) the date on which the installation became operational; and

(f) the date and country of issue and a unique identification number.

Simplified information may be specified on guarantees of origin from installations of less than 50 kW.

8. Where an electricity supplier is required to demonstrate the share or quantity of energy from renewable sources in its energy mix for the purposes of point (a) of Article **18 and Annex I to** Directive **2019/944/EC, as adapted and adopted by Ministerial Council Decision 2021/13/MC-EnC**, it shall do so by using guarantees of origin except:

(a) as regards the share of its energy mix corresponding to non-tracked commercial offers, if any, for which the supplier may use the residual mix; or

(b) where a **Contracting Party** decides not to issue guarantees of origin to a producer that receives financial support from a support scheme.

Where **Contracting Parties** have arranged to have guarantees of origin for other types of energy, suppliers shall use for disclosure the same type of guarantees of origin as the energy supplied. Likewise, guarantees of origin created pursuant to Article 14(10) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC**, may be used to substantiate any requirement to demonstrate the quantity of electricity produced from high-efficiency cogeneration. For the purposes of paragraph 2 of this Article, where electricity is generated from high-efficiency cogeneration using renewable sources, only one guarantee of origin specifying both characteristics may be issued.

9. **Contracting Parties** shall recognise guarantees of origin issued by other **Contracting Parties** in accordance with this Directive exclusively as evidence of the elements referred to in paragraph 1 and

points (a) to (f) of the first subparagraph of paragraph 7. A **Contracting Party** may refuse to recognise a guarantee of origin only where it has well-founded doubts about its accuracy, reliability or veracity. The **Contracting Party** shall notify the **Secretariat** of such a refusal and its justification.

10. If the **Energy Community Secretariat** finds that a refusal to recognise a guarantee of origin is unfounded, the **Energy Community Secretariat** may **issue an opinion inviting** the **Contracting Party** in question to recognise it. **The Contracting Party in question shall take utmost account of the opinion and provide reasons for any deviation in writing.**

11. **Contracting Parties** shall not recognise guarantees of origins issued by a third country except where the Union **or the Energy Community** has concluded an agreement with that third country on mutual recognition of guarantees of origin issued in the **Contracting Parties** and compatible guarantees of origin systems established in that third country, and only where there is direct import or export of energy.

12. A **Contracting Party** may, in accordance with **Energy Community** law, introduce objective, transparent and non-discriminatory criteria for the use of guarantees of origin in accordance with the obligations laid down in Article **18 and Annex I to** Directive **2019/944/**EC**, as adapted and adopted by Ministerial Council Decision 2021/13/MC-EnC**.

13. The **Secretariat** shall adopt a report assessing options to establish an **Energy Community**-wide green label with a view to promoting the use of renewable energy coming from new installations. Suppliers shall use the information contained in guarantees of origin to demonstrate compliance with the requirements of such a label.

Article 20

Access to and operation of the grids

1. Where relevant, **Contracting Parties** shall assess the need to extend existing gas network infrastructure to facilitate the integration of gas from renewable sources.

2. Where relevant, **Contracting Parties** shall require transmission system operators and distribution system operators in their territory to publish technical rules in accordance with Article 8 of Directive 2009/73/EC **as adapted and adopted by Ministerial Council Decision Decision 2011/02/MC-EnC**, in particular regarding network connection rules that include gas quality, gas odoration and gas pressure requirements. **Contracting Parties** shall also require transmission and distribution system operators to publish the connection tariffs to connect gas from renewable sources based on objective, transparent and non-discriminatory criteria.

3. Subject to their assessment included in the integrated national energy and climate plans in accordance with Annex I to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC** on the necessity to build new infrastructure for district heating and cooling from renewable sources in order to achieve the **Energy Community** target set in Article 3(1) of this Directive, **Contracting Parties** shall, where relevant, take the necessary steps with a view to developing a district heating and cooling infrastructure to accommodate the development of heating and cooling from large biomass, solar energy, ambient energy and geothermal energy facilities and from waste heat and cold.

Article 21

Renewables self-consumers

1. **Contracting Parties** shall ensure that consumers are entitled to become renewables self-consumers, subject to this Article.

2. **Contracting Parties** shall ensure that renewables self-consumers, individually or through aggregators, are entitled:

(a) to generate renewable energy, including for their own consumption, store and sell their excess production of renewable electricity, including through renewables power purchase agreements, electricity suppliers and peer-to-peer trading arrangements, without being subject:

(i) in relation to the electricity that they consume from or feed into the grid, to discriminatory or disproportionate procedures and charges, and to network charges that are not cost-reflective;

(ii) in relation to their self-generated electricity from renewable sources remaining within their premises, to discriminatory or disproportionate procedures, and to any charges or fees;

(b) to install and operate electricity storage systems combined with installations generating renewable electricity for self-consumption without liability for any double charge, including network charges, for stored electricity remaining within their premises;

(c) to maintain their rights and obligations as final consumers;

(d) to receive remuneration, including, where applicable, through support schemes, for the self-generated renewable electricity that they feed into the grid, which reflects the market value of that electricity and which may take into account its long-term value to the grid, the environment and society.

3. **Contracting Parties** may apply non-discriminatory and proportionate charges and fees to renewables self-consumers, in relation to their self-generated renewable electricity remaining within their premises in one or more of the following cases:

(a) if the self-generated renewable electricity is effectively supported via support schemes, only to the extent that the economic viability of the project and the incentive effect of such support are not undermined;

(b) from 1 December 2026, if the overall share of self-consumption installations exceeds 8 % of the total installed electricity capacity of a **Contracting Party**, and if it is demonstrated, by means of a cost-benefit analysis performed by the national regulatory authority of that **Contracting Party**, which is conducted by way of an open, transparent and participatory process, that the provision laid down in point (a)(ii) of paragraph 2 either results in a significant disproportionate burden on the long-term financial sustainability of the electric system, or creates an incentive exceeding what is objectively needed to achieve cost-effective deployment of renewable energy, and that such burden or incentive cannot be minimised by taking other reasonable actions; or

(c) if the self-generated renewable electricity is produced in installations with a total installed electrical capacity of more than 30 kW.

4. **Contracting Parties** shall ensure that renewables self-consumers located in the same building, including multi-apartment blocks, are entitled to engage jointly in activities referred to in paragraph 2 and that they are permitted to arrange sharing of renewable energy that is produced on their site or sites between themselves, without prejudice to the network charges and other relevant charges, fees, levies and taxes

applicable to each renewables self-consumer. **Contracting Parties** may differentiate between individual renewables self-consumers and jointly acting renewables self-consumers. Any such differentiation shall be proportionate and duly justified.

5. The renewables self-consumer's installation may be owned by a third party or managed by a third party for installation, operation, including metering and maintenance, provided that the third party remains subject to the renewables self-consumer's instructions. The third party itself shall not be considered to be a renewables self-consumer.

6. **Contracting Parties** shall put in place an enabling framework to promote and facilitate the development of renewables self-consumption based on an assessment of the existing unjustified barriers to, and of the potential of, renewables self-consumption in their territories and energy networks. That enabling framework shall, *inter alia*:

(a) address accessibility of renewables self-consumption to all final customers, including those in low-income or vulnerable households;

(b) address unjustified barriers to the financing of projects in the market and measures to facilitate access to finance;

(c) address other unjustified regulatory barriers to renewables self-consumption, including for tenants;

(d) address incentives to building owners to create opportunities for renewables self-consumption, including for tenants;

(e) grant renewables self-consumers, for self-generated renewable electricity that they feed into the grid, non-discriminatory access to relevant existing support schemes as well as to all electricity market segments;

(f) ensure that renewables self-consumers contribute in an adequate and balanced way to the overall cost sharing of the system when electricity is fed into the grid.

Contracting Parties shall include a summary of the policies and measures under the enabling framework and an assessment of their implementation respectively in their integrated national energy and climate plans and progress reports pursuant to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**.

7. This Article shall apply without prejudice to Article**s 18 and 19 of the Energy Community Treaty**.

Article 22

Renewable energy communities

1. **Contracting Parties** shall ensure that final customers, in particular household customers, are entitled to participate in a renewable energy community while maintaining their rights or obligations as final customers, and without being subject to unjustified or discriminatory conditions or procedures that would prevent their participation in a renewable energy community, provided that for private undertakings, their participation does not constitute their primary commercial or professional activity.

2. **Contracting Parties** shall ensure that renewable energy communities are entitled to:

(a) produce, consume, store and sell renewable energy, including through renewables power purchase agreements;

(b) share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community, subject to the other requirements laid down in this Article and to maintaining the rights and obligations of the renewable energy community members as customers;

(c) access all suitable energy markets both directly or through aggregation in a non-discriminatory manner.

3. **Contracting Parties** shall carry out an assessment of the existing barriers and potential of development of renewable energy communities in their territories.

4. **Contracting Parties** shall provide an enabling framework to promote and facilitate the development of renewable energy communities. That framework shall ensure, *inter alia*, that:

(a) unjustified regulatory and administrative barriers to renewable energy communities are removed;

(b) renewable energy communities that supply energy or provide aggregation or other commercial energy services are subject to the provisions relevant for such activities;

(c) the relevant distribution system operator cooperates with renewable energy communities to facilitate energy transfers within renewable energy communities;

(d) renewable energy communities are subject to fair, proportionate and transparent procedures, including registration and licensing procedures, and cost-reflective network charges, as well as relevant charges, levies and taxes, ensuring that they contribute, in an adequate, fair and balanced way, to the overall cost sharing of the system in line with a transparent cost-benefit analysis of distributed energy sources developed by the national competent authorities;

(e) renewable energy communities are not subject to discriminatory treatment with regard to their activities, rights and obligations as final customers, producers, suppliers, distribution system operators, or as other market participants;

(f) the participation in the renewable energy communities is accessible to all consumers, including those in low-income or vulnerable households;

(g) tools to facilitate access to finance and information are available;

(h) regulatory and capacity-building support is provided to public authorities in enabling and setting up renewable energy communities, and in helping authorities to participate directly;

(i) rules to secure the equal and non-discriminatory treatment of consumers that participate in the renewable energy community are in place.

5. The main elements of the enabling framework referred to in paragraph 4, and of its implementation, shall be part of the updates of the **Contracting Parties**' integrated national energy and climate plans and progress reports pursuant to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**.

6. **Contracting Parties** may provide for renewable energy communities to be open to cross-border participation.

7. Without prejudice to Article **18 of the Energy Community Treaty, Contracting Parties** shall take into account specificities of renewable energy communities when designing support schemes in order to allow them to compete for support on an equal footing with other market participants.

Article 23

Mainstreaming renewable energy in heating and cooling

1. In order to promote the use of renewable energy in the heating and cooling sector, each **Contracting Party** shall endeavour to increase the share of renewable energy in that sector by an indicative 1,3 percentage points as an annual average calculated for the periods 2021 to 2025 and 2026 to 2030, starting from the share of renewable energy in the heating and cooling sector in 2020, expressed in terms of national share of final energy consumption and calculated in accordance with the methodology set out in Article 7, without prejudice to paragraph 2 of this Article. That increase shall be limited to an indicative 1,1 percentage points for **Contracting Parties** where waste heat and cold is not used. **Contracting Parties** shall, where appropriate, prioritise the best available technologies.

2. For the purposes of paragraph 1, when calculating its share of renewable energy in the heating and cooling sector and its average annual increase in accordance with that paragraph, each **Contracting Party**:

(a) may count waste heat and cold, subject to a limit of 40 % of the average annual increase;

(b) where its share of renewable energy in the heating and cooling sector is above 60 %, may count any such share as fulfilling the average annual increase; and

(c) where its share of renewable energy in the heating and cooling sector is above 50 % and up to 60 %, may count any such share as fulfilling half of the average annual increase.

When deciding which measures to adopt for the purposes of deploying energy from renewable sources in the heating and cooling sector, **Contracting Parties** may take into account cost-effectiveness reflecting structural barriers arising from the high share of natural gas or cooling, or from a dispersed settlement structure with low population density.

Where those measures would result in a lower average annual increase than that referred to in paragraph 1 of this Article, **Contracting Parties** shall make it public, for instance by the means of their integrated national energy and climate progress reports pursuant to Article 20 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**, and provide the **Secretariat** with reasons, including of choice of measures as referred to the second subparagraph of this paragraph.

3. On the basis of objective and non-discriminatory criteria, **Contracting Parties** may establish and make public a list of measures and may designate and make public the implementing entities, such as fuel suppliers, public or professional bodies, which are to contribute to the average annual increase referred to in paragraph 1.

4. **Contracting Parties** may implement the average annual increase referred to in paragraph 1 by means, *inter alia*, of one or more of the following options:

(a) physical incorporation of renewable energy or waste heat and cold in the energy and energy fuel supplied for heating and cooling;

(b) direct mitigation measures such as the installation of highly efficient renewable heating and cooling systems in buildings, or the use of renewable energy or waste heat and cold in industrial heating and cooling processes;

(c) indirect mitigation measures covered by tradable certificates proving compliance with the obligation laid

down in paragraph 1 through support to indirect mitigation measures, carried out by another economic operator such as an independent renewable technology installer or energy service company providing renewable installation services;

(d) other policy measures, with an equivalent effect, to reach the average annual increase referred to in paragraph 1, including fiscal measures or other financial incentives.

When adopting and implementing the measures referred to in the first subparagraph, **Contracting Parties** shall aim to ensure the accessibility of measures to all consumers, in particular those in low-income or vulnerable households, who would not otherwise possess sufficient up-front capital to benefit.

5. **Contracting Parties** may use the structures established under the national energy savings obligations set out in Article 7 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC** to implement and monitor the measures referred to in paragraph 3 of this Article.

6. Where entities are designated under paragraph 3, **Contracting Parties** shall ensure that the contribution by those designated entities is measurable and verifiable and that the designated entities report annually on:

(a) the total amount of energy supplied for heating and cooling;

(b) the total amount of renewable energy supplied for heating and cooling;

(c) the amount of waste heat and cold supplied for heating and cooling;

(d) the share of renewable energy and waste heat and cold in the total amount of energy supplied for heating and cooling; and

(e) the type of renewable energy source.

Article 24

District heating and cooling

1. **Contracting Parties** shall ensure that information on the energy performance and the share of renewable energy in their district heating and cooling systems is provided to final consumers in an easily accessible manner, such as on the suppliers' websites, on annual bills or upon request.

2. **Contracting Parties** shall lay down the necessary measures and conditions to allow customers of district heating or cooling systems which are not efficient district heating and cooling systems, or which are not such a system by 31 December 2025 on the basis of a plan approved by the competent authority, to disconnect by terminating or modifying their contract in order to produce heating or cooling from renewable sources themselves.

Where the termination of a contract is linked to physical disconnection, such a termination may be made conditional on compensation for the costs directly incurred as a result of the physical disconnection and for the undepreciated portion of assets needed to provide heat and cold to that customer.

3. **Contracting Parties** may restrict the right to disconnect by terminating or modifying a contract in accordance with paragraph 2 to customers who can demonstrate that the planned alternative supply solution for heating or cooling results in a significantly better energy performance. The energy-performance assessment of the alternative supply solution may be based on the energy performance certificate.

4. **Contracting Parties** shall lay down the necessary measures to ensure that district heating and cooling

systems contribute to the increase referred to in Article 23(1) of this Directive by implementing at least one of the two following options:

(a) Endeavour to increase the share of energy from renewable sources and from waste heat and cold in district heating and cooling by at least one percentage point as an annual average calculated for the period 2021 to 2025 and for the period 2026 to 2030, starting from the share of energy from renewable sources and from waste heat and cold in district heating and cooling in 2020, expressed in terms of share of final energy consumption in district heating and cooling, by implementing measures that can be expected to trigger that average annual increase in years with normal climatic conditions.

Contracting Parties with a share of energy from renewable sources and from waste heat and cold in district heating and cooling above 60 % may count any such share as fulfilling the average annual increase referred to in the first subparagraph of this point.

Contracting Parties shall lay down the necessary measures to implement the average annual increase referred to in the first subparagraph of this point in their integrated national energy and climate plans pursuant to Annex I to Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**.

(b) Ensure that operators of district heating or cooling systems are obliged to connect suppliers of energy from renewable sources and from waste heat and cold or are obliged to offer to connect and purchase heat or cold from renewable sources and from waste heat and cold from third-party suppliers based on non-discriminatory criteria set by the competent authority of the **Contracting Party** concerned, where they need to do one or more of the following:

(i) meet demand from new customers;

(ii) replace existing heat or cold generation capacity;

(iii) expand existing heat or cold generation capacity.

5. Where a **Contracting Party** exercises the option referred to in point (b) of paragraph 4, an operator of a district heating or cooling system may refuse to connect and to purchase heat or cold from a third-party supplier where:

(a) the system lacks the necessary capacity due to other supplies of waste heat and cold, of heat or cold from renewable sources or of heat or cold produced by high-efficiency cogeneration;

(b) the heat or cold from the third-party supplier does not meet the technical parameters necessary to connect and ensure the reliable and safe operation of the district heating and cooling system; or

(c) the operator can demonstrate that providing access would lead to an excessive heat or cold cost increase for final customers compared to the cost of using the main local heat or cold supply with which the renewable source or waste heat and cold would compete.

Contracting Parties shall ensure that, when an operator of a district heating or cooling system refuses to connect a supplier of heating or cooling pursuant to the first subparagraph, information on the reasons for the refusal, as well as the conditions to be met and measures to be taken in the system in order to enable the connection, is provided by that operator to the competent authority in accordance with paragraph 9.

6. Where a Contracting Party exercises the option referred to in point (b) of paragraph 4, it may exempt operators of the following district heating and cooling systems from the application of that point:

(a) efficient district heating and cooling;

(b) efficient district heating and cooling that exploits high-efficiency cogeneration;

(c) district heating and cooling that, on the basis of a plan approved by the competent authority, is efficient district heating and cooling by 31 December 2025;

(d) district heating and cooling with a total rated thermal input below 20 MW.

7. The right to disconnect by terminating or modifying a contract in accordance with paragraph 2 may be exercised by individual customers, by joint undertakings formed by customers or by parties acting on behalf of customers. For multi-apartment blocks, such disconnection may be exercised only at a whole building level in accordance with the applicable housing law.

8. **Contracting Parties** shall require electricity distribution system operators to assess at least every four years, in cooperation with the operators of district heating or cooling systems in their respective area, the potential for district heating or cooling systems to provide balancing and other system services, including demand response and storing of excess electricity from renewable sources, and whether the use of the identified potential would be more resource- and cost-efficient than alternative solutions.

9. **Contracting Parties** shall ensure that the rights of consumers and the rules for operating district heating and cooling systems in accordance with this Article are clearly defined and enforced by the competent authority.

10. A **Contracting Party** shall not be required to apply paragraphs 2 to 9 of this Article where:

(a) its share of district heating and cooling is less than or equal to 2 % of the overall consumption of energy in heating and cooling on 24 December **2021**;

(b) its share of district heating and cooling is increased above 2 % by developing new efficient district heating and cooling based on its integrated national energy and climate plan pursuant to Annex I to Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC** or the assessment referred to in Article 15(7) of this Directive; or

(c) its share of systems referred to in paragraph 6 of this Article constitutes over 90 % of total sales of its district heating and cooling.

Article 25

Mainstreaming renewable energy in the transport sector

1. In order to mainstream the use of renewable energy in the transport sector, each **Contracting Party** shall set an obligation on fuel suppliers to ensure that the share of renewable energy within the final consumption of energy in the transport sector is at least 14 % by 2030 (minimum share) in accordance with an indicative trajectory set by the **Contracting Party** and calculated in accordance with the methodology set out in this Article and in Articles 26 and 27. **<…>**

Contracting Parties may exempt, or distinguish between, different fuel suppliers and different energy carriers when setting the obligation on the fuel suppliers, ensuring that the varying degrees of maturity and the cost of different technologies are taken into account.

For the calculation of the minimum share referred to in the first subparagraph, **Contracting Parties**:

(a) shall take into account renewable liquid and gaseous transport fuels of non-biological origin also when

they are used as intermediate products for the production of conventional fuels; and

(b) may take into account recycled carbon fuels.

Within the minimum share referred to in the first subparagraph, the contribution of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX as a share of final consumption of energy in the transport sector shall be at least 0,2 % in 2022, at least 1 % in 2025 and at least 3,5 % in 2030.

Contracting Parties may exempt fuel suppliers supplying fuel in the form of electricity or renewable liquid and gaseous transport fuels of non-biological origin from the requirement to comply with the minimum share of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX with respect to those fuels.

2. The greenhouse gas emissions savings from the use of renewable liquid and gaseous transport fuels of non-biological origin shall be at least 70 % from 1 January 202**4**.

<…>

The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 25(2) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

Article 26

Specific rules for biofuels, bioliquids and biomass fuels produced from food and feed crops

1. For the calculation of a **Contracting Party'**s gross final consumption of energy from renewable sources referred to in Article 7 and the minimum share referred to in the first subparagraph of Article 25(1), the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport, where produced from food and feed crops, shall be no more than one percentage point higher than the share of such fuels in the final consumption of energy in the road and rail transport sectors in 202**2** in that **Contracting Party**, with a maximum of 7 % of final consumption of energy in the road and rail transport sectors in that **Contracting Party**.

Where that share is below 1 % in a **Contracting Party**, it may be increased to a maximum of 2 % of the final consumption of energy in the road and rail transport sectors.

Contracting Parties may set a lower limit and may distinguish, for the purposes of Article 29(1), between different biofuels, bioliquids and biomass fuels produced from food and feed crops, taking into account best available evidence on indirect land-use change impact. **Contracting Parties** may, for example, set a lower limit for the share of biofuels, bioliquids and biomass fuels produced from oil crops.

Where the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport, produced from food and feed crops in a **Contracting Party** is limited to a share lower than 7 % or a **Contracting Party** decides to limit the share further, that Contracting Party may reduce the minimum share referred to in the first subparagraph of Article 25(1) accordingly, by a maximum of 7 percentage points.

2. For the calculation of a **Contracting Party**'s gross final consumption of energy from renewable sources referred to in Article 7 and the minimum share referred to in the first subparagraph of Article 25(1), the

share of high indirect land-use change-risk biofuels, bioliquids or biomass fuels produced from food and feed crops for which a significant expansion of the production area into land with high-carbon stock is observed shall not exceed the level of consumption of such fuels in that **Contracting Party** in 2019, unless they are certified to be low indirect land-use change-risk biofuels, bioliquids or biomass fuels pursuant to this paragraph.

From 31 December 202**6** until 31 December 2030 at the latest, that limit shall gradually decrease to 0 %.

<…>

The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 26(2) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis".

Article 27

Calculation rules with regard to the minimum shares of renewable energy in the transport sector

1. For the calculation of the minimum shares referred to in the first and fourth subparagraphs of Article 25(1), the following provisions shall apply:

(a) for the calculation of the denominator, that is the energy content of road- and rail- transport fuels supplied for consumption or use on the market, petrol, diesel, natural gas, biofuels, biogas, renewable liquid and gaseous transport fuels of non-biological origin, recycled carbon fuels and electricity supplied to the road and rail transport sectors, shall be taken into account;

(b) for the calculation of the numerator, that is the amount of energy from renewable sources consumed in the transport sector for the purposes of the first subparagraph of Article 25(1), the energy content of all types of energy from renewable sources supplied to all transport sectors, including renewable electricity supplied to the road and rail transport sectors, shall be taken into account. **Contracting Parties** may also take into account recycled carbon fuels.

For the calculation of the numerator, the share of biofuels and biogas produced from the feedstock listed in Part B of Annex IX shall **<…>** be limited to 1,7 % of the energy content of transport fuels supplied for consumption or use on the market. **Contracting Parties** may, where justified, modify that limit, taking into account the availability of feedstock. Any such modification shall be subject to approval by the **Secretariat**;

(c) for the calculation of both numerator and denominator, the values regarding the energy content of transport fuels set out in Annex III shall be used. For the determination of the energy content of transport fuels not included in Annex III, the **Contracting Parties** shall use the relevant ESO standards for the determination of the calorific values of fuels. Where no ESO standard has been adopted for that purpose, the relevant ISO standards shall be used.

<…> The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 27(1) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant

delegated acts into the Energy Community acquis.

2. For the purposes of demonstrating compliance with the minimum shares referred to in Article 25(1):

(a) the share of biofuels and biogas for transport produced from the feedstock listed in Annex IX may be considered to be twice its energy content;

(b) the share of renewable electricity shall be considered to be four times its energy content when supplied to road vehicles and may be considered to be 1,5 times its energy content when supplied to rail transport;

(c) with the exception of fuels produced from food and feed crops, the share of fuels supplied in the aviation and maritime sectors shall be considered to be 1,2 times their energy content.

3. For the calculation of the share of renewable electricity in the electricity supplied to road and rail vehicles for the purposes of paragraph 1 of this Article, **Contracting Parties** shall refer to the two-year period before the year in which the electricity is supplied in their territory.

By way of derogation from the first subparagraph of this paragraph, to determine the share of electricity for the purposes of paragraph 1 of this Article, in the case of electricity obtained from a direct connection to an installation generating renewable electricity and supplied to road vehicles, that electricity shall be fully counted as renewable.

In order to ensure that the expected increase in demand for electricity in the transport sector beyond the current baseline is met with additional renewable energy generation capacity, the **Contracting Parties** shall **use** framework on additionality in the transport sector **developed by the European Commission**, and the **Secretariat** shall develop different options with a view to determining the baseline of **Contracting Parties** and measuring additionality.

For the purposes of this paragraph, where electricity is used for the production of renewable liquid and gaseous transport fuels of non-biological origin, either directly or for the production of intermediate products, the average share of electricity from renewable sources in the country of production, as measured two years before the year in question, shall be used to determine the share of renewable energy.

However, electricity obtained from direct connection to an installation generating renewable electricity may be fully counted as renewable electricity where it is used for the production of renewable liquid and gaseous transport fuels of non-biological origin, provided that the installation:

(a) comes into operation after, or at the same time as, the installation producing the renewable liquid and gaseous transport fuels of non-biological origin; and

(b) is not connected to the grid or is connected to the grid but evidence can be provided that the electricity concerned has been supplied without taking electricity from the grid.

Electricity that has been taken from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated, ensuring that the renewable properties of that electricity are claimed only once and only in one end-use sector.

<…>

The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 27(3) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant

delegated acts into the Energy Community acquis.

Article 28

Other provisions on renewable energy in the transport sector

1. With a view to minimising the risk of single consignments being claimed more than once in the **Energy Community, Contracting Parties** and the **Secretariat** shall strengthen cooperation among national systems and between national systems and voluntary schemes and verifiers established pursuant to Article 30, including, where appropriate, the exchange of data. Where the competent authority of one **Contracting Party** suspects or detects a fraud, it shall, where appropriate, inform the other **Contracting Parties**.

2. The **Secretariat** shall ensure that a**n Energy Community** database is put in place to enable the tracing of liquid and gaseous transport fuels that are eligible for being counted towards the numerator referred to in point (b) of Article 27(1) or that are taken into account for the purposes referred to in points (a), (b), and (c) of the first subparagraph of Article 29(1). **Contracting Parties** shall require the relevant economic operators to enter into that database information on the transactions made and the sustainability characteristics of those fuels, including their life-cycle greenhouse gas emissions, starting from their point of production to the fuel supplier that places the fuel on the market. A **Contracting Party** may set up a national database that is linked to the **Energy Community** database ensuring that information entered is instantly transferred between the databases.

Fuel suppliers shall enter the information necessary to verify compliance with the requirements laid down in the first and fourth subparagraphs of Article 25(1) into the relevant database.

3. By 31 December 202**4**, **Contracting Parties** shall take measures to ensure the availability of fuels from renewable sources for transport including with regard to publicly accessible high-power recharging points and other refuelling infrastructure as provided for in their national policy frameworks. **<…>**

4. **Contracting Parties** shall have access to the **Energy Community** database referred to in paragraph 2 of this Article. They shall take measures to ensure that economic operators enter accurate information into the relevant database. **<…>**

5. **The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 28(5) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.**

6. The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 28(6) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

7. By 31 December 2025, in the context of the biennial assessment of progress made pursuant to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**, the **Secretariat** shall assess whether the obligation relating to advanced biofuels and biogas produced from feedstock listed in Part A of Annex IX laid

down in the fourth subparagraph of Article 25(1) effectively stimulates innovation and ensures greenhouse gas emissions savings in the transport sector. The **Secretariat** shall analyse in that assessment whether the application of this Article effectively avoids double accounting of renewable energy.

<...>

Article 29

Sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels

1. Energy from biofuels, bioliquids and biomass fuels shall be taken into account for the purposes referred to in points (a), (b) and (c) of this subparagraph only if they fulfil the sustainability and the greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10:

(a) contributing towards the **Energy Community** target set in Article 3(1) and the renewable energy shares of Contracting Parties;

(b) measuring compliance with renewable energy obligations, including the obligation laid down in Article 25;

(c) eligibility for financial support for the consumption of biofuels, bioliquids and biomass fuels.

However, biofuels, bioliquids and biomass fuels produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues, are required to fulfil only the greenhouse gas emissions saving criteria laid down in paragraph 10 in order to be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph. This subparagraph shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, bioliquids and biomass fuels.

Electricity, heating and cooling produced from municipal solid waste shall not be subject to the greenhouse gas emissions saving criteria laid down in paragraph 10.

Biomass fuels shall fulfil the sustainability and greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 if used in installations producing electricity, heating and cooling or fuels with a total rated thermal input equal to or exceeding 20 MW in the case of solid biomass fuels, and with a total rated thermal input equal to or exceeding 2 MW in the case of gaseous biomass fuels. **Contracting Parties** may apply the sustainability and greenhouse gas emissions saving criteria to installations with lower total rated thermal input.

The sustainability and the greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 shall apply irrespective of the geographical origin of the biomass.

2. Biofuels, bioliquids and biomass fuels produced from waste and residues derived not from forestry but from agricultural land shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 only where operators or national authorities have monitoring or management plans in place in order to address the impacts on soil quality and soil carbon. Information about how those impacts are monitored and managed shall be reported pursuant to Article 30(3).

3. Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with a high biodiversity value, namely land that had one of the

following statuses in or after January 2008, whether or not the land continues to have that status:

(a) primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;

(b) highly biodiverse forest and other wooded land which is species-rich and not degraded, or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

(c) areas designated:

(i) by law or by the relevant competent authority for nature protection purposes; or

(ii) for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the first subparagraph of Article 30(4), unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

(d) highly biodiverse grassland spanning more than one hectare that is:

(i) natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or

(ii) non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland.

<…> The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 29(3) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

4. Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with high-carbon stock, namely land that had one of the following statuses in January 2008 and no longer has that status:

(a) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year;

(b) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds *in situ*;

(c) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds *in situ*, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Part C of Annex V is applied, the conditions laid down in paragraph 10 of this Article would be fulfilled.

This paragraph shall not apply if, at the time the raw material was obtained, the land had the same status as it had in January 2008.

5. Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.

6. Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following criteria to minimise the risk of using forest biomass derived from unsustainable production:

(a) the country in which forest biomass was harvested has national or sub-national laws applicable in the area of harvest as well as monitoring and enforcement systems in place ensuring:

(i) the legality of harvesting operations;

(ii) forest regeneration of harvested areas;

(iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands and peatlands, are protected;

(iv) that harvesting is carried out considering maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and

(v) that harvesting maintains or improves the long-term production capacity of the forest;

(b) when evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level ensuring:

(i) the legality of harvesting operations;

(ii) forest regeneration of harvested areas;

(iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands and peatlands, are protected unless evidence is provided that the harvesting of that raw material does not interfere with those nature protection purposes;

(iv) that harvesting is carried out considering the maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and

(v) that harvesting maintains or improves the long-term production capacity of the forest. 7. Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following land-use, land-use change and forestry (LULUCF) criteria:

(a) the country or regional economic integration organisation of origin of the forest biomass:

(i) is a Party to the Paris Agreement;

(ii) has submitted a nationally determined contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), covering emissions and removals from agriculture, forestry and land use which ensures that changes in carbon stock associated with biomass harvest are accounted towards the country's commitment to reduce or limit greenhouse gas emissions as specified in the NDC; or

(iii) has national or sub-national laws in place, in accordance with Article 5 of the Paris Agreement, applicable in the area of harvest, to conserve and enhance carbon stocks and sinks, and providing evidence that reported LULUCF-sector emissions do not exceed removals;

(b) where evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level to ensure that carbon stocks and sinks levels in the forest are maintained, or strengthened over the long term.

8. <…> The Energy Community Secretariat shall inform the Permanent High Level Group about any delegated acts adopted in accordance with Article 29(8) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.

9. <…>

10. The greenhouse gas emission savings from the use of biofuels, bioliquids and biomass fuels taken into account for the purposes referred to in paragraph 1 shall be:

(a) at least 50 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations in operation on or before 5 October 2015;

(b) at least 60 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations starting operation from 6 October 2015 until 31 December 2020;

(c) at least 65 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations starting operation from 1 January 202**3**;

(d) at least 70 % for electricity, heating and cooling production from biomass fuels used in installations starting operation from 1 January 202**3** until 31 December 202**7**, and 80 % for installations starting operation from 1 January 202**8**.

An installation shall be considered to be in operation once the physical production of biofuels, biogas consumed in the transport sector and bioliquids, and the physical production of heating and cooling and electricity from biomass fuels has started.

The greenhouse gas emission savings from the use of biofuels, biogas consumed in the transport sector, bioliquids and biomass fuels used in installations producing heating, cooling and electricity shall be calculated in accordance with Article 31(1).

11.Electricity from biomass fuels shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 only if it meets one or more of the following requirements:

(a) it is produced in installations with a total rated thermal input below 50 MW;

(b) for installations with a total rated thermal input from 50 to 100 MW, it is produced applying high-efficiency cogeneration technology, or, for electricity-only installations, meeting an energy efficiency level associated with the best available techniques (BAT-AEELs) as defined in Commission Implementing Decision (EU) 2017/1442;

(c) for installations with a total rated thermal input above 100 MW, it is produced applying high-efficiency cogeneration technology, or, for electricity-only installations, achieving an net-electrical efficiency of at least 36 %;

(d) it is produced applying Biomass CO_2 Capture and Storage.

For the purposes of points (a), (b) and (c) of the first subparagraph of paragraph 1 of this Article, elec-

tricity-only-installations shall be taken into account only if they do not use fossil fuels as a main fuel and only if there is no cost-effective potential for the application of high-efficiency cogeneration technology according to the assessment in accordance with Article 14 of Directive 2012/27/EU.

For the purposes of points (a) and (b) of the first subparagraph of paragraph 1 of this Article, this paragraph shall apply only to installations starting operation or converted to the use of biomass fuels after 25 December 202**4**. For the purposes of point (c) of the first subparagraph of paragraph 1 of this Article, this paragraph shall be without prejudice to support granted under support schemes in accordance with Article 4 approved by 25 December 202**4**.

Contracting Parties may apply higher energy efficiency requirements than those referred in the first subparagraph to installations with lower rated thermal input.

The first subparagraph shall not apply to electricity from installations which are the object of a specific notification by a **Contracting Party** to the **Secretariat** based on the duly substantiated existence of risks for the security of supply of electricity. Upon assessment of the notification, the **Energy Community Secretariat** shall **issue an opinion** taking into account the elements included therein. **The Contracting Party in question shall take utmost account of the opinion and provide reasons for any deviation in writing.**

12. For the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 of this Article, and without prejudice to Articles 25 and 26, **Contracting Parties** shall not refuse to take into account, on other sustainability grounds, biofuels and bioliquids obtained in compliance with this Article. This paragraph shall be without prejudice to public support granted under support schemes approved before 24 December 2018.

13. <…>

14. For the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1, **Contracting Parties** may establish additional sustainability criteria for biomass fuels.

By 31 December 202**9**, the **Energy Community Secretariat** shall assess the impact of such additional criteria on the internal market.

Article 30

Verification of compliance with the sustainability and greenhouse gas emissions saving criteria

1. Where biofuels, bioliquids and biomass fuels, or other fuels that are eligible for counting towards the numerator referred to in point (b) of Article 27(1), are to be taken into account for the purposes referred to in Articles 23 and 25 and in points (a), (b) and (c) of the first subparagraph of Article 29(1), **Contracting Parties** shall require economic operators to show that the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) have been fulfilled. For those purposes, they shall require economic operators to use a mass balance system which:

(a) allows consignments of raw material or fuels with differing sustainability and greenhouse gas emissions saving characteristics to be mixed for instance in a container, processing or logistical facility, transmission and distribution infrastructure or site;

(b) allows consignments of raw material with differing energy content to be mixed for the purposes of further processing, provided that the size of consignments is adjusted according to their energy content;

(c) requires information about the sustainability and greenhouse gas emissions saving characteristics and sizes of the consignments referred to in point (a) to remain assigned to the mixture; and

(d) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture and requires that this balance be achieved over an appropriate period of time.

The mass balance system shall ensure that each consignment is counted only once in point (a), (b) or (c) of the first subparagraph of Article 7(1) for the purposes of calculating the gross final consumption of energy from renewable sources and shall include information on whether support has been provided for the production of that consignment, and if so, on the type of support scheme.

2. Where a consignment is processed, information on the sustainability and greenhouse gas emissions saving characteristics of the consignment shall be adjusted and assigned to the output in accordance with the following rules:

(a) when the processing of a consignment of raw material yields only one output that is intended for the production of biofuels, bioliquids or biomass fuels, renewable liquid and gaseous transport fuels of non-biological origin, or recycled carbon fuels, the size of the consignment and the related quantities of sustainability and greenhouse gas emissions saving characteristics shall be adjusted applying a conversion factor representing the ratio between the mass of the output that is intended for such production and the mass of the raw material entering the process;

(b) when the processing of a consignment of raw material yields more than one output that is intended for the production of biofuels, bioliquids or biomass fuels, renewable liquid and gaseous transport fuels of non-biological origin, or recycled carbon fuels, for each output a separate conversion factor shall be applied and a separate mass balance shall be used.

3. **Contracting Parties** shall take measures to ensure that economic operators submit reliable information regarding the compliance with the greenhouse gas emissions savings thresholds set in, and adopted pursuant to, Article 25(2), and with the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10), and that economic operators make available to the relevant **Contracting Party**, upon request, the data that were used to develop the information. **Contracting Parties** shall require economic operators to arrange for an adequate standard of independent auditing of the information submitted, and to provide evidence that this has been done. In order to comply with point (a) of Article 29(6) and point (a) of Article 29(7), the first or second party auditing may be used up to the first gathering point of the forest biomass. The auditing shall verify that the systems used by economic operators are accurate, reliable and protected against fraud, including verification ensuring that materials are not intentionally modified or discarded so that the consignment or part thereof could become a waste or residue. It shall evaluate the frequency and methodology of sampling and the robustness of the data.

The obligations laid down in this paragraph shall apply regardless of whether the biofuels, bioliquids, biomass fuels, renewable liquid and gaseous transport fuels of non-biological origin, or recycled carbon fuels are produced within the **Energy Community** or are imported. Information about the geographic origin and feedstock type of biofuels, bioliquids and biomass fuels per fuel supplier shall be made available to consumers on the websites of operators, suppliers or the relevant competent authorities and shall be updated on an annual basis.

Contracting Parties shall submit to the Secretariat, in aggregated form, the information referred to in the first subparagraph of this paragraph. The **Secretariat** shall publish that information on the e-reporting platform referred to in Article 28 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC** in summary form preserving the confidentiality of commercially sensitive information.

4. The **Secretariat** may recognize that voluntary national schemes setting standards for the production of biofuels, bioliquids or biomass fuels, or other fuels that are eligible for counting towards the numerator referred to in point (b) of Article 27(1), provide accurate data on greenhouse gas emission savings for the purposes of Article 25(2) and Article 29(10), demonstrate compliance with Article 27(3) and Article 28(2) and (4), or demonstrate that consignments of biofuels, bioliquids or biomass fuels comply with the sustainability criteria laid down in Article 29(2) to (7). When demonstrating that the criteria laid down in Article 29(6) and (7) are met, the operators may provide the required evidence directly at sourcing area level. The **Secretariat** may recognise areas for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature for the purposes of point (c)(ii) of the first subparagraph of Article 29(3).

The **Secretariat** may **recognise** that those schemes contain accurate information on measures taken for soil, water and air protection, for the restoration of degraded land, for the avoidance of excessive water consumption in areas where water is scarce, and for certification of biofuels, bioliquids and biomass fuels with low indirect land-use change-risk.

5. **<…>** The **Secretariat** shall require that each voluntary scheme on which a**n opinion has been issued** under paragraph 4 submit annually by 30 April a report to the **Secretariat** covering each of the points set out in Annex IX to Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**. The report shall cover the preceding calendar year. The requirement to submit a report shall apply only to voluntary schemes that have operated for at least 12 months.

The **Secretariat** shall make the reports drawn up by the voluntary schemes available, in an aggregated form or in full if appropriate, on the e-reporting platform referred to in Article 28 of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**.

6. **Contracting Parties** may set up national schemes where compliance with the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) and with the greenhouse gas emissions savings thresholds for renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuels set in, and adopted pursuant to, Article 25(2) and in accordance with Article 28(5) is verified throughout the entire chain of custody involving competent national authorities.

A **Contracting Party** may notify such a national scheme to the **Secretariat**. The **Secretariat** may **issue an opinion**, whether such a notified national scheme complies with the conditions laid down in this Directive. **The Contracting Party in question shall take utmost account of the opinion and provide reasons for any deviation in writing.**

Where the **opinion** is positive, schemes established in accordance with this Article shall not refuse mutual recognition with that **Contracting Party'**s scheme, as regards verification of compliance with the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) and the

greenhouse gas emissions savings thresholds set in, and adopted pursuant to, Article 25(2).

7. The **Secretariat shall issue opinions** under paragraph 4 of this Article only if the scheme in question meets adequate standards of reliability, transparency and independent auditing and provides adequate assurances that no materials have been intentionally modified or discarded so that the consignment or part thereof would fall under Annex IX. In the case of schemes to measure greenhouse gas emissions savings, such schemes shall also comply with the methodological requirements set out in Annex V or VI. Lists of areas of high biodiversity value as referred to in point (c)(ii) of the first subparagraph of Article 29(3) shall meet adequate standards of objectivity and coherence with internationally recognised standards and provide for appropriate appeal procedures.

The voluntary schemes referred to in paragraph 4 shall, at least annually, publish a list of their certification bodies used for independent auditing, indicating for each certification body by which entity or national public authority it was recognised and which entity or national public authority is monitoring it.

8. <…> The Energy Community Secretariat shall inform the Permanent High Level Group about any implementing acts adopted in accordance with Article 30(8) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.

9. Where an economic operator provides evidence or data obtained in accordance with a scheme that has been the subject of an **opinion** pursuant to paragraph 4 or 6 of this Article, to the extent covered by that **opinion**, a **Contracting Party** shall not require the supplier to provide further evidence of compliance with the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10).

Competent authorities of the **Contracting Parties** shall supervise the operation of certification bodies that are conducting independent auditing under a voluntary scheme. Certification bodies shall submit, upon the request of competent authorities, all relevant information necessary to supervise the operation, including the exact date, time and location of audits. Where **Contracting Parties** find issues of non-conformity, they shall inform the voluntary scheme without delay.

10. At the request of a **Contracting Party**, which may be based on the request of an economic operator, the Secretariat shall, on the basis of all available evidence, examine whether the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) in relation to a source of biofuels, bioliquids and biomass fuels, and the greenhouse gas emissions savings thresholds set in, and adopted pursuant to, Article 25(2), have been met.

Within six months of receipt of such a request and in accordance with the examination procedure referred to in Article 34(3), the **Secretariat** shall, decide whether the **Contracting Party** concerned may either:

(a) take into account biofuels, bioliquids, biomass fuels and other fuels that are eligible for counting towards the numerator referred to in point (b) of Article 27(1) from that source for the purposes referred to in points (a), (b) and (c) of the first subparagraph of Article 29(1); or

(b) by way of derogation from paragraph 9 of this Article, require suppliers of the source of biofuels, bioliquids, biomass fuels and other fuels that are eligible for counting towards the numerator referred to in point (b) of Article 27(1) to provide further evidence of compliance with those sustainability and greenhouse gas emissions saving criteria and those greenhouse gas emissions savings thresholds.

Article 31

Calculation of the greenhouse gas impact of biofuels, bioliquids and biomass fuels

1. For the purposes of Article 29(10), the greenhouse gas emissions saving from the use of biofuel, bioliquids and biomass fuels shall be calculated in one of the following ways:

(a) where a default value for greenhouse gas emissions saving for the production pathway is laid down in Part A or B of Annex V for biofuels and bioliquids and in Part A of Annex VI for biomass fuels where the e_l value for those biofuels or bioliquids calculated in accordance with point 7 of Part C of Annex V and for those biomass fuels calculated in accordance with point 7 of Part B of Annex VI is equal to or less than zero, by using that default value;

(b) by using an actual value calculated in accordance with the methodology laid down in Part C of Annex V for biofuels and bioliquids and in Part B of Annex VI for biomass fuels;

(c) by using a value calculated as the sum of the factors of the formulas referred to in point 1 of Part C of Annex V, where disaggregated default values in Part D or E of Annex V may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Part C of Annex V, are used for all other factors;

(d) by using a value calculated as the sum of the factors of the formulas referred to in point 1 of Part B of Annex VI, where disaggregated default values in Part C of Annex VI may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Part B of Annex VI, are used for all other factors.

2. **Contracting Parties** may submit to the **Secretariat** reports including information on the typical greenhouse gas emissions from the cultivation of agricultural raw materials of the areas on their territory classified as level 2 in the nomenclature of territorial units for statistics (NUTS) or as a more disaggregated NUTS level in accordance with Regulation (EC) No 1059/2003 of the European Parliament and of the Council. Those reports shall be accompanied by a description of the method and data sources used to calculate the level of emissions. That method shall take into account soil characteristics, climate and expected raw material yields.

3. <…>

4. **<…> The Energy Community Secretariat shall inform the Permanent High Level Group about any implementing acts adopted in accordance with Article 31(4) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

5. **The Energy Community Secretariat shall inform the Permanent High Level Group about any implementing acts adopted in accordance with Article 31(5) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

6. The Energy Community Secretariat shall inform the Permanent High Level Group about any implementing acts adopted in accordance with Article 31(6) of Directive (EU) 2018/2001 within one week of their adoption. The Permanent High Level Group is empowered pursuant

to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.

Article 32

Implementing acts

<…>

Article 33

Monitoring by the Secretariat

1. The **Secretariat** shall monitor the origin of biofuels, bioliquids and biomass fuels consumed in the **Energy Community** and the impact of their production, including the impact as a result of displacement, on land use in the **Energy Community** and in the main third countries of supply. Such monitoring shall be based on **Contracting Parties**' integrated national energy and climate plans and corresponding progress reports pursuant to Articles 3, 17 and 20 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC and Ministerial Council Decision 2022/02/MC-EnC**, and those of relevant third countries, intergovernmental organisations, scientific studies and any other relevant pieces of information. The **Secretariat** shall also monitor the commodity price changes associated with the use of biomass for energy and any associated positive and negative effects on food security.

2. **<…>**

3. **<…>**

4. In 2032, the **Secretariat** shall publish a report reviewing the application of this Directive.

(new) Article 34

Until adoption by the Ministerial Council of the Energy Community 2030 targets, including the renewable energy target and/or targets for energy and climate of each Contracting Party, as appropriate, this Directive shall be applied on the basis of Contracting Parties' National Domestic Contributions or targets or any other more ambitious targets or contributions that they have undertaken under any national or international legal and/or policy text.

Article 34

Committee procedure

<…>

Article 35

Exercise of the delegation

<…>

Article 36

Transposition

<…>

Article 37

Repeal

<…>

Article 38

Entry into force

This Directive enters into force on the day of adoption of Ministerial Council Decision 2021/14/MC-EnC <…>

Article 39

Addressees

This Directive is addressed to **the Contracting Parties and institutions of the Energy Community.**

ANNEX I

TARGETS FOR SHARES OF ENERGY FROM RENEWABLE SOURCES IN GROSS FINAL CONSUMPTION OF ENERGY IN 2020 AND 2030

PART A.

	Share of energy from renewable sources in gross final consumption of energy, 2005 (S2005)	Target for share of energy from renewable sources in gross final consumption of energy, 2020 (S2020)	Target for share of energy from renewable sources in gross final consumption of energy, 2030 (S2030)
Albania	31,2%	38%	52,0%
Bosnia and Herzegovina	34,0%	40%	43,6%
Georgia	n/a	n/a	27,4%
Kosovo*	18,9%	25%	32,0%
Moldova	11,9%	17%	27,0%
Montenegro	26,3%	33%	50,0%
North Macedonia	17,2%	23%	38,0%
Serbia	21,2%	27%	40,7%
Ukraine	5,5 %	11%	27,0%
Overall Energy Community 2030 Target			31,0%

[1] In order to be able to achieve the national objectives set out in this Annex, it is underlined that the State aid guidelines for environmental protection recognise the continued need for national mechanisms of support for the promotion of energy from renewable sources.

ANNEX II

NORMALISATION RULE FOR ACCOUNTING FOR ELECTRICITY GENERATED FROM HYDROPOWER AND WIND POWER

The following rule shall be applied for the purposes of accounting for electricity generated from hydropower in a given **Contracting Party**:

$(Q_{N(norm)})(C_N[(/(i)(N\ 14))(Q_iC_i)]\ 15)$

where:

N = reference year;

$Q_{N(norm)}$ = normalised electricity generated by all hydropower plants of the **Contracting Party** in year N, for accounting purposes;

Q_i = the quantity of electricity actually generated in year i by all hydropower plants of the **Contracting Party** measured in GWh, excluding production from pumped storage units using water that has previously been pumped uphill;

C_i = the total installed capacity, net of pumped storage, of all hydropower plants of the **Contracting Party** at the end of year i, measured in MW.

The following rule shall be applied for the purposes of accounting for electricity generated from onshore wind power in a given **Contracting Party**:

$(Q_{N(norm)})((C_N\ C_{N\ 1}2)((/(i)(Nn))Q_i(/(j)(Nn))(C_j\ C_{j\ 1}2)))$

where:

N = reference year;

$Q_{N(norm)}$ = normalised electricity generated by all onshore wind power plants of the **Contracting Party** in year N, for accounting purposes;

Q_i = the quantity of electricity actually generated in year i by all onshore wind power plants of the **Contracting Party** measured in GWh;

C_j = the total installed capacity of all the onshore wind power plants of the **Contracting Party** at the end of year j, measured in MW;

n = 4 or the number of years preceding year N for which capacity and production data are available for the **Contracting Party** in question, whichever is lower.

The following rule shall be applied for the purposes of accounting for electricity generated from offshore wind power in a given Contracting Party:

$(Q_{N(norm)})((C_N\ C_{N\ 1}2)((/(i)(Nn))Q_i(/(j)(Nn))(C_j\ C_{j\ 1}2)))$

where:

N = reference year;

$Q_{N(norm)}$ = normalised electricity generated by all offshore wind power plants of the **Contracting Party** in year N, for accounting purposes;

Q_i = the quantity of electricity actually generated in year i by all offshore wind power plants of the **Contracting Party** measured in GWh;

C_j = the total installed capacity of all the offshore wind power plants of the **Contracting Party** at the end of year j, measured in MW;

n = 4 or the number of years preceding year N for which capacity and production data are available for the **Contracting Party** in question, whichever is lower.

ANNEX III
ENERGY CONTENT OF FUELS

Fuel	Energy content by weight (lower calorific value, MJ/kg)	Energy content by volume (lower calorific value, MJ/l)
FUELS FROM BIOMASS AND/OR BIOMASS PROCESSING OPERATIONS		
Bio-Propane	46	24
Pure vegetable oil (oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified)	37	34
Biodiesel - fatty acid methyl ester (methyl-ester produced from oil of biomass origin)	37	33
Biodiesel - fatty acid ethyl ester (ethyl-ester produced from oil of biomass origin)	38	34
Biogas that can be purified to natural gas quality	50	—
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of diesel	44	34
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of petrol	45	30
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of jet fuel	44	34
Hydrotreated oil (thermochemically treated with hydrogen) of biomass origin, to be used for replacement of liquefied petroleum gas	46	24
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin to be used for replacement of diesel	43	36
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace petrol	44	32
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace jet fuel	43	33

Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace liquefied petroleum gas	46	23
RENEWABLE FUELS THAT CAN BE PRODUCED FROM VARIOUS RENEWABLE SOURCES, INCLUDING BIOMASS		
Methanol from renewable sources	20	16
Ethanol from renewable sources	27	21
Propanol from renewable sources	31	25
Butanol from renewable sources	33	27
Fischer-Tropsch diesel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons to be used for replacement of diesel)	44	34
Fischer-Tropsch petrol (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass, to be used for replacement of petrol)	44	33
Fischer-Tropsch jet fuel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass, to be used for replacement of jet fuel)	44	33
Fischer-Tropsch liquefied petroleum gas (a synthetic hydrocarbon or mixture of synthetic hydrocarbons, to be used for replacement of liquefied petroleum gas	46	24
DME (dimethylether)	28	19
Hydrogen from renewable sources	120	—
ETBE (ethyl-tertio-butyl-ether produced on the basis of ethanol)	36 (of which 37 % from renewable sources)	27 (of which 37 % from renewable sources)
MTBE (methyl-tertio-butyl-ether produced on the basis of methanol)	35 (of which 22 % from renewable sources)	26 (of which 22 % from renewable sources)
TAEE (tertiary-amyl-ethyl-ether produced on the basis of ethanol)	38 (of which 29 % from renewable sources)	29 (of which 29 % from renewable sources)
TAME (tertiary-amyl-methyl-ether produced on the basis of methanol)	36 (of which 18 % from renewable sources)	28 (of which 18 % from renewable sources)
THxEE (tertiary-hexyl-ethyl-ether produced on the basis of ethanol)	38 (of which 25 % from renewable sources)	30 (of which 25 % from renewable sources)
THxME (tertiary-hexyl-methyl-ether produced on the basis of methanol)	38 of which 14 % from renewable sources)	30 (of which 14 % from renewable sources)
FOSSIL FUELS		
Petrol	43	32
Diesel	43	36

ANNEX IV
CERTIFICATION OF INSTALLERS

The certification schemes or equivalent qualification schemes referred to in Article 18(3) shall be based on the following criteria:

1. The certification or qualification process shall be transparent and clearly defined by the **Contracting Parties** or by the administrative body that they appoint.

2. Installers of biomass, heat pump, shallow geothermal and solar photovoltaic and solar thermal energy shall be certified by an accredited training programme or training provider.

3. The accreditation of the training programme or provider shall be effected by **Contracting Parties** or by the administrative body that they appoint. The accrediting body shall ensure that the training programme offered by the training provider has continuity and regional or national coverage. The training provider shall have adequate technical facilities to provide practical training, including some laboratory equipment or corresponding facilities to provide practical training. The training provider shall also offer in addition to the basic training, shorter refresher courses on topical issues, including on new technologies, to enable life-long learning in installations. The training provider may be the manufacturer of the equipment or system, institutes or associations.

4. The training leading to certification or qualification of an installer shall include theoretical and practical parts. At the end of the training, the installer must have the skills required to install the relevant equipment and systems to meet the performance and reliability needs of the customer, incorporate quality craftsmanship, and comply with all applicable codes and standards, including energy and eco-labelling.

5. The training course shall end with an examination leading to a certificate or qualification. The examination shall include a practical assessment of successfully installing biomass boilers or stoves, heat pumps, shallow geothermal installations, solar photovoltaic or solar thermal installations.

6. The certification schemes or equivalent qualification schemes referred to in Article 18(3) shall take due account of the following guidelines:

(a) Accredited training programmes should be offered to installers with work experience, who have undergone, or are undergoing, the following types of training:

(i) in the case of biomass boiler and stove installers: training as a plumber, pipe fitter, heating engineer or technician of sanitary and heating or cooling equipment as a prerequisite;

(ii) in the case of heat pump installers: training as a plumber or refrigeration engineer and have basic electrical and plumbing skills (cutting pipe, soldering pipe joints, gluing pipe joints, lagging, sealing fittings, testing for leaks and installation of heating or cooling systems) as a prerequisite;

(iii) in the case of a solar photovoltaic or solar thermal installer: training as a plumber or electrician and have plumbing, electrical and roofing skills, including knowledge of soldering pipe joints, gluing pipe joints, sealing fittings, testing for plumbing leaks, ability to connect wiring, familiar with basic roof materials, flashing and sealing methods as a prerequisite; or

(iv) a vocational training scheme to provide an installer with adequate skills corresponding to a three years education in the skills referred to in point (a), (b) or (c), including both classroom and workplace learning.

(b) The theoretical part of the biomass stove and boiler installer training should give an overview of the market situation of biomass and cover ecological aspects, biomass fuels, logistics, fire protection, related subsidies, combustion techniques, firing systems, optimal hydraulic solutions, cost and profitability comparison as well as the design, installation and maintenance of biomass boilers and stoves. The training should also provide good knowledge of any European standards for technology and biomass fuels, such as pellets, and biomass related national and **Energy Community** law.

(c) The theoretical part of the heat pump installer training should give an overview of the market situation for heat pumps and cover geothermal resources and ground source temperatures of different regions, soil and rock identification for thermal conductivity, regulations on using geothermal resources, feasibility of using heat pumps in buildings and determining the most suitable heat pump system, and knowledge about their technical requirements, safety, air filtering, connection with the heat source and system layout. The training should also provide good knowledge of any European standards for heat pumps, and of relevant national and **Energy Community** law. The installer should demonstrate the following key competences:

(i) a basic understanding of the physical and operation principles of a heat pump, including characteristics of the heat pump circle: context between low temperatures of the heat sink, high temperatures of the heat source, and the efficiency of the system, determination of the coefficient of performance and seasonal performance factor (SPF);

(ii) an understanding of the components and their function within a heat pump circle, including the compressor, expansion valve, evaporator, condenser, fixtures and fittings, lubricating oil, refrigerant, superheating and sub-cooling and cooling possibilities with heat pumps; and

(iii) the ability to choose and size the components in typical installation situations, including determining the typical values of the heat load of different buildings and for hot water production based on energy consumption, determining the capacity of the heat pump on the heat load for hot water production, on the storage mass of the building and on interruptible current supply; determine the buffer tank component and its volume and integration of a second heating system.

(d) The theoretical part of the solar photovoltaic and solar thermal installer training should give an overview of the market situation of solar products and cost and profitability comparisons, and cover ecological aspects, components, characteristics and dimensioning of solar systems, selection of accurate systems and dimensioning of components, determination of the heat demand, fire protection, related subsidies, as well as the design, installation and maintenance of solar photovoltaic and solar thermal installations. The training should also provide good knowledge of any European standards for technology, and certification such as Solar Keymark, and related national and **Energy Community** law. The installer should demonstrate the following key competences:

(i) the ability to work safely using the required tools and equipment and implementing safety codes and standards and to identify plumbing, electrical and other hazards associated with solar installations;

(ii) the ability to identify systems and their components specific to active and passive systems, including the mechanical design, and to determine the components' location and system layout and configuration;

(iii) the ability to determine the required installation area, orientation and tilt for the solar photovoltaic and solar water heater, taking account of shading, solar access, structural integrity, the appropriateness of the installation for the building or the climate and to identify different installation methods suitable for roof types and the balance of system equipment required for the installation; and

(iv) for solar photovoltaic systems in particular, the ability to adapt the electrical design, including determining design currents, selecting appropriate conductor types and ratings for each electrical circuit, determining appropriate size, ratings and locations for all associated equipment and subsystems and selecting an appropriate interconnection point.

(e) The installer certification should be time restricted, so that a refresher seminar or event would be necessary for continued certification.

ANNEX V

RULES FOR CALCULATING THE GREENHOUSE GAS IMPACT OF BIOFUELS, BIOLIQUIDS AND THEIR FOSSIL FUEL COMPARATORS

A. TYPICAL AND DEFAULT VALUES FOR BIOFUELS IF PRODUCED WITH NO NET CARBON EMISSIONS FROM LAND-USE CHANGE

Biofuel production pathway	**Greenhouse gas emissions saving – typical value**	**Greenhouse gas emissions saving – default value**
sugar beet ethanol (no biogas from slop, natural gas as process fuel in conventional boiler)	67 %	59 %
sugar beet ethanol (with biogas from slop, natural gas as process fuel in conventional boiler)	77 %	73 %
sugar beet ethanol (no biogas from slop, natural gas as process fuel in CHP plant (*))	73 %	68 %
sugar beet ethanol (with biogas from slop, natural gas as process fuel in CHP plant (*))	79 %	76 %
sugar beet ethanol (no biogas from slop, lignite as process fuel in CHP plant (*))	58 %	47 %
sugar beet ethanol (with biogas from slop, lignite as process fuel in CHP plant (*))	71 %	64 %
corn (maize) ethanol (natural gas as process fuel in conventional boiler)	48 %	40 %
corn (maize) ethanol, (natural gas as process fuel in CHP plant (*))	55 %	48 %
corn (maize) ethanol (lignite as process fuel in CHP plant (*))	40 %	28 %
corn (maize) ethanol (forest residues as process fuel in CHP plant (*))	69 %	68 %
other cereals excluding maize ethanol (natural gas as process fuel in conventional boiler)	47 %	38 %
other cereals excluding maize ethanol (natural gas as process fuel in CHP plant (*))	53 %	46 %
other cereals excluding maize ethanol (lignite as process fuel in CHP plant (*))	37 %	24 %
other cereals excluding maize ethanol (forest residues as process fuel in CHP plant (*))	67 %	67 %
sugar cane ethanol	70 %	70 %
the part from renewable sources of ethyl-tertio-butyl-ether (ETBE)	Equal to that of the ethanol production pathway used	

the part from renewable sources of tertiary-amyl-ethyl-ether (TAEE)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	52 %	47 %
sunflower biodiesel	57 %	52 %
soybean biodiesel	55 %	50 %
palm oil biodiesel (open effluent pond)	32 %	19 %
palm oil biodiesel (process with methane capture at oil mill)	51 %	45 %
waste cooking oil biodiesel	88 %	84 %
animal fats from rendering biodiesel (**)	84 %	78 %
hydrotreated vegetable oil from rape seed	51 %	47 %
hydrotreated vegetable oil from sunflower	58 %	54 %
hydrotreated vegetable oil from soybean	55 %	51 %
hydrotreated vegetable oil from palm oil (open effluent pond)	34 %	22 %
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	53 %	49 %
hydrotreated oil from waste cooking oil	87 %	83 %
hydrotreated oil from animal fats from rendering (**)	83 %	77 %
pure vegetable oil from rape seed	59 %	57 %
pure vegetable oil from sunflower	65 %	64 %
pure vegetable oil from soybean	63 %	61 %
pure vegetable oil from palm oil (open effluent pond)	40 %	30 %
pure vegetable oil from palm oil (process with methane capture at oil mill)	59 %	57 %
pure oil from waste cooking oil	98 %	98 %

(*) Default values for processes using CHP are valid only if all the process heat is supplied by CHP.

(**) Applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009 of the European Parliament and of the Council [(1)], for which emissions related to hygenisation as part of the rendering are not considered.

(1) Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation)

B. ESTIMATED TYPICAL AND DEFAULT VALUES FOR FUTURE BIOFUELS THAT WERE NOT ON THE MARKET OR WERE ON THE MARKET ONLY IN NEGLIGIBLE QUANTITIES IN 2016, IF PRODUCED WITH NO NET CARBON EMISSIONS FROM LAND-USE CHANGE

Biofuel production pathway	**Greenhouse gas emissions saving - typical value**	**Greenhouse gas emissions saving - default value**
wheat straw ethanol	85 %	83 %
waste wood Fischer-Tropsch diesel in free-standing plant	85 %	85 %
farmed wood Fischer-Tropsch diesel in free-standing plant	82 %	82 %
waste wood Fischer-Tropsch petrol in free-standing plant	85 %	85 %
farmed wood Fischer-Tropsch petrol in free-standing plant	82 %	82 %
waste wood dimethylether (DME) in free-standing plant	86 %	86 %
farmed wood dimethylether (DME) in free-standing plant	83 %	83 %
waste wood methanol in free-standing plant	86 %	86 %
farmed wood methanol in free-standing plant	83 %	83 %
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	89 %	89 %
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	89 %	89 %
dimethylether (DME) from black-liquor gasification integrated with pulp mill	89 %	89 %
Methanol from black-liquor gasification integrated with pulp mill	89 %	89 %
the part from renewable sources of methyl-tertio-butyl-ether (MTBE)	Equal to that of the methanol production pathway used	

C. METHODOLOGY

1. Greenhouse gas emissions from the production and use of transport fuels, biofuels and bioliquids shall be calculated as follows:

(a) greenhouse gas emissions from the production and use of biofuels shall be calculated as:

$$E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} - e_{sca} - e_{ccs} - e_{ccr},$$

where

E = total emissions from the use of the fuel;

e_{ec} = emissions from the extraction or cultivation of raw materials;

e_{l} = annualised emissions from carbon stock changes caused by land-use change;

e_{p} = emissions from processing;

e_{td} = emissions from transport and distribution;

e_u = emissions from the fuel in use;

e_{sca} = emission savings from soil carbon accumulation via improved agricultural management;

e_{ccs} = emission savings from CO_2 capture and geological storage; and

e_{ccr} = emission savings from CO_2 capture and replacement. Emissions from the manufacture of machinery and equipment shall not be taken into account.

(b) Greenhouse gas emissions from the production and use of bioliquids shall be calculated as for biofuels (E), but with the extension necessary for including the energy conversion to electricity and/or heat and cooling produced, as follows:

(i) For energy installations delivering only heat:

$$EC_h = \frac{E}{\eta_h}$$

(ii) For energy installations delivering only electricity:

$$EC_{el} = \frac{E}{\eta_{el}}$$

where

$EC_{h,el}$ = Total greenhouse gas emissions from the final energy commodity.

E = Total greenhouse gas emissions of the bioliquid before end-conversion.

η_{el} = The electrical efficiency, defined as the annual electricity produced divided by the annual bioliquid input based on its energy content.

η_h = The heat efficiency, defined as the annual useful heat output divided by the annual bioliquid input based on its energy content.

(iii) For the electricity or mechanical energy coming from energy installations delivering useful heat together with electricity and/or mechanical energy:

$$EC_{el} = \frac{E}{\eta_{el}} \left(\frac{C_{el} \cdot \eta_{el}}{C_{el} \cdot \eta_{el} + C_h \cdot \eta_h} \right)$$

(iv) For the useful heat coming from energy installations delivering heat together with electricity and/or mechanical energy:

$$EC_h = \frac{E}{\eta_h} \left(\frac{C_h \cdot \eta_h}{C_{el} \cdot \eta_{el} + C_h \cdot \eta_h} \right)$$

where:

$EC_{h,el}$ = Total greenhouse gas emissions from the final energy commodity.

E = Total greenhouse gas emissions of the bioliquid before end-conversion.

η_{el} = The electrical efficiency, defined as the annual electricity produced divided by the annual fuel input based on its energy content.

η_{h} = The heat efficiency, defined as the annual useful heat output divided by the annual fuel input based on its energy content.

C_{el} = Fraction of exergy in the electricity, and/or mechanical energy, set to 100 % (C_{el} = 1).

C_{h} = Carnot efficiency (fraction of exergy in the useful heat).

The Carnot efficiency, C_{h}, for useful heat at different temperatures is defined as:

$$C_h = \frac{T_h - T_0}{T_h}$$

where

T_{h} = Temperature, measured in absolute temperature (kelvin) of the useful heat at point of delivery.

T_{0} = Temperature of surroundings, set at 273,15 kelvin (equal to 0 °C)

If the excess heat is exported for heating of buildings, at a temperature below 150 °C (423,15 kelvin), C_{h} can alternatively be defined as follows:

C_{h} = Carnot efficiency in heat at 150 °C (423,15 kelvin), which is: 0,3546

For the purposes of that calculation, the following definitions apply:

(a) 'cogeneration' means the simultaneous generation in one process of thermal energy and electricity and/or mechanical energy;

(b) 'useful heat' means heat generated to satisfy an economical justifiable demand for heat, for heating and cooling purposes;

(c) 'economically justifiable demand' means the demand that does not exceed the needs for heat or cooling and which would otherwise be satisfied at market conditions.

2. Greenhouse gas emissions from biofuels and bioliquids shall be expressed as follows:

(a) greenhouse gas emissions from biofuels, E, shall be expressed in terms of grams of CO_2 equivalent per MJ of fuel, g CO_2eq/MJ.

(b) greenhouse gas emissions from bioliquids, EC, in terms of grams of CO_2 equivalent per MJ of final energy commodity (heat or electricity), g CO_2eq/MJ.

When heating and cooling are co-generated with electricity, emissions shall be allocated between heat and electricity (as under 1(b)), irrespective if the heat is used for actual heating purposes or for cooling [(2)].

Where the greenhouse gas emissions from the extraction or cultivation of raw materials e_{ec} are expressed in unit g CO_2eq/dry-ton of feedstock, the conversion to grams of CO_2 equivalent per MJ of fuel, g CO_2eq/MJ, shall be calculated as follows [(3)]:

$$e_{ec}\text{fuel}_a \left[\frac{gCO_2eq}{MJfuel}\right]_{ec} = \frac{e_{ec}\text{feedstock}_a \left[\frac{gCO_2eq}{t_{dry}}\right]}{LHV_a \left[\frac{MJfeedstock}{tdry\ feedstock}\right]} \times \text{Fuel feedstock factor}_a \times \text{Allocation factor fuel}_a$$

where

$$\text{Allocation factor fuel}_a = \left[\frac{\text{Energy in fuel}}{\text{Energy fuel} + \text{Energy in co-products}}\right]$$

$$\text{Fuel feedstock factor}_a = [\text{Ratio of MJ feedstock required to make 1 MJ fuel}]$$

Emissions per dry-ton feedstock shall be calculated as follows:

$$e_{ec}\text{feedstock}_a\left[\frac{gCO_2eq}{t_{dry}}\right] = \frac{e_{ec}\text{feedstock}_a\left[\frac{gCO_2eq}{t_{moist}}\right]}{(1 - \text{moisture content})}$$

3. Greenhouse gas emissions savings from biofuels and bioliquids shall be calculated as follows:

(a) greenhouse gas emissions savings from biofuels:

SAVING = $(E_{F(t)} - E_B)/E_{F(t)}$,

where

E_B = total emissions from the biofuel; and

$E_{F(t)}$ = total emissions from the fossil fuel comparator for transport

(b) greenhouse gas emissions savings from heat and cooling, and electricity being generated from bioliquids:

SAVING = $(EC_{F(h\&c,el)} - EC_{B(h\&c,el)})/EC_{F(h\&c,el)}$,

where

$EC_{B(h\&c,el)}$ = total emissions from the heat or electricity; and

$EC_{F(h\&c,el)}$ = total emissions from the fossil fuel comparator for useful heat or electricity.

4. The greenhouse gases taken into account for the purposes of point 1 shall be CO_2, N_2O and CH_4. For the purposes of calculating CO_2 equivalence, those gases shall be valued as follows:

CO_2 : 1

N_2O : 298

CH_4 : 25

5. Emissions from the extraction or cultivation of raw materials, e_{ec}, shall include emissions from the extraction or cultivation process itself; from the collection, drying and storage of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO_2 in the cultivation of raw materials shall be excluded. Estimates of emissions from agriculture biomass cultivation may be derived from the use of regional averages for cultivation emissions included in the reports referred to in Article 31(4) or the information on the disaggregated default values for cultivation emissions included in this Annex, as an alternative to using actual values. In the absence of relevant information in those reports it is allowed to calculate averages based on local farming practises based for instance on data of a group of farms, as an alternative to using actual values.

6. For the purposes of the calculation referred to in point 1(a), greenhouse gas emissions savings from improved agriculture management, e_{sca}, such as shifting to reduced or zero-tillage, improved crop/rotation, the use of cover crops, including crop residue management, and the use of organic soil improver (e.g. compost, manure fermentation digestate), shall be taken into account only if solid and verifiable evidence is provided that the soil carbon has increased or that it is reasonable to expect to have increased over the

period in which the raw materials concerned were cultivated while taking into account the emissions where such practices lead to increased fertiliser and herbicide use [(4)].

7. Annualised emissions from carbon stock changes caused by land-use change, e_l, shall be calculated by dividing total emissions equally over 20 years. For the calculation of those emissions, the following rule shall be applied:

$$e_l = (CS_R - CS_A) \times 3{,}664 \times 1/20 \times 1/P - e_B,$$ [(5)]

where

e_l = annualised greenhouse gas emissions from carbon stock change due to land-use change (measured as mass (grams) of CO_2-equivalent per unit of biofuel or bioliquid energy (megajoules)). 'Cropland' [(6)] and 'perennial cropland' [(7)] shall be regarded as one land use;

CS_R = the carbon stock per unit area associated with the reference land-use (measured as mass (tonnes) of carbon per unit area, including both soil and vegetation). The reference land-use shall be the land-use in January 2008 or 20 years before the raw material was obtained, whichever was the later;

CS_A = the carbon stock per unit area associated with the actual land-use (measured as mass (tonnes) of carbon per unit area, including both soil and vegetation). In cases where the carbon stock accumulates over more than one year, the value attributed to CS_A shall be the estimated stock per unit area after 20 years or when the crop reaches maturity, whichever the earlier;

P = the productivity of the crop (measured as biofuel or bioliquid energy per unit area per year) and

e_B = bonus of 29 g CO_2eq/MJ biofuel or bioliquid if biomass is obtained from restored degraded land under the conditions laid down in point 8.

8. The bonus of 29 g CO_2eq/MJ shall be attributed if evidence is provided that the land:

(a) was not in use for agriculture or any other activity in January 2008; and

(b) is severely degraded land, including such land that was formerly in agricultural use.

The bonus of 29 g CO_2eq/MJ shall apply for a period of up to 20 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks as well as a sizable reduction in erosion phenomena for land falling under (b) are ensured.

9. 'Severely degraded land' means land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and has been severely eroded.

10. **<...>**

11. Emissions from processing, e_p, shall include emissions from the processing itself; from waste and leakages; and from the production of chemicals or products used in processing including the CO_2 emissions corresponding to the carbon contents of fossil inputs, whether or not actually combusted in the process.

In accounting for the consumption of electricity not produced within the fuel production plant, the greenhouse gas emissions intensity of the production and distribution of that electricity shall be assumed to be equal to the average emission intensity of the production and distribution of electricity in a defined region. By way of derogation from this rule, producers may use an average value for an individual electricity production plant for electricity produced by that plant, if that plant is not connected to the electricity grid.

Emissions from processing shall include emissions from drying of interim products and materials where relevant.

12. Emissions from transport and distribution, e_{td}, shall include emissions from the transport of raw and semi-finished materials and from the storage and distribution of finished materials. Emissions from transport and distribution to be taken into account under point 5 shall not be covered by this point.

13. Emissions of the fuel in use, e_u, shall be taken to be zero for biofuels and bioliquids.

Emissions of non-CO_2 greenhouse gases (N_2O and CH_4) of the fuel in use shall be included in the e_u factor for bioliquids.

14. Emission savings from CO_2 capture and geological storage, e_{ccs}, that have not already been accounted for in e_p, shall be limited to emissions avoided through the capture and storage of emitted CO_2 directly related to the extraction, transport, processing and distribution of fuel if stored in compliance with Directive 2009/31/EC of the European Parliament and of the Council [(10)].

15. Emission savings from CO_2 capture and replacement, e_{ccr}, shall be related directly to the production of biofuel or bioliquid they are attributed to, and shall be limited to emissions avoided through the capture of CO_2 of which the carbon originates from biomass and which is used to replace fossil-derived CO_2 in production of commercial products and services.

16. Where a cogeneration unit – providing heat and/or electricity to a fuel production process for which emissions are being calculated – produces excess electricity and/or excess useful heat, the greenhouse gas emissions shall be divided between the electricity and the useful heat according to the temperature of the heat (which reflects the usefulness (utility) of the heat). The useful part of the heat is found by multiplying its energy content with the Carnot efficiency, C_h, calculated as follows:

$$C_h = \frac{T_h - T_0}{T_h}$$

where

T_h = Temperature, measured in absolute temperature (kelvin) of the useful heat at point of delivery.

T_0 = Temperature of surroundings, set at 273,15 kelvin (equal to 0 °C)

If the excess heat is exported for heating of buildings, at a temperature below 150 °C (423,15 kelvin), C_h can alternatively be defined as follows:

C_h = Carnot efficiency in heat at 150 °C (423,15 kelvin), which is: 0,3546

For the purposes of that calculation, the actual efficiencies shall be used, defined as the annual mechanical energy, electricity and heat produced respectively divided by the annual energy input.

For the purposes of that calculation, the following definitions apply:

(a) 'cogeneration' shall mean the simultaneous generation in one process of thermal energy and electrical and/or mechanical energy;

(b) 'useful heat' shall mean heat generated to satisfy an economical justifiable demand for heat, for heating or cooling purposes;

(c) 'economically justifiable demand' shall mean the demand that does not exceed the needs for heat or cooling and which would otherwise be satisfied at market conditions.

17. Where a fuel production process produces, in combination, the fuel for which emissions are being calculated and one or more other products (co-products), greenhouse gas emissions shall be divided between

the fuel or its intermediate product and the co-products in proportion to their energy content (determined by lower heating value in the case of co-products other than electricity and heat). The greenhouse gas intensity of excess useful heat or excess electricity is the same as the greenhouse gas intensity of heat or electricity delivered to the fuel production process and is determined from calculating the greenhouse intensity of all inputs and emissions, including the feedstock and CH_4 and N_2O emissions, to and from the cogeneration unit, boiler or other apparatus delivering heat or electricity to the fuel production process. In the case of cogeneration of electricity and heat, the calculation is performed following point 16.

18. For the purposes of the calculation referred to in point 17, the emissions to be divided shall be $e_{ec} + e_l + e_{sca}$ + those fractions of e_p, e_{td}, e_{ccs}, and e_{ccr} that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for those purposes instead of the total of those emissions.

In the case of biofuels and bioliquids, all co-products shall be taken into account for the purposes of that calculation. No emissions shall be allocated to wastes and residues. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purposes of the calculation.

Wastes and residues, including tree tops and branches, straw, husks, cobs and nut shells, and residues from processing, including crude glycerine (glycerine that is not refined) and bagasse, shall be considered to have zero life-cycle greenhouse gas emissions up to the process of collection of those materials irrespectively of whether they are processed to interim products before being transformed into the final product.

In the case of fuels produced in refineries, other than the combination of processing plants with boilers or cogeneration units providing heat and/or electricity to the processing plant, the unit of analysis for the purposes of the calculation referred to in point 17 shall be the refinery.

19. For biofuels, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $E_{F(t)}$ shall be 94 g CO_2eq/MJ.

For bioliquids used for the production of electricity, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(e)}$ shall be 183 g CO_2eq/MJ.

For bioliquids used for the production of useful heat, as well as for the production of heating and/or cooling, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h\&c)}$ shall be 80 g CO_2eq/MJ.

[2] Heat or waste heat is used to generate cooling (chilled air or water) through absorption ***chillers***. Therefore, it is appropriate to calculate only the emissions associated to the heat produced per MJ of heat, irrespectively if the end-use of the heat is actual heating or cooling via absorption chillers.

[3] The formula for calculating greenhouse gas emissions from the extraction or cultivation of raw materials e_{ec} describes cases where feedstock is converted into biofuels in one step. For more complex supply chains, adjustments are needed for calculating greenhouse gas emissions from the extraction or cultivation of raw materials e_{ec} for intermediate products.

[4] Measurements of soil carbon can constitute such evidence, e.g. by a first measurement in advance of the cultivation and subsequent ones at regular intervals several years apart. In such a case, before the second measurement is available, increase in soil carbon would be estimated on the basis of representative experiments or soil models. From the second measurement onwards, the measurements would constitute the basis for determining the existence of an increase in soil carbon and its magnitude.

[5] The quotient obtained by dividing the molecular weight of CO_2 (44,010 g/mol) by the molecular weight of carbon (12,011 g/mol) is equal to 3,664.

[6] Cropland as defined by IPCC.

[7] Perennial crops are defined as multi-annual crops, the stem of which is usually not annually harvested such as short rotation coppice and oil palm.

[8] Decision 2010/335/EU of 10 June 2010 on guidelines for the calculation of land carbon stocks for the purpose of Annex V

to Directive 2009/28/EC

([9]) Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU

([10]) Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006

D. DISAGGREGATED DEFAULT VALUES FOR BIOFUELS AND BIOLIQUIDS

Disaggregated default values for cultivation: 'e_{ec}' as defined in Part C of this Annex, including soil N_2O emissions

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value ($g\ CO_2eq/MJ$)**	**Greenhouse gas emissions – default value ($g\ CO_2eq/MJ$)**
sugar beet ethanol	9,6	9,6
corn (maize) ethanol	25,5	25,5
other cereals excluding corn (maize) ethanol	27,0	27,0
sugar cane ethanol	17,1	17,1
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	32,0	32,0
sunflower biodiesel	26,1	26,1
soybean biodiesel	21,2	21,2
palm oil biodiesel	26,2	26,2
waste cooking oil biodiesel	0	0
animal fats from rendering biodiesel ([**])	0	0
hydrotreated vegetable oil from rape seed	33,4	33,4
hydrotreated vegetable oil from sunflower	26,9	26,9
hydrotreated vegetable oil from soybean	22,1	22,1
hydrotreated vegetable oil from palm oil	27,4	27,4
hydrotreated oil from waste cooking oil	0	0
hydrotreated oil from animal fats from rendering ([**])	0	0

pure vegetable oil from rape seed	33,4	33,4
pure vegetable oil from sunflower	27,2	27,2
pure vegetable oil from soybean	22,2	22,2
pure vegetable oil from palm oil	27,1	27,1
pure oil from waste cooking oil	0	0
(**) Applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.		

Disaggregated default values for cultivation: 'e_{ec}' – for soil N_2O emissions only (these are already included in the disaggregated values for cultivation emissions in the 'e_{ec}' table)

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value (g CO_2eq/MJ)**	**Greenhouse gas emissions – default value (g CO_2eq/MJ)**
sugar beet ethanol	4,9	4,9
corn (maize) ethanol	13,7	13,7
other cereals excluding corn (maize) ethanol	14,1	14,1
sugar cane ethanol	2,1	2,1
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	17,6	17,6
sunflower biodiesel	12,2	12,2
soybean biodiesel	13,4	13,4
palm oil biodiesel	16,5	16,5
waste cooking oil biodiesel	0	0
animal fats from rendering biodiesel (**)	0	0
hydrotreated vegetable oil from rape seed	18,0	18,0
hydrotreated vegetable oil from sunflower	12,5	12,5
hydrotreated vegetable oil from soybean	13,7	13,7
hydrotreated vegetable oil from palm oil	16,9	16,9

hydrotreated oil from waste cooking oil	0	0
hydrotreated oil from animal fats from rendering (**)	0	0
pure vegetable oil from rape seed	17,6	17,6
pure vegetable oil from sunflower	12,2	12,2
pure vegetable oil from soybean	13,4	13,4
pure vegetable oil from palm oil	16,5	16,5
pure oil from waste cooking oil	0	0
(**) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.		

Disaggregated default values for processing: 'e_p' as defined in Part C of this Annex

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value ($g\ CO_2eq/MJ$)**	**Greenhouse gas emissions – default value ($g\ CO_2eq/MJ$)**
sugar beet ethanol (no biogas from slop, natural gas as process fuel in conventional boiler)	18,8	26,3
sugar beet ethanol (with biogas from slop, natural gas as process fuel in conventional boiler)	9,7	13,6
sugar beet ethanol (no biogas from slop, natural gas as process fuel in CHP plant (*1))	13,2	18,5
sugar beet ethanol (with biogas from slop, natural gas as process fuel in CHP plant (*1))	7,6	10,6
sugar beet ethanol (no biogas from slop, lignite as process fuel in CHP plant (*1))	27,4	38,3
sugar beet ethanol (with biogas from slop, lignite as process fuel in CHP plant (*1))	15,7	22,0
corn (maize) ethanol (natural gas as process fuel in conventional boiler)	20,8	29,1
corn (maize) ethanol, (natural gas as process fuel in CHP plant (*1))	14,8	20,8

corn (maize) ethanol (lignite as process fuel in CHP plant (*1))	28,6	40,1
corn (maize) ethanol (forest residues as process fuel in CHP plant (*1))	1,8	2,6
other cereals excluding maize ethanol (natural gas as process fuel in conventional boiler)	21,0	29,3
other cereals excluding maize ethanol (natural gas as process fuel in CHP plant (*1))	15,1	21,1
other cereals excluding maize ethanol (lignite as process fuel in CHP plant (*1))	30,3	42,5
other cereals excluding maize ethanol (forest residues as process fuel in CHP plant (*1))	1,5	2,2
sugar cane ethanol	1,3	1,8
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	11,7	16,3
sunflower biodiesel	11,8	16,5
soybean biodiesel	12,1	16,9
palm oil biodiesel (open effluent pond)	30,4	42,6
palm oil biodiesel (process with methane capture at oil mill)	13,2	18,5
waste cooking oil biodiesel	9,3	13,0
animal fats from rendering biodiesel (*2)	13,6	19,1
hydrotreated vegetable oil from rape seed	10,7	15,0
hydrotreated vegetable oil from sunflower	10,5	14,7
hydrotreated vegetable oil from soybean	10,9	15,2
hydrotreated vegetable oil from palm oil (open effluent pond)	27,8	38,9

hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	9,7	13,6
hydrotreated oil from waste cooking oil	10,2	14,3
hydrotreated oil from animal fats from rendering (-2)	14,5	20,3
pure vegetable oil from rape seed	3,7	5.2
pure vegetable oil from sunflower	3,8	5,4
pure vegetable oil from soybean	4,2	5,9
pure vegetable oil from palm oil (open effluent pond)	22,6	31,7
pure vegetable oil from palm oil (process with methane capture at oil mill)	4,7	6,5
pure oil from waste cooking oil	0,6	0,8

(-1) Default values for processes using CHP are valid only if all the process heat is supplied by CHP.

(-2) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.

Disaggregated default values for oil extraction only (these are already included in the disaggregated values for processing emissions in the 'e_p' table)

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value (g CO_2eq/MJ)**	**Greenhouse gas emissions – default value (g CO_2eq/MJ)**
rape seed biodiesel	3,0	4,2
sunflower biodiesel	2,9	4,0
soybean biodiesel	3,2	4,4
palm oil biodiesel (open effluent pond)	20,9	29,2
palm oil biodiesel (process with methane capture at oil mill)	3,7	5,1
waste cooking oil biodiesel	0	0
animal fats from rendering biodiesel (**)	4,3	6,1
hydrotreated vegetable oil from rape seed	3,1	4,4
hydrotreated vegetable oil from sunflower	3,0	4,1
hydrotreated vegetable oil from soybean	3,3	4,6
hydrotreated vegetable oil from palm oil (open effluent pond)	21,9	30,7
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	3,8	5,4
hydrotreated oil from waste cooking oil	0	0
hydrotreated oil from animal fats from rendering (**)	4,3	6,0
pure vegetable oil from rape seed	3,1	4,4
pure vegetable oil from sunflower	3,0	4,2
pure vegetable oil from soybean	3,4	4,7
pure vegetable oil from palm oil (open effluent pond)	21,8	30,5
pure vegetable oil from palm oil (process with methane capture at oil mill)	3,8	5,3
pure oil from waste cooking oil	0	0

(**) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.

Disaggregated default values for transport and distribution: 'e_{td}' as defined in Part C of this Annex

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
sugar beet ethanol (no biogas from slop, natural gas as process fuel in conventional boiler)	2,3	2,3
sugar beet ethanol (with biogas from slop, natural gas as process fuel in conventional boiler)	2,3	2,3
sugar beet ethanol (no biogas from slop, natural gas as process fuel in CHP plant (*3))	2,3	2,3
sugar beet ethanol (with biogas from slop, natural gas as process fuel in CHP plant (*3))	2,3	2,3
sugar beet ethanol (no biogas from slop, lignite as process fuel in CHP plant (*3))	2,3	2,3
sugar beet ethanol (with biogas from slop, lignite as process fuel in CHP plant (*3))	2,3	2,3
corn (maize) ethanol (natural gas as process fuel in CHP plant (*3))	2,2	2,2
corn (maize) ethanol (natural gas as process fuel in conventional boiler)	2,2	2,2
corn (maize) ethanol (lignite as process fuel in CHP plant (*3))	2,2	2,2
corn (maize) ethanol (forest residues as process fuel in CHP plant (*3))	2,2	2,2
other cereals excluding maize ethanol (natural gas as process fuel in conventional boiler)	2,2	2,2
other cereals excluding maize ethanol (natural gas as process fuel in CHP plant (*3))	2,2	2,2
other cereals excluding maize ethanol (lignite as process fuel in CHP plant (*3))	2,2	2,2
other cereals excluding maize ethanol (forest residues as process fuel in CHP plant (*3))	2,2	2,2
sugar cane ethanol	9,7	9,7
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	1,8	1,8

sunflower biodiesel	2,1	2,1
soybean biodiesel	8,9	8,9
palm oil biodiesel (open effluent pond)	6,9	6,9
palm oil biodiesel (process with methane capture at oil mill)	6,9	6,9
waste cooking oil biodiesel	1,9	1,9
animal fats from rendering biodiesel (*4)	1,7	1,7
hydrotreated vegetable oil from rape seed	1,7	1,7
hydrotreated vegetable oil from sunflower	2,0	2,0
hydrotreated vegetable oil from soybean	9,2	9,2
hydrotreated vegetable oil from palm oil (open effluent pond)	7,0	7,0
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	7,0	7,0
hydrotreated oil from waste cooking oil	1,7	1,7
hydrotreated oil from animal fats from rendering (*4)	1,5	1,5
pure vegetable oil from rape seed	1,4	1,4
pure vegetable oil from sunflower	1,7	1,7
pure vegetable oil from soybean	8,8	8,8
pure vegetable oil from palm oil (open effluent pond)	6,7	6,7
pure vegetable oil from palm oil (process with methane capture at oil mill)	6,7	6,7
pure oil from waste cooking oil	1,4	1,4

(*3) Default values for processes using CHP are valid only if all the process heat is supplied by CHP.

(*4) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.

Disaggregated default values for transport and distribution of final fuel only. These are already included in the table of 'transport and distribution emissions e_{td}' as defined in Part C of this Annex, but the following values are useful if an economic operator wishes to declare actual transport emissions for crops or oil transport only).

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value ($g CO_2eq/MJ$)**	**Greenhouse gas emissions – default value ($g CO_2eq/MJ$)**
sugar beet ethanol (no biogas from slop, natural gas as process fuel in conventional boiler)	1,6	1,6
sugar beet ethanol (with biogas from slop, natural gas as process fuel in conventional boiler)	1,6	1,6
sugar beet ethanol (no biogas from slop, natural gas as process fuel in CHP plant (*5))	1,6	1,6
sugar beet ethanol (with biogas from slop, natural gas as process fuel in CHP plant (*5))	1,6	1,6
sugar beet ethanol (no biogas from slop, lignite as process fuel in CHP plant (*5))	1,6	1,6
sugar beet ethanol (with biogas from slop, lignite as process fuel in CHP plant (*5))	1,6	1,6
corn (maize) ethanol (natural gas as process fuel in conventional boiler)	1,6	1,6
corn (maize) ethanol (natural gas as process fuel in CHP plant (*5))	1,6	1,6
corn (maize) ethanol (lignite as process fuel in CHP plant (*5))	1,6	1,6
corn (maize) ethanol (forest residues as process fuel in CHP plant (*5))	1,6	1,6
other cereals excluding maize ethanol (natural gas as process fuel in conventional boiler)	1,6	1,6
other cereals excluding maize ethanol (natural gas as process fuel in CHP plant (*5))	1,6	1,6
other cereals excluding maize ethanol (lignite as process fuel in CHP plant (*5))	1,6	1,6
other cereals excluding maize ethanol (forest residues as process fuel in CHP plant (*5))	1,6	1,6
sugar cane ethanol	6,0	6,0
the part of ethyl-tertio-butyl-ether (ETBE) from renewable ethanol	Will be considered to be equal to that of the ethanol production pathway used	

the part of tertiary-amyl-ethyl-ether (TAEE) from renewable ethanol	Will be considered to be equal to that of the ethanol production pathway used	
rape seed biodiesel	1,3	1,3
sunflower biodiesel	1,3	1,3
soybean biodiesel	1,3	1,3
palm oil biodiesel (open effluent pond)	1,3	1,3
palm oil biodiesel (process with methane capture at oil mill)	1,3	1,3
waste cooking oil biodiesel	1,3	1,3
animal fats from rendering biodiesel (*6)	1,3	1,3
hydrotreated vegetable oil from rape seed	1,2	1,2
hydrotreated vegetable oil from sunflower	1,2	1,2
hydrotreated vegetable oil from soybean	1,2	1,2
hydrotreated vegetable oil from palm oil (open effluent pond)	1,2	1,2
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	1,2	1,2
hydrotreated oil from waste cooking oil	1,2	1,2
hydrotreated oil from animal fats from rendering (*6)	1,2	1,2
pure vegetable oil from rape seed	0,8	0,8
pure vegetable oil from sunflower	0,8	0,8
pure vegetable oil from soybean	0,8	0,8
pure vegetable oil from palm oil (open effluent pond)	0,8	0,8
pure vegetable oil from palm oil (process with methane capture at oil mill)	0,8	0,8
pure oil from waste cooking oil	0,8	0,8

(*5) Default values for processes using CHP are valid only if all the process heat is supplied by CHP.

(*6) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.

Total for cultivation, processing, transport and distribution

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
sugar beet ethanol (no biogas from slop, natural gas as process fuel in conventional boiler)	30,7	38,2

sugar beet ethanol (with biogas from slop, natural gas as process fuel in conventional boiler)	21,6	25,5
sugar beet ethanol (no biogas from slop, natural gas as process fuel in CHP plant (*7))	25,1	30,4
sugar beet ethanol (with biogas from slop, natural gas as process fuel in CHP plant (*7))	19,5	22,5
sugar beet ethanol (no biogas from slop, lignite as process fuel in CHP plant (*7))	39,3	50,2
sugar beet ethanol (with biogas from slop, lignite as process fuel in CHP plant (*7))	27,6	33,9
corn (maize) ethanol (natural gas as process fuel in conventional boiler)	48,5	56,8
corn (maize) ethanol, (natural gas as process fuel in CHP plant (*7))	42,5	48,5
corn (maize) ethanol (lignite as process fuel in CHP plant (*7))	56,3	67,8
corn (maize) ethanol (forest residues as process fuel in CHP plant (*7))	29,5	30,3
other cereals excluding maize ethanol (natural gas as process fuel in conventional boiler)	50,2	58,5
other cereals excluding maize ethanol (natural gas as process fuel in CHP plant (*7))	44,3	50,3
other cereals excluding maize ethanol (lignite as process fuel in CHP plant (*7))	59,5	71,7
other cereals excluding maize ethanol (forest residues as process fuel in CHP plant (*7))	30,7	31.4
sugar cane ethanol	28,1	28.6
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	45,5	50,1
sunflower biodiesel	40,0	44,7
soybean biodiesel	42,2	47,0
palm oil biodiesel (open effluent pond)	63,5	75,7
palm oil biodiesel (process with methane capture at oil mill)	46,3	51,6
waste cooking oil biodiesel	11,2	14,9
animals fats from rendering biodiesel (*8)	15,3	20,8

hydrotreated vegetable oil from rape seed	45,8	50,1
hydrotreated vegetable oil from sunflower	39,4	43,6
hydrotreated vegetable oil from soybean	42,2	46,5
hydrotreated vegetable oil from palm oil (open effluent pond)	62,2	73,3
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	44,1	48,0
hydrotreated oil from waste cooking oil	11,9	16,0
hydrotreated oil from animal fats from rendering (*8)	16,0	21,8
pure vegetable oil from rape seed	38,5	40,0
pure vegetable oil from sunflower	32,7	34,3
pure vegetable oil from soybean	35,2	36,9
pure vegetable oil from palm oil (open effluent pond)	56,3	65,4
pure vegetable oil from palm oil (process with methane capture at oil mill)	38,4	57,2
pure oil from waste cooking oil	2,0	2,2

(*7) Default values for processes using CHP are valid only if all the process heat is supplied by CHP.

(*8) Note: applies only to biofuels produced from animal by-products classified as category 1 and 2 material in accordance with Regulation (EC) No 1069/2009, for which emissions related to hygenisation as part of the rendering are not considered.

E. ESTIMATED DISAGGREGATED DEFAULT VALUES FOR FUTURE BIOFUELS AND BIOLIQUIDS THAT WERE NOT ON THE MARKET OR WERE ONLY ON THE MARKET IN NEGLIGIBLE QUANTITIES IN 2016

Disaggregated default values for cultivation: 'e_{ec}' as defined in Part C of this Annex, including N_2O emissions (including chipping of waste or farmed wood)

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value (g CO_2eq/MJ)**	**Greenhouse gas emissions – default value (g CO_2eq/MJ)**
wheat straw ethanol	1,8	1,8
waste wood Fischer-Tropsch diesel in free-standing plant	3,3	3,3
farmed wood Fischer-Tropsch diesel in free-standing plant	8,2	8,2
waste wood Fischer-Tropsch petrol in free-standing plant	8,2	8,2
farmed wood Fischer-Tropsch petrol in free-standing plant	12,4	12,4
waste wood dimethylether (DME) in free-standing plant	3,1	3,1

farmed wood dimethylether (DME) in free-standing plant	7,6	7,6
waste wood methanol in free-standing plant	3,1	3,1
farmed wood methanol in free-standing plant	7,6	7,6
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	2,5	2,5
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	2,5	2,5
dimethylether (DME) from black-liquor gasification integrated with pulp mill	2,5	2,5
Methanol from black-liquor gasification integrated with pulp mill	2,5	2,5
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for soil N_2O emissions (included in disaggregated default values for cultivation emissions in the 'e_{ec}' table)

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value (g CO_2eq/MJ)**	**Greenhouse gas emissions – default value (g CO_2eq/MJ)**
wheat straw ethanol	0	0
waste wood Fischer-Tropsch diesel in free-standing plant	0	0
farmed wood Fischer-Tropsch diesel in free-standing plant	4,4	4,4
waste wood Fischer-Tropsch petrol in free-standing plant	0	0
farmed wood Fischer-Tropsch petrol in free-standing plant	4,4	4,4
waste wood dimethylether (DME) in free-standing plant	0	0
farmed wood dimethylether (DME) in free-standing plant	4,1	4,1
waste wood methanol in free-standing plant	0	0
farmed wood methanol in free-standing plant	4,1	4,1
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	0	0

Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	0	0
dimethylether (DME) from black-liquor gasification integrated with pulp mill	0	0
Methanol from black-liquor gasification integrated with pulp mill	0	0
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for processing: 'e_p' as defined in Part C of this Annex

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
wheat straw ethanol	4,8	6,8
waste wood Fischer-Tropsch diesel in free-standing plant	0,1	0,1
farmed wood Fischer-Tropsch diesel in free-standing plant	0,1	0,1
waste wood Fischer-Tropsch petrol in free-standing plant	0,1	0,1
farmed wood Fischer-Tropsch petrol in free-standing plant	0,1	0,1
waste wood dimethylether (DME) in free-standing plant	0	0
farmed wood dimethylether (DME) in free-standing plant	0	0
waste wood methanol in free-standing plant	0	0
farmed wood methanol in free-standing plant	0	0
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	0	0
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	0	0
dimethylether (DME) from black-liquor gasification integrated with pulp mill	0	0
methanol from black-liquor gasification integrated with pulp mill	0	0
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for transport and distribution: 'e_{td}' as defined in Part C of this Annex

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
wheat straw ethanol	7,1	7,1
waste wood Fischer-Tropsch diesel in free-standing plant	10,3	10,3
farmed wood Fischer-Tropsch diesel in free-standing plant	8,4	8,4
waste wood Fischer-Tropsch petrol in free-standing plant	10,3	10,3
farmed wood Fischer-Tropsch petrol in free-standing plant	8,4	8,4
waste wood dimethylether (DME) in free-standing plant	10,4	10,4
farmed wood dimethylether (DME) in free-standing plant	8,6	8,6
waste wood methanol in free-standing plant	10,4	10,4
farmed wood methanol in free-standing plant	8,6	8,6
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	7,7	7,7
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	7,9	7,9
dimethylether (DME) from black-liquor gasification integrated with pulp mill	7,7	7,7
methanol from black-liquor gasification integrated with pulp mill	7,9	7,9
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for transport and distribution of final fuel only. These are already included in the table of 'transport and distribution emissions e_{td}' as defined in Part C of this Annex, but the following values are useful if an economic operator wishes to declare actual transport emissions for feedstock transport only).

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
wheat straw ethanol	1,6	1,6
waste wood Fischer-Tropsch diesel in free-standing plant	1,2	1,2
farmed wood Fischer-Tropsch diesel in free-standing plant	1,2	1,2
waste wood Fischer-Tropsch petrol in free-standing plant	1,2	1,2
farmed wood Fischer-Tropsch petrol in free-standing plant	1,2	1,2
waste wood dimethylether (DME) in free-standing plant	2,0	2,0
farmed wood dimethylether (DME) in free-standing plant	2,0	2,0
waste wood methanol in free-standing plant	2,0	2,0
farmed wood methanol in free-standing plant	2,0	2,0
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	2,0	2,0
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	2,0	2,0
dimethylether (DME) from black-liquor gasification integrated with pulp mill	2,0	2,0
methanol from black-liquor gasification integrated with pulp mill	2,0	2,0
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Total for cultivation, processing, transport and distribution

Biofuel and bioliquid production pathway	**Greenhouse gas emissions – typical value** **(g CO_2eq/MJ)**	**Greenhouse gas emissions – default value** **(g CO_2eq/MJ)**
wheat straw ethanol	13,7	15,7
waste wood Fischer-Tropsch diesel in free-standing plant	13,7	13,7
farmed wood Fischer-Tropsch diesel in free-standing plant	16,7	16,7
waste wood Fischer-Tropsch petrol in free-standing plant	13,7	13,7
farmed wood Fischer-Tropsch petrol in free-standing plant	16,7	16,7
waste wood dimethylether (DME) in free-standing plant	13,5	13,5
farmed wood dimethylether (DME) in free-standing plant	16,2	16,2
waste wood methanol in free-standing plant	13,5	13,5
farmed wood methanol in free-standing plant	16,2	16,2
Fischer-Tropsch diesel from black-liquor gasification integrated with pulp mill	10,2	10,2
Fischer-Tropsch petrol from black-liquor gasification integrated with pulp mill	10,4	10,4
dimethylether (DME) from black-liquor gasification integrated with pulp mill	10,2	10,2
methanol from black-liquor gasification integrated with pulp mill	10,4	10,4
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

ANNEX VI

RULES FOR CALCULATING THE GREENHOUSE GAS IMPACT OF BIOMASS FUELS AND THEIR FOSSIL FUEL COMPARATORS

A. Typical and default values of greenhouse gas emissions savings for biomass fuels if produced with no net-carbon emissions from land-use change

WOODCHIPS					
Biomass fuel production system	**Transport distance**	**Greenhouse gas emissions savings –typical value**		**Greenhouse gas emissions savings – default value**	
		Heat	**Electricity**	**Heat**	**Electricity**
Woodchips from forest residues	1 to 500 km	93 %	89 %	91 %	87 %
	500 to 2 500 km	89 %	84 %	87 %	81 %
	2 500 to 10 000 km	82 %	73 %	78 %	67 %
	Above 10 000 km	67 %	51 %	60 %	41 %
Woodchips from short rotation coppice (Eucalyptus)	2 500 to 10 000 km	77 %	65 %	73 %	60 %
Woodchips from short rotation coppice (Poplar – Fertilised)	1 to 500 km	89 %	83 %	87 %	81 %
	500 to 2 500 km	85 %	78 %	84 %	76 %
	2 500 to 10 000 km	78 %	67 %	74 %	62 %
	Above 10 000 km	63 %	45 %	57 %	35 %
Woodchips from short rotation coppice (Poplar – No fertilisation)	1 to 500 km	91 %	87 %	90 %	85 %
	500 to 2 500 km	88 %	82 %	86 %	79 %
	2 500 to 10 000 km		70 %	77 %	65 %
	80 %				
	Above 10 000 km	65 %	48 %	59 %	39 %
Woodchips from stemwood	1 to 500 km	93 %	89 %	92 %	88 %
	500 to 2 500 km	90 %	85 %	88 %	82 %
	2 500 to 10 000 km	82 %	73 %	79 %	68 %
	Above 10 000 km	67 %	51 %	61 %	42 %
Woodchips from industry residues	1 to 500 km	94 %	92 %	93 %	90 %
	500 to 2 500 km	91 %	87 %	90 %	85 %
	2 500 to 10 000 km	83 %	75 %	80 %	71 %
	Above 10 000 km	69 %	54 %	63 %	44 %

WOOD PELLETS [(11)]						
Biomass fuel production system		**Transport distance**	**Greenhouse gas emissions savings – typical value**		**Greenhouse gas emissions savings – default value**	
			Heat	**Electricity**	**Heat**	**Electricity**
Wood briquettes or pellets from forest residues	Case 1	1 to 500 km	58 %	37 %	49 %	24 %
		500 to 2 500 km	58 %	37 %	49 %	25 %
		2 500 to 10 000 km	55 %	34 %	47 %	21 %
		Above 10 000 km	50 %	26 %	40 %	11 %
	Case 2a	1 to 500 km	77 %	66 %	72 %	59 %
		500 to 2 500 km	77 %	66 %	72 %	59 %
		2 500 to 10 000 km	75 %	62 %	70 %	55 %
		Above 10 000 km	69 %	54 %	63 %	45 %
	Case 3a	1 to 500 km	92 %	88 %	90 %	85 %
		500 to 2 500 km	92 %	88 %	90 %	86 %
		2 500 to 10 000 km	90 %	85 %	88 %	81 %
		Above 10 000 km	84 %	76 %	81 %	72 %
Wood briquettes or pellets from short rotation coppice (Eucalyptus)	Case 1	2 500 to 10 000 km	52 %	28 %	43 %	15 %
	Case 2a	2 500 to 10 000 km	70 %	56 %	66 %	49 %
	Case 3a	2 500 to 10 000 km	85 %	78 %	83 %	75 %
Wood briquettes or pellets from short rotation coppice (Poplar – Fertilised)	Case 1	1 to 500 km	54 %	32 %	46 %	20 %
		500 to 10 000 km	52 %	29 %	44 %	16 %
		Above 10 000 km	47 %	21 %	37 %	7 %
	Case 2a	1 to 500 km	73 %	60 %	69 %	54 %
		500 to 10 000 km	71 %	57 %	67 %	50 %
		Above 10 000 km	66 %	49 %	60 %	41 %
	Case 3a	1 to 500 km	88 %	82 %	87 %	81 %
		500 to 10 000 km	86 %	79 %	84 %	77 %
		Above 10 000 km	80 %	71 %	78 %	67 %

Wood briquettes or pellets from short rotation coppice (Poplar – No fertilisation)	Case 1	1 to 500 km	56 %	35 %	48 %	23 %
		500 to 10 000 km	54 %	32 %	46 %	20 %
		Above 10 000 km	49 %	24 %	40 %	10 %
	Case 2a	1 to 500 km	76 %	64 %	72 %	58 %
		500 to 10 000 km	74 %	61 %	69 %	54 %
		Above 10 000 km	68 %	53 %	63 %	45 %
	Case 3a	1 to 500 km	91 %	86 %	90 %	85 %
		500 to 10 000 km	89 %	83 %	87 %	81 %
		Above 10 000 km	83 %	75 %	81 %	71 %
Stemwood	Case 1	1 to 500 km	57 %	37 %	49 %	24 %
		500 to 2 500 km	58 %	37 %	49 %	25 %
		2 500 to 10 000 km	55 %	34 %	47 %	21 %
		Above 10 000 km	50 %	26 %	40 %	11 %
	Case 2a	1 to 500 km	77 %	66 %	73 %	60 %
		500 to 2 500 km	77 %	66 %	73 %	60 %
		2 500 to 10 000 km	75 %	63 %	70 %	56 %
		Above 10 000 km	70 %	55 %	64 %	46 %
	Case 3a	1 to 500 km	92 %	88 %	91 %	86 %
		500 to 2 500 km	92 %	88 %	91 %	87 %
		2 500 to 10 000 km	90 %	85 %	88 %	83 %
		Above 10 000 km	84 %	77 %	82 %	73 %
Wood briquettes or pellets from wood industry residues	Case 1	1 to 500 km	75 %	62 %	69 %	55 %
		500 to 2 500 km	75 %	62 %	70 %	55 %
		2 500 to 10 000 km	72 %	59 %	67 %	51 %
		Above 10 000 km	67 %	51 %	61 %	42 %
	Case 2a	1 to 500 km	87 %	80 %	84 %	76 %
		500 to 2 500 km	87 %	80 %	84 %	77 %
		2 500 to 10 000 km	85 %	77 %	82 %	73 %
		Above 10 000 km	79 %	69 %	75 %	63 %
	Case 3a	1 to 500 km	95 %	93 %	94 %	91 %
		500 to 2 500 km	95 %	93 %	94 %	92 %
		2 500 to 10 000 km	93 %	90 %	92 %	88 %
		Above 10 000 km	88 %	82 %	85 %	78 %

(*1) Case 1 refers to processes in which a natural gas boiler is used to provide the process heat to the pellet mill. Electricity for the pellet mill is supplied from the grid;

Case 2a refers to processes in which a woodchips boiler, fed with pre-dried chips, is used to provide process heat. Electricity for the pellet mill is supplied from the grid;

Case 3a refers to processes in which a CHP, fed with pre-dried woodchips, is used to provide electricity and heat to the pellet mill.

AGRICULTURE PATHWAYS					
Biomass fuel production system	**Transport distance**	**Greenhouse gas emissions savings – typical value**		**Greenhouse gas emissions savings – default value**	
		Heat	**Electricity**	**Heat**	**Electricity**
Agricultural Residues with density < 0,2 t/m³ (*2)	1 to 500 km	95 %	92 %	93 %	90 %
	500 to 2 500 km	89 %	83 %	86 %	80 %
	2 500 to 10 000 km	77 %	66 %	73 %	60 %
	Above 10 000 km	57 %	36 %	48 %	23 %
Agricultural Residues with density > 0,2 t/m³ (*3)	1 to 500 km	95 %	92 %	93 %	90 %
	500 to 2 500 km	93 %	89 %	92 %	87 %
	2 500 to 10 000 km	88 %	82 %	85 %	78 %
	Above 10 000 km	78 %	68 %	74 %	61 %
Straw pellets	1 to 500 km	88 %	82 %	85 %	78 %
	500 to 10 000 km	86 %	79 %	83 %	74 %
	Above 10 000 km	80 %	70 %	76 %	64 %
Bagasse briquettes	500 to 10 000 km	93 %	89 %	91 %	87 %
	Above 10 000 km	87 %	81 %	85 %	77 %
Palm Kernel Meal	Above 10 000 km	20 %	-18 %	11 %	-33 %
Palm Kernel Meal (no CH_4 emissions from oil mill)	Above 10 000 km	46 %	20 %	42 %	14 %

(*2) This group of materials includes agricultural residues with a low bulk density and it comprises materials such as straw bales, oat hulls, rice husks and sugar cane bagasse bales (not exhaustive list).

(*3) The group of agricultural residues with higher bulk density includes materials such as corn cobs, nut shells, soybean hulls, palm kernel shells (not exhaustive list).

BIOGAS FOR ELECTRICITY (*4)				
Biogas production system		**Technological option**	**Greenhouse gas emissions savings – typical value**	**Greenhouse gas emissions savings – default value**
Wet manure (1)	Case 1	Open digestate (2)	146 %	94 %
		Close digestate (3)	246 %	240 %
	Case 2	Open digestate	136 %	85 %
		Close digestate	227 %	219 %
	Case 3	Open digestate	142 %	86 %
		Close digestate	243 %	235 %
Maize whole plant (4)	Case 1	Open digestate	36 %	21 %
		Close digestate	59 %	53 %
	Case 2	Open digestate	34 %	18 %
		Close digestate	55 %	47 %
	Case 3	Open digestate	28 %	10 %
		Close digestate	52 %	43 %
Biowaste (*5)	Case 1	Open digestate	47 %	26 %
		Close digestate	84 %	78 %
	Case 2	Open digestate	43 %	21 %
		Close digestate	77 %	68 %
	Case 3	Open digestate	38 %	14 %
		Close digestate	76 %	66 %

(1) The values for biogas production from manure include negative emissions for emissions saved from raw manure management. The value of esca considered is equal to – 45 g CO2eq/MJ manure used in anaerobic digestion.

(2) Open storage of digestate accounts for additional emissions of CH4 and N2O. The magnitude of those emissions changes with ambient conditions, substrate types and the digestion efficiency.

(3) Close storage means that the digestate resulting from the digestion process is stored in a gas-tight tank and that the additional biogas released during storage is considered to be recovered for production of additional electricity or biomethane. No greenhouse gas emissions are included in that process.

(4) Maize whole plant means maize harvested as fodder and ensiled for preservation.

(*5) Case 1 refers to pathways in which electricity and heat required in the process are supplied by the CHP engine itself.

Case 2 refers to pathways in which the electricity required in the process is taken from the grid and the process heat is supplied by the CHP engine itself. In some Member States, operators are not allowed to claim the gross production for subsidies and case 1 is the more likely configuration.

Case 3 refers to pathways in which the electricity required in the process is taken from the grid and the process heat is supplied by a biogas boiler. This case applies to some installations in which the CHP engine is not on-site and biogas is sold (but not upgraded to biomethane).

BIOGAS FOR ELECTRICITY – MIXTURES OF MANURE AND MAIZE				
Biogas production system		**Technological option**	**Greenhouse gas emissions savings – typical value**	**Greenhouse gas emissions savings – default value**
Manure – Maize 80 % - 20 %	Case 1	Open digestate	72 %	45 %
		Close digestate	120 %	114 %
	Case 2	Open digestate	67 %	40 %
		Close digestate	111 %	103 %
	Case 3	Open digestate	65 %	35 %
		Close digestate	114 %	106 %
Manure – Maize 70 % - 30 %	Case 1	Open digestate	60 %	37 %
		Close digestate	100 %	94 %
	Case 2	Open digestate	57 %	32 %
		Close digestate	93 %	85 %
	Case 3	Open digestate	53 %	27 %
		Close digestate	94 %	85 %
Manure – Maize 60 % - 40 %	Case 1	Open digestate	53 %	32 %
		Close digestate	88 %	82 %
	Case 2	Open digestate	50 %	28 %
		Close digestate	82 %	73 %
	Case 3	Open digestate	46 %	22 %
		Close digestate	81 %	72 %

BIOMETHANE FOR TRANSPORT (*6)			
Biomethane production system	**Technological options**	**Greenhouse gas emissions savings – typical value**	**Greenhouse gas emissions savings – default value**
Wet manure	Open digestate, no off-gas combustion	117 %	72 %
	Open digestate, off-gas combustion	133 %	94 %
	Close digestate, no off-gas combustion	190 %	179 %
	Close digestate, off-gas combustion	206 %	202 %

Maize whole plant	Open digestate, no off-gas combustion	35 %	17 %
	Open digestate, off-gas combustion	51 %	39 %
	Close digestate, no off-gas combustion	52 %	41 %
	Close digestate, off-gas combustion	68 %	63 %
Biowaste	Open digestate, no off-gas combustion	43 %	20 %
	Open digestate, off-gas combustion	59 %	42 %
	Close digestate, no off-gas combustion	70 %	58 %
	Close digestate, off-gas combustion	86 %	80 %
(*6) The greenhouse gas emissions savings for biomethane only refer to compressed biomethane relative to the fossil fuel comparator for transport of 94 g CO2eq/MJ.			

BIOMETHANE – MIXTURES OF MANURE AND MAIZE (*7)			
Biomethane production system	**Technological options**	**Greenhouse gas emissions savings – typical value**	**Greenhouse gas emissions savings – default value**
Manure – Maize 80 % - 20 %	Open digestate, no off-gas combustion (5)	62 %	35 %
	Open digestate, off-gas combustion (6)	78 %	57 %
	Close digestate, no off-gas combustion	97 %	86 %
	Close digestate, off-gas combustion	113 %	108 %
Manure – Maize 70 % - 30 %	Open digestate, no off-gas combustion	53 %	29 %
	Open digestate, off-gas combustion	69 %	51 %
	Close digestate, no off-gas combustion	83 %	71 %
	Close digestate, off-gas combustion	99 %	94 %
Manure – Maize 60 % - 40 %	Open digestate, no off-gas combustion	48 %	25 %
	Open digestate, off-gas combustion	64 %	48 %
	Close digestate, no off-gas combustion	74 %	62 %
	Close digestate, off-gas combustion	90 %	84 %
(*7) The greenhouse gas emissions savings for biomethane only refer to compressed biomethane relative to the fossil fuel comparator for transport of 94 g CO2eq/MJ.			

B. METHODOLOGY

Greenhouse gas emissions from the production and use of biomass fuels, shall be calculated as follows:

(a) Greenhouse gas emissions from the production and use of biomass fuels before conversion into electricity, heating and cooling, shall be calculated as:

$$E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} - e_{sca} - e_{ccs} - e_{ccr},$$

Where

E = total emissions from the production of the fuel before energy conversion;

e_{ec} = emissions from the extraction or cultivation of raw materials;

e_l = annualised emissions from carbon stock changes caused by land-use change;

e_p = emissions from processing;

e_{td} = emissions from transport and distribution;

e_u = emissions from the fuel in use;

e_{sca} = emission savings from soil carbon accumulation via improved agricultural management;

e_{ccs} = emission savings from CO_2 capture and geological storage; and

e_{ccr} = emission savings from CO_2 capture and replacement. Emissions from the manufacture of machinery and equipment shall not be taken into account.

(b) In the case of co-digestion of different substrates in a biogas plant for the production of biogas or biomethane, the typical and default values of greenhouse gas emissions shall be calculated as:

$$E = \sum_{1}^{n} \cdot E_n$$

where

E = greenhouse gas emissions per MJ biogas or biomethane produced from co-digestion of the defined mixture of substrates

S_n = Share of feedstock n in energy content

E_n = Emission in g CO_2/MJ for pathway n as provided in Part D of this Annex (*)

$$S_n = \frac{P_n \cdot W_n}{\sum_1^n \cdot W_n}$$

where

P_n = energy yield [MJ] per kilogram of wet input of feedstock n (**)

W_n = weighting factor of substrate n defined as:

$$W_n = \frac{I_n}{\sum_1^n I_n} \cdot \left(\frac{1 - AM_n}{1 - SM_n} \right)$$

where:

I_n = Annual input to digester of substrate n [tonne of fresh matter]

AM_n = Average annual moisture of substrate n [kg water/kg fresh matter]

SM_n = Standard moisture for substrate n (***).

(*) For animal manure used as substrate, a bonus of 45 g CO_2eq/MJ manure (– 54 kg CO_2eq/t fresh matter) is added for improved agricultural and manure management.

(**) The following values of P_n shall be used for calculating typical and default values:

P(Maize): 4,16 [MJ_{biogas}/kg $_{\text{wet maize @ 65 \% moisture}}$]

P(Manure): 0,50 [MJ_{biogas}/kg $_{\text{wet manure @ 90 \% moisture}}$]

P(Biowaste) 3,41 [MJ_{biogas}/kg $_{wet\ biowaste\ @\ 76\ \%\ moisture}$]

(***) The following values of the standard moisture for substrate SM_n shall be used:

SM(Maize): 0,65 [kg water/kg fresh matter]

SM(Manure): 0,90 [kg water/kg fresh matter]

SM(Biowaste): 0,76 [kg water/kg fresh matter]

(c) In the case of co-digestion of n substrates in a biogas plant for the production of electricity or biomethane, actual greenhouse gas emissions of biogas and biomethane are calculated as follows:

$$E = \sum_{1}^{n} S_n \cdot (e_{ec,n} + e_{td,feedstock,n} + e_{l,n} - e_{sca,n}) + e_p + e_{td,product} + e_u - e_{ccs} - e_{ccr}$$

where

E = total emissions from the production of the biogas or biomethane before energy conversion;

S_n = Share of feedstock n, in fraction of input to the digester;

$e_{ec,n}$ = emissions from the extraction or cultivation of feedstock n;

$e_{td,feedstock,n}$ = emissions from transport of feedstock n to the digester;

$e_{l,n}$ = annualised emissions from carbon stock changes caused by land-use change, for feedstock n;

e_{sca} = emission savings from improved agricultural management of feedstock n (*);

e_p = emissions from processing;

$e_{td,product}$ = emissions from transport and distribution of biogas and/or biomethane;

e_u = emissions from the fuel in use, that is greenhouse gases emitted during combustion;

e_{ccs} = emission savings from CO_2 capture and geological storage; and

e_{ccr} = emission savings from CO_2 capture and replacement.

(*) For e_{sca} a bonus of 45 g CO_2eq/MJ manure shall be attributed for improved agricultural and manure management in the case animal manure is used as a substrate for the production of biogas and biomethane.

(d) Greenhouse gas emissions from the use of biomass fuels in producing electricity, heating and cooling, including the energy conversion to electricity and/or heat or cooling produced, shall be calculated as follows:

(i) For energy installations delivering only heat:

$$EC_h = \frac{E}{\eta_h}$$

(ii) For energy installations delivering only electricity:

$$EC_{el} = \frac{E}{\eta_{el}}$$

where

$EC_{h,el}$ = Total greenhouse gas emissions from the final energy commodity.

E = Total greenhouse gas emissions of the fuel before end-conversion.

η_{el} = The electrical efficiency, defined as the annual electricity produced divided by the annual fuel input, based on its energy content.

η_{h} = The heat efficiency, defined as the annual useful heat output divided by the annual fuel input, based on its energy content.

(iii) For the electricity or mechanical energy coming from energy installations delivering useful heat together with electricity and/or mechanical energy:

$$EC_{el} = \frac{E}{\eta_{el}} \left(\frac{C_{el} \cdot \eta_{el}}{C_{el} \cdot \eta_{el} + C_h \cdot \eta_h} \right)$$

(iv) For the useful heat coming from energy installations delivering heat together with electricity and/or mechanical energy:

$$EC_h = \frac{E}{\eta_h} \left(\frac{C_h \cdot \eta_h}{C_{el} \cdot \eta_{el} + C_h \cdot \eta_h} \right)$$

where:

$EC_{h,el}$ = Total greenhouse gas emissions from the final energy commodity.

E = Total greenhouse gas emissions of the fuel before end-conversion.

η_{el} = The electrical efficiency, defined as the annual electricity produced divided by the annual energy input, based on its energy content.

η_{h} = The heat efficiency, defined as the annual useful heat output divided by the annual energy input, based on its energy content.

C_{el} = Fraction of exergy in the electricity, and/or mechanical energy, set to 100 % (C_{el} = 1).

C_{h} = Carnot efficiency (fraction of exergy in the useful heat). The Carnot efficiency, C_{h}, for useful heat at different temperatures is defined as:

$$C_h = \frac{T_h - T_0}{T_h}$$

where:

T_{h} = Temperature, measured in absolute temperature (kelvin) of the useful heat at point of delivery.

T_{0} = Temperature of surroundings, set at 273,15 kelvin (equal to 0 °C).

If the excess heat is exported for heating of buildings, at a temperature below 150 °C (423,15 kelvin), C_{h} can alternatively be defined as follows:

C_{h} = Carnot efficiency in heat at 150 °C (423,15 kelvin), which is: 0,3546

For the purposes of that calculation, the following definitions apply:

(i) 'cogeneration' shall mean the simultaneous generation in one process of thermal energy and electricity and/or mechanical energy;

(ii) 'useful heat' shall mean heat generated to satisfy an economical justifiable demand for heat, for

heating or cooling purposes;

(iii) 'economically justifiable demand' shall mean the demand that does not exceed the needs for heat or cooling and which would otherwise be satisfied at market conditions.

2. Greenhouse gas emissions from biomass fuels shall be expressed as follows:

(a) greenhouse gas emissions from biomass fuels, E, shall be expressed in terms of grams of CO_2 equivalent per MJ of biomass fuel, g CO_2eq/MJ;

(b) greenhouse gas emissions from heating or electricity, produced from biomass fuels, EC, shall be expressed in terms of grams of CO_2 equivalent per MJ of final energy commodity (heat or electricity), g CO_2eq/MJ.

When heating and cooling are co-generated with electricity, emissions shall be allocated between heat and electricity (as under point 1(d)), irrespective if the heat is used for actual heating purposes or for cooling.[7]

Where the greenhouse gas emissions from the extraction or cultivation of raw materials e_{ec} are expressed in unit g CO_2eq/dry-ton of feedstock, the conversion to grams of CO_2 equivalent per MJ of fuel, g CO_2eq /MJ, shall be calculated as follows [8]:

$$e_{ec}\text{fuel}_a\left[\frac{gCO_2eq}{MJfuel}\right]_{ec} = \frac{e_{ec}\text{feedstock}_a\left[\frac{gCO_2eq}{t_{dry}}\right]}{LHV_a\left[\frac{MJfeedstock}{tdry\,feedstock}\right]} \cdot \text{Fuel feedstock factor}_a \cdot \text{Allocation factor fuel}_a$$

Where

$$\text{Allocation factor fuel}_a = \left[\frac{\text{Energy in fuel}}{\text{Energy fuel} + \text{Energy in co-products}}\right]$$

$$\text{Fuel feedstock factor}_a = [\text{Ratio of MJ feedstock required to make 1 MJ fuel}]$$

Emissions per dry-ton feedstock shall be calculated as follows:

$$e_{ec}\text{feedstock}_a\left[\frac{gCO_2eq}{t_{dry}}\right] = \frac{e_{ec}\text{feedstock}_a\left[\frac{gCO_2eq}{t_{moist}}\right]}{(1 - \text{moisture content})}$$

3. Greenhouse gas emissions savings from biomass fuels shall be calculated as follows:

(a) greenhouse gas emissions savings from biomass fuels used as transport fuels:

SAVING = $(E_{F(t)} - E_B)/E_{F(t)}$

where

E_B = total emissions from biomass fuels used as transport fuels; and

$E_{F(t)}$ = total emissions from the fossil fuel comparator for transport

(b) greenhouse gas emissions savings from heat and cooling, and electricity being generated from biomass fuels:

SAVING = $(EC_{F(h\&c,el)} - EC_{B(h\&c,el)})/EC_{F\,(h\&c,el)}$,

where

$EC_{B(h\&c,el)}$ = total emissions from the heat or electricity,

$EC_{F(h\&c,el)}$ = total emissions from the fossil fuel comparator for useful heat or electricity.

4. The greenhouse gases taken into account for the purposes of point 1 shall be CO_2, N_2O and CH_4. For

the purposes of calculating CO_2 equivalence, those gases shall be valued as follows:

CO_2: 1

N_2O: 298

CH_4: 25

5. Emissions from the extraction, harvesting or cultivation of raw materials, e_{ec}, shall include emissions from the extraction, harvesting or cultivation process itself; from the collection, drying and storage of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO_2 in the cultivation of raw materials shall be excluded. Estimates of emissions from agriculture biomass cultivation may be derived from the regional averages for cultivation emissions included in the reports referred to in Article 31(4) of this Directive or the information on the disaggregated default values for cultivation emissions included in this Annex, as an alternative to using actual values. In the absence of relevant information in those reports it is allowed to calculate averages based on local farming practises based for instance on data of a group of farms, as an alternative to using actual values.

Estimates of emissions from cultivation and harvesting of forestry biomass may be derived from the use of averages for cultivation and harvesting emissions calculated for geographical areas at national level, as an alternative to using actual values.

6. For the purposes of the calculation referred to in point 1(a), emission savings from improved agriculture management, e_{sca}, such as shifting to reduced or zero-tillage, improved crop/rotation, the use of cover crops, including crop residue management, and the use of organic soil improver (e.g. compost, manure fermentation digestate), shall be taken into account only if solid and verifiable evidence is provided that the soil carbon has increased or that it is reasonable to expect to have increased over the period in which the raw materials concerned were cultivated while taking into account the emissions where such practices lead to increased fertiliser and herbicide use [(9)].

7. Annualised emissions from carbon stock changes caused by land-use change, e_l, shall be calculated by dividing total emissions equally over 20 years. For the calculation of those emissions the following rule shall be applied:

$$e_l = (CS_R - CS_A) \times 3{,}664 \times 1/20 \times 1/P - e_B, \text{ [(10)]}$$

where

e_l = annualised greenhouse gas emissions from carbon stock change due to land-use change (measured as mass of CO_2-equivalent per unit biomass fuel energy). 'Cropland' [(11)] and 'perennial cropland' [(12)] shall be regarded as one land use;

CS_R = the carbon stock per unit area associated with the reference land use (measured as mass (tonnes) of carbon per unit area, including both soil and vegetation). The reference land use shall be the land use in January 2008 or 20 years before the raw material was obtained, whichever was the later;

CS_A = the carbon stock per unit area associated with the actual land use (measured as mass (tonnes) of carbon per unit area, including both soil and vegetation). In cases where the carbon stock accumulates over more than one year, the value attributed to CS_A shall be the estimated stock per unit area after 20 years or when the crop reaches maturity, whichever the earlier;

P = the productivity of the crop (measured as biomass fuel energy per unit area per year); and

e_B = bonus of 29 g CO_2eq/MJ biomass fuel if biomass is obtained from restored degraded land under the

conditions laid down in point 8.

8. The bonus of 29 g CO_2eq/MJ shall be attributed if evidence is provided that the land:

(a) was not in use for agriculture in January 2008 or any other activity; and

(b) is severely degraded land, including such land that was formerly in agricultural use. The bonus of 29 g CO_2eq/MJ shall apply for a period of up to 20 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks as well as a sizable reduction in erosion phenomena for land falling under (b) are ensured.

9. 'Severely degraded land' means land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and has been severely eroded.

10. In accordance with point 10 of Part C of Annex V to this Directive, Decision 2010/335/EU [(13)], which provides for guidelines for the calculation of land carbon stocks in relation to this Directive, drawing on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – volume 4, and in accordance with Regulations (EU) No 525/2013 and (EU) 2018/841, shall serve as the basis for the calculation of land carbon stocks.

11. Emissions from processing, e_p, shall include emissions from the processing itself; from waste and leakages; and from the production of chemicals or products used in processing, including the CO_2 emissions corresponding to the carbon contents of fossil inputs, whether or not actually combusted in the process.

In accounting for the consumption of electricity not produced within the solid or gaseous biomass fuel production plant, the greenhouse gas emissions intensity of the production and distribution of that electricity shall be assumed to be equal to the average emission intensity of the production and distribution of electricity in a defined region. By way of derogation from this rule, producers may use an average value for an individual electricity production plant for electricity produced by that plant, if that plant is not connected to the electricity grid.

Emissions from processing shall include emissions from drying of interim products and materials where relevant.

12. Emissions from transport and distribution, e_{td}, shall include emissions from the transport of raw and semi-finished materials and from the storage and distribution of finished materials. Emissions from transport and distribution to be taken into account under point 5 shall not be covered by this point.

13. Emissions of CO_2 from fuel in use, $e_{u,}$ shall be taken to be zero for biomass fuels. Emissions of non-CO_2 greenhouse gases (CH_4 and N_2O) from the fuel in use shall be included in the e_u factor.

14. Emission savings from CO_2 capture and geological storage, e_{ccs}, that have not already been accounted for in e_p, shall be limited to emissions avoided through the capture and storage of emitted CO_2 directly related to the extraction, transport, processing and distribution of biomass fuel if stored in compliance with Directive 2009/31/EC.

15. Emission savings from CO_2 capture and replacement, e_{ccr}, shall be related directly to the production of biomass fuel they are attributed to, and shall be limited to emissions avoided through the capture of CO_2 of which the carbon originates from biomass and which is used to replace fossil-derived CO_2 in production of commercial products and services.

16. Where a cogeneration unit – providing heat and/or electricity to a biomass fuel production process for which emissions are being calculated – produces excess electricity and/or excess useful heat, the greenhouse gas emissions shall be divided between the electricity and the useful heat according to the temperature of the heat (which reflects the usefulness (utility) of the heat). The useful part of the heat is found by

multiplying its energy content with the Carnot efficiency, C_h, calculated as follows:

$$C_h = \frac{T_h - T_0}{T_h}$$

where

T_h = Temperature, measured in absolute temperature (kelvin) of the useful heat at point of delivery.

T_0 = Temperature of surroundings, set at 273,15 kelvin (equal to 0 °C).

If the excess heat is exported for heating of buildings, at a temperature below 150 °C (423,15 kelvin), C_h can alternatively be defined as follows:

C_h = Carnot efficiency in heat at 150 °C (423,15 kelvin), which is: 0,3546

For the purposes of that calculation, the actual efficiencies shall be used, defined as the annual mechanical energy, electricity and heat produced respectively divided by the annual energy input.

For the purposes of that calculation, the following definitions apply:

(a) 'cogeneration' shall mean the simultaneous generation in one process of thermal energy and electrical and/or mechanical energy;

(b) 'useful heat' shall mean heat generated to satisfy an economical justifiable demand for heat, for heating or cooling purposes;

(c) 'economically justifiable demand' shall mean the demand that does not exceed the needs for heat or cooling and which would otherwise be satisfied at market conditions.

17. Where a biomass fuel production process produces, in combination, the fuel for which emissions are being calculated and one or more other products ('co-products'), greenhouse gas emissions shall be divided between the fuel or its intermediate product and the co-products in proportion to their energy content (determined by lower heating value in the case of co-products other than electricity and heat). The greenhouse gas intensity of excess useful heat or excess electricity is the same as the greenhouse gas intensity of heat or electricity delivered to the biomass fuel production process and is determined from calculating the greenhouse gas intensity of all inputs and emissions, including the feedstock and CH_4 and N_2O emissions, to and from the cogeneration unit, boiler or other apparatus delivering heat or electricity to the biomass fuel production process. In the case of cogeneration of electricity and heat, the calculation is performed following point 16.

18. For the purposes of the calculations referred to in point 17, the emissions to be divided shall be $e_{ec} + e_l + e_{sca}$ + those fractions of e_p, e_{td}, e_{ccs} and e_{ccr} that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for those purposes instead of the total of those emissions.

In the case of biogas and biomethane, all co-products that do not fall under the scope of point 7 shall be taken into account for the purposes of that calculation. No emissions shall be allocated to wastes and residues. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purposes of the calculation.

Wastes and residues, including tree tops and branches, straw, husks, cobs and nut shells, and residues from processing, including crude glycerine (glycerine that is not refined) and bagasse, shall be considered

to have zero life-cycle greenhouse gas emissions up to the process of collection of those materials irrespectively of whether they are processed to interim products before being transformed into the final product.

In the case of biomass fuels produced in refineries, other than the combination of processing plants with boilers or cogeneration units providing heat and/or electricity to the processing plant, the unit of analysis for the purposes of the calculation referred to in point 17 shall be the refinery.

19. For biomass fuels used for the production of electricity, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(el)}$ shall be 183 g CO_2eq/MJ electricity or 212 g CO_2eq/MJ electricity for the outermost regions.

For biomass fuels used for the production of useful heat, as well as for the production of heating and/or cooling, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h)}$ shall be 80 g CO_2eq/MJ heat.

For biomass fuels used for the production of useful heat, in which a direct physical substitution of coal can be demonstrated, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h)}$ shall be 124 g CO_2eq/MJ heat.

For biomass fuels used as transport fuels, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $E_{F(t)}$ shall be 94 g CO_2eq/MJ.

(8) The formula for calculating greenhouse gas emissions from the extraction or cultivation of raw materials eec describes cases where feedstock is converted into biofuels in one step. For more complex supply chains, adjustments are needed for calculating greenhouse gas emissions from the extraction or cultivation of raw materials eec for intermediate products.

(9) Measurements of soil carbon can constitute such evidence, e.g. by a first measurement in advance of

the cultivation and subsequent ones at regular intervals several years apart. In such a case, before the second measurement is available, increase in soil carbon would be estimated on the basis of representative experiments or soil models. From the second measurement onwards, the measurements would constitute the basis for determining the existence of an increase in soil carbon and its magnitude.

(10) The quotient obtained by dividing the molecular weight of CO2 (44,010 g/mol) by the molecular weight of carbon (12,011 g/mol) is equal to 3,664.

(11) Cropland as defined by IPCC.

(12) Perennial crops are defined as multi-annual crops, the stem of which is usually not annually harvested such as short rotation coppice and oil palm.

(13) Commission Decision 2010/335/EU of 10 June 2010 on guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC (OJ L 151, 17.6.2010, p. 19).

C. DISAGGREGATED DEFAULT VALUES FOR BIOMASS FUELS

Wood briquettes or pellets

Biomass fuel production system	Transport distance	Greenhouse gas emissions – typical value (g CO_2eq/MJ)				Greenhouse gas emissions – default value (g CO_2eq/MJ)			
		Cultivation	Processing	Transport	Non-CO_2 emissions from the fuel in use	Cultivation	Processing	Transport	Non-CO_2 emissions from the fuel in use
Wood chips from forest residues	1 to 500 km	0,0	1,6	3,0	0,4	0,0	1,9	3,6	0,5
	500 to 2 500 km	0,0	1,6	5,2	0,4	0,0	1,9	6,2	0,5
	2 500 to 10 000 km	0,0	1,6	10,5	0,4	0,0	1,9	12,6	0,5
	Above 10 000 km	0,0	1,6	20,5	0,4	0,0	1,9	24,6	0,5
Wood chips from SRC (Eucalyptus)	2 500 to 10 000 km	4,4	0,0	11,0	0,4	4,4	0,0	13,2	0,5
Wood chips from SRC (Poplar – fertilised)	1 to 500 km	3,9	0,0	3,5	0,4	3,9	0,0	4,2	0,5
	500 to 2 500 km	3,9	0,0	5,6	0,4	3,9	0,0	6,8	0,5
	2 500 to 10 000 km	3,9	0,0	11,0	0,4	3,9	0,0	13,2	0,5
	Above 10 000 km	3,9	0,0	21,0	0,4	3,9	0,0	25,2	0,5
Wood chips from SRC (Poplar – Not fertilised)	1 to 500 km	2,2	0,0	3,5	0,4	2,2	0,0	4,2	0,5
	500 to 2 500 km	2,2	0,0	5,6	0,4	2,2	0,0	6,8	0,5
	2 500 to 10 000 km	2,2	0,0	11,0	0,4	2,2	0,0	13,2	0,5
	Above 10 000 km	2,2	0,0	21,0	0,4	2,2	0,0	25,2	0,5
Wood chips from stemwood	1 to 500 km	1,1	0,3	3,0	0,4	1,1	0,4	3,6	0,5
	500 to 2 500 km	1,1	0,3	5,2	0,4	1,1	0,4	6,2	0,5
	2 500 to 10 000 km	1,1	0,3	10,5	0,4	1,1	0,4	12,6	0,5
	Above 10 000 km	1,1	0,3	20,5	0,4	1,1	0,4	24,6	0,5
Wood chips from wood industry residues	1 to 500 km	0,0	0,3	3,0	0,4	0,0	0,4	3,6	0,5
	500 to 2 500 km	0,0	0,3	5,2	0,4	0,0	0,4	6,2	0,5
	2 500 to 10 000 km	0,0	0,3	10,5	0,4	0,0	0,4	12,6	0,5
	Above 10 000 km	0,0	0,3	20,5	0,4	0,0	0,4	24,6	0,5

Wood briquettes or pellets

Biomass fuel production system	Transport distance	Greenhouse gas emissions – typical value ($g\ CO_2eq/MJ$)				Greenhouse gas emissions – default value ($g\ CO_2eq/MJ$)			
		Cultivation	Processing	Transport & distribution	Non-CO_2 emissions from the fuel in use	Cultivation	Processing	Transport & distribution	Non-CO_2 emissions from the fuel in use
Wood briquettes or pellets from forest residues (case 1)	1 to 500 km	0,0	25,8	2,9	0,3	0,0	30,9	3,5	0,3
	500 to 2 500 km	0,0	25,8	2,8	0,3	0,0	30,9	3,3	0,3
	2 500 to 10 000 km	0,0	25,8	4,3	0,3	0,0	30,9	5,2	0,3
	Above 10 000 km	0,0	25,8	7,9	0,3	0,0	30,9	9,5	0,3
Wood briquettes or pellets from forest residues (case 2a)	1 to 500 km	0,0	12,5	3,0	0,3	0,0	15,0	3,6	0,3
	500 to 2 500 km	0,0	12,5	2,9	0,3	0,0	15,0	3,5	0,3
	2 500 to 10 000 km	0,0	12,5	4,4	0,3	0,0	15,0	5,3	0,3
	Above 10 000 km	0,0	12,5	8,1	0,3	0,0	15,0	9,8	0,3
Wood briquettes or pellets from forest residues (case 3a)	1 to 500 km	0,0	2,4	3,0	0,3	0,0	2,8	3,6	0,3
	500 to 2 500 km	0,0	2,4	2,9	0,3	0,0	2,8	3,5	0,3
	2 500 to 10 000 km	0,0	2,4	4,4	0,3	0,0	2,8	5,3	0,3
	Above 10 000 km	0,0	2,4	8,2	0,3	0,0	2,8	9,8	0,3
Wood briquettes from short rotation coppice (Eucalyptus – case 1)	2 500 to 10 000 km	3,9	24,5	4,3	0,3	3,9	29,4	5,2	0,3
Wood briquettes from short rotation coppice (Eucalyptus – case 2a)	2 500 to 10 000 km	5,0	10,6	4,4	0,3	5,0	12,7	5,3	0,3
Wood briquettes from short rotation coppice (Eucalyptus – case 3a)	2 500 to 10 000 km	5,3	0,3	4,4	0,3	5,3	0,4	5,3	0,3
Wood briquettes from short rotation coppice (Poplar – Fertilised – case 1)	1 to 500 km	3,4	24,5	2,9	0,3	3,4	29,4	3,5	0,3
	500 to 10 000 km	3,4	24,5	4,3	0,3	3,4	29,4	5,2	0,3
	Above 10 000 km	3,4	24,5	7,9	0,3	3,4	29,4	9,5	0,3

Wood briquettes from short rotation coppice (Poplar – Fertilised – case 2a)	1 to 500 km	4,4	10,6	3,0	0,3	4,4	12,7	3,6	0,3
	500 to 10 000 km	4,4	10,6	4,4	0,3	4,4	12,7	5,3	0,3
	Above 10 000 km	4,4	10,6	8,1	0,3	4,4	12,7	9,8	0,3
Wood briquettes from short rotation coppice (Poplar – Fertilised – case 3a)	1 to 500 km	4,6	0,3	3,0	0,3	4,6	0,4	3,6	0,3
	500 to 10 000 km	4,6	0,3	4,4	0,3	4,6	0,4	5,3	0,3
	Above 10 000 km	4,6	0,3	8,2	0,3	4,6	0,4	9,8	0,3
Wood briquettes from short rotation coppice (Poplar – no fertilisation – case 1)	1 to 500 km	2,0	24,5	2,9	0,3	2,0	29,4	3,5	0,3
	500 to 2 500 km	2,0	24,5	4,3	0,3	2,0	29,4	5,2	0,3
	2 500 to 10 000 km	2,0	24,5	7,9	0,3	2,0	29,4	9,5	0,3
Wood briquettes from short rotation coppice (Poplar – no fertilisation – case 2a)	1 to 500 km	2,5	10,6	3,0	0,3	2,5	12,7	3,6	0,3
	500 to 10 000 km	2,5	10,6	4,4	0,3	2,5	12,7	5,3	0,3
	Above 10 000 km	2,5	10,6	8,1	0,3	2,5	12,7	9,8	0,3
Wood briquettes from short rotation coppice (Poplar – no fertilisation– case 3a)	1 to 500 km	2,6	0,3	3,0	0,3	2,6	0,4	3,6	0,3
	500 to 10 000 km	2,6	0,3	4,4	0,3	2,6	0,4	5,3	0,3
	Above 10 000 km	2,6	0,3	8,2	0,3	2,6	0,4	9,8	0,3
Wood briquettes or pellets from stemwood (case 1)	1 to 500 km	1,1	24,8	2,9	0,3	1,1	29,8	3,5	0,3
	500 to 2 500 km	1,1	24,8	2,8	0,3	1,1	29,8	3,3	0,3
	2 500 to 10 000 km	1,1	24,8	4,3	0,3	1,1	29,8	5,2	0,3
	Above 10 000 km	1,1	24,8	7,9	0,3	1,1	29,8	9,5	0,3
Wood briquettes or pellets from stemwood (case 2a)	1 to 500 km	1,4	11,0	3,0	0,3	1,4	13,2	3,6	0,3
	500 to 2 500 km	1,4	11,0	2,9	0,3	1,4	13,2	3,5	0,3
	2 500 to 10 000 km	1,4	11,0	4,4	0,3	1,4	13,2	5,3	0,3
	Above 10 000 km	1,4	11,0	8,1	0,3	1,4	13,2	9,8	0,3
Wood briquettes or pellets from stemwood (case 3a)	1 to 500 km	1,4	0,8	3,0	0,3	1,4	0,9	3,6	0,3
	500 to 2 500 km	1,4	0,8	2,9	0,3	1,4	0,9	3,5	0,3
	2 500 to 10 000 km	1,4	0,8	4,4	0,3	1,4	0,9	5,3	0,3
	Above 10 000 km	1,4	0,8	8,2	0,3	1,4	0,9	9,8	0,3

Wood briquettes or pellets from wood industry residues (case 1)	1 to 500 km	0,0	14,3	2,8	0,3	0,0	17,2	3,3	0,3
	500 to 2 500 km	0,0	14,3	2,7	0,3	0,0	17,2	3,2	0,3
	2 500 to 10 000 km	0,0	14,3	4,2	0,3	0,0	17,2	5,0	0,3
	Above 10 000 km	0,0	14,3	7,7	0,3	0,0	17,2	9,2	0,3
Wood briquettes or pellets from wood industry residues (case 2a)	1 to 500 km	0,0	6,0	2,8	0,3	0,0	7,2	3,4	0,3
	500 to 2 500 km	0,0	6,0	2,7	0,3	0,0	7,2	3,3	0,3
	2 500 to 10 000 km	0,0	6,0	4,2	0,3	0,0	7,2	5,1	0,3
	Above 10 000 km	0,0	6,0	7,8	0,3	0,0	7,2	9,3	0,3
Wood briquettes or pellets from wood industry residues (case 3a)	1 to 500 km	0,0	0,2	2,8	0,3	0,0	0,3	3,4	0,3
	500 to 2 500 km	0,0	0,2	2,7	0,3	0,0	0,3	3,3	0,3
	2 500 to 10 000 km	0,0	0,2	4,2	0,3	0,0	0,3	5,1	0,3
	Above 10 000 km	0,0	0,2	7,8	0,3	0,0	0,3	9,3	0,3

Agriculture pathways

Biomass fuel production system	Transport distance	Greenhouse gas emissions – typical value (g CO_2eq/MJ)				Greenhouse gas emissions – default value (g CO_2eq/MJ)			
		Cultivation	Processing	Transport & distribution	Non-CO_2 emissions from the fuel in use	Cultivation	Processing	Transport & distribution	Non-CO_2 emissions from the fuel in use
Agricultural Residues with density < 0,2 t/m³	1 to 500 km	0,0	0,9	2,6	0,2	0,0	1,1	3,1	0,3
	500 to 2 500 km	0,0	0,9	6,5	0,2	0,0	1,1	7,8	0,3
	2 500 to 10 000 km	0,0	0,9	14,2	0,2	0,0	1,1	17,0	0,3
	Above 10 000 km	0,0	0,9	28,3	0,2	0,0	1,1	34,0	0,3
Agricultural Residues with density > 0,2 t/m³	1 to 500 km	0,0	0,9	2,6	0,2	0,0	1,1	3,1	0,3
	500 to 2 500 km	0,0	0,9	3,6	0,2	0,0	1,1	4,4	0,3
	2 500 to 10 000 km	0,0	0,9	7,1	0,2	0,0	1,1	8,5	0,3
	Above 10 000 km	0,0	0,9	13,6	0,2	0,0	1,1	16,3	0,3
Straw pellets	1 to 500 km	0,0	5,0	3,0	0,2	0,0	6,0	3,6	0,3
	500 to 10 000 km	0,0	5,0	4,6	0,2	0,0	6,0	5,5	0,3
	Above 10 000 km	0,0	5,0	8,3	0,2	0,0	6,0	10,0	0,3
Bagasse briquettes	500 to 10 000 km	0,0	0,3	4,3	0,4	0,0	0,4	5,2	0,5
	Above 10 000 km	0,0	0,3	8,0	0,4	0,0	0,4	9,5	0,5
Palm Kernel Meal	Above 10 000 km	21,6	21,1	11,2	0,2	21,6	25,4	13,5	0,3
Palm Kernel Meal (no CH_4 emissions from oil mill)	Above 10 000 km	21,6	3,5	11,2	0,2	21,6	4,2	13,5	0,3

Disaggregated default values for biogas for the production of electricity

Biomass fuel production system		Technology	TYPICAL VALUE [g CO_2eq/MJ]					DEFAULT VALUE [g CO_2eq/MJ]				
			Cultivation	Processing	Non-CO_2 emissions from the fuel in use	Transport	Manure credits	Cultivation	Processing	Non-CO_2 emissions from the fuel in use	Transport	Manure credits
Wet manure (14)	case 1	Open digestate	0,0	69,6	8,9	0,8	– 107,3	0,0	97,4	12,5	0,8	– 107,3
		Close digestate	0,0	0,0	8,9	0,8	– 97,6	0,0	0,0	12,5	0,8	– 97,6
	case 2	Open digestate	0,0	74,1	8,9	0,8	– 107,3	0,0	103,7	12,5	0,8	– 107,3
		Close digestate	0,0	4,2	8,9	0,8	– 97,6	0,0	5,9	12,5	0,8	– 97,6
	case 3	Open digestate	0,0	83,2	8,9	0,9	– 120,7	0,0	116,4	12,5	0,9	– 120,7
		Close digestate	0,0	4,6	8,9	0,8	– 108,5	0,0	6,4	12,5	0,8	– 108,5
Maize whole plant (15)	case 1	Open digestate	15,6	13,5	8,9	0,0 (16)	—	15,6	18,9	12,5	0,0	—
		Close digestate	15,2	0,0	8,9	0,0	—	15,2	0,0	12,5	0,0	—
	case 2	Open digestate	15,6	18,8	8,9	0,0	—	15,6	26,3	12,5	0,0	—
		Close digestate	15,2	5,2	8,9	0,0	—	15,2	7,2	12,5	0,0	—
	case 3	Open digestate	17,5	21,0	8,9	0,0	—	17,5	29,3	12,5	0,0	—
		Close digestate	17,1	5,7	8,9	0,0	—	17,1	7,9	12,5	0,0	—
Biowaste	case 1	Open digestate	0,0	21,8	8,9	0,5	—	0,0	30,6	12,5	0,5	—
		Close digestate	0,0	0,0	8,9	0,5	—	0,0	0,0	12,5	0,5	—
	case 2	Open digestate	0,0	27,9	8,9	0,5	—	0,0	39,0	12,5	0,5	—
		Close digestate	0,0	5,9	8,9	0,5	—	0,0	8,3	12,5	0,5	—
	case 3	Open digestate	0,0	31,2	8,9	0,5	—	0,0	43,7	12,5	0,5	—
		Close digestate	0,0	6,5	8,9	0,5	—	0,0	9,1	12,5	0,5	—

(*14) The values for biogas production from manure include negative emissions for emissions saved from raw manure management. The value of esca considered is equal to – 45 g CO2eq/MJ manure used in anaerobic digestion.

(*15) Maize whole plant means maize harvested as fodder and ensiled for preservation.

(*16) Transport of agricultural raw materials to the transformation plant is, according to the methodology provided in the Commission's report of 25 February 2010 on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling, included in the 'cultivation' value. The value for transport of maize silage accounts for 0,4 g CO2eq/MJ biogas.

Disaggregated default values for biomethane

Biomethane production system	Technological option		TYPICAL VALUE [g CO_2eq/MJ]						DEFAULT VALUE [g CO_2eq/MJ]					
			Cultivation	Processing	Upgrading	Transport	Compression at filling station	Manure credits	Cultivation	Processing	Upgrading	Transport	Compression at filling station	Manure credits
Wet manure	Open digestate	no off-gas combustion	0,0	84,2	19,5	1,0	3,3	– 124,4	0,0	117,9	27,3	1,0	4,6	– 124,4
		off-gas combustion	0,0	84,2	4,5	1,0	3,3	– 124,4	0,0	117,9	6,3	1,0	4,6	– 124,4
	Close digestate	no off-gas combustion	0,0	3,2	19,5	0,9	3,3	– 111,9	0,0	4,4	27,3	0,9	4,6	– 111,9
		off-gas combustion	0,0	3,2	4,5	0,9	3,3	– 111,9	0,0	4,4	6,3	0,9	4,6	– 111,9
Maize whole plant	Open digestate	no off-gas combustion	18,1	20,1	19,5	0,0	3,3	—	18,1	28,1	27,3	0,0	4,6	—
		off-gas combustion	18,1	20,1	4,5	0,0	3,3	—	18,1	28,1	6,3	0,0	4,6	—
	Close digestate	no off-gas combustion	17,6	4,3	19,5	0,0	3,3	—	17,6	6,0	27,3	0,0	4,6	—
		off-gas combustion	17,6	4,3	4,5	0,0	3,3	—	17,6	6,0	6,3	0,0	4,6	—
Biowaste	Open digestate	no off-gas combustion	0,0	30,6	19,5	0,6	3,3	—	0,0	42,8	27,3	0,6	4,6	—
		off-gas combustion	0,0	30,6	4,5	0,6	3,3	—	0,0	42,8	6,3	0,6	4,6	—
	Close digestate	no off-gas combustion	0,0	5,1	19,5	0,5	3,3	—	0,0	7,2	27,3	0,5	4,6	—
		off-gas combustion	0,0	5,1	4,5	0,5	3,3	—	0,0	7,2	6,3	0,5	4,6	—

D. TOTAL TYPICAL AND DEFAULT VALUES FOR BIOMASS FUEL PATHWAYS

Biomass fuel production system	Transport distance	Greenhouse gas emissions – typical value (g CO_2eq/MJ)	Greenhouse gas emissions – default value (g CO_2eq/MJ)
Woodchips from forest residues	1 to 500 km	5	6
	500 to 2 500 km	7	9
	2 500 to 10 000 km	12	15
	Above 10 000 km	22	27
Woodchips from short rotation coppice (Eucalyptus)	2 500 to 10 000 km	16	18
Woodchips from short rotation coppice (Poplar – Fertilised)	1 to 500 km	8	9
	500 to 2 500 km	10	11
	2 500 to 10 000 km	15	18
	Above 10 000 km	25	30
Woodchips from short rotation coppice (Poplar – No fertilisation)	1 to 500 km	6	7
	500 to 2 500 km	8	10
	2 500 to 10 000 km	14	16
	Above 10 000 km	24	28
Woodchips from stemwood	1 to 500 km	5	6
	500 to 2 500 km	7	8
	2 500 to 10 000 km	12	15
	Above 10 000 km	22	27
Woodchips from industry residues	1 to 500 km	4	5
	500 to 2 500 km	6	7
	2 500 to 10 000 km	11	13
	Above 10 000 km	21	25
Wood briquettes or pellets from forest residues (case 1)	1 to 500 km	29	35
	500 to 2 500 km	29	35
	2 500 to 10 000 km	30	36
	Above 10 000 km	34	41
Wood briquettes or pellets from forest residues (case 2a)	1 to 500 km	16	19
	500 to 2 500 km	16	19
	2 500 to 10 000 km	17	21
	Above 10 000 km	21	25
Wood briquettes or pellets from forest residues (case 3a)	1 to 500 km	6	7
	500 to 2 500 km	6	7
	2 500 to 10 000 km	7	8
	Above 10 000 km	11	13

Wood briquettes or pellets from short rotation coppice (Eucalyptus – case 1)	2 500 to 10 000 km	33	39
Wood briquettes or pellets from short rotation coppice (Eucalyptus – case 2a)	2 500 to 10 000 km	20	23
Wood briquettes or pellets from short rotation coppice (Eucalyptus – case 3a)	2 500 to 10 000 km	10	11
Wood briquettes or pellets from short rotation coppice (Poplar – Fertilised – case 1)	1 to 500 km	31	37
	500 to 10 000 km	32	38
	Above 10 000 km	36	43
Wood briquettes or pellets from short rotation coppice (Poplar – Fertilised – case 2a)	1 to 500 km	18	21
	500 to 10 000 km	20	23
	Above 10 000 km	23	27
Wood briquettes or pellets from short rotation coppice (Poplar – Fertilised – case 3a)	1 to 500 km	8	9
	500 to 10 000 km	10	11
	Above 10 000 km	13	15
Wood briquettes or pellets from short rotation coppice (Poplar – no fertilisation – case 1)	1 to 500 km	30	35
	500 to 10 000 km	31	37
	Above 10 000 km	35	41
Wood briquettes or pellets from short rotation coppice (Poplar – no fertilisation – case 2a)	1 to 500 km	16	19
	500 to 10 000 km	18	21
	Above 10 000 km	21	25
Wood briquettes or pellets from short rotation coppice (Poplar – no fertilisation – case 3a)	1 to 500 km	6	7
	500 to 10 000 km	8	9
	Above 10 000 km	11	13
Wood briquettes or pellets from stemwood (case 1)	1 to 500 km	29	35
	500 to 2 500 km	29	34
	2 500 to 10 000 km	30	36
	Above 10 000 km	34	41
Wood briquettes or pellets from stemwood (case 2a)	1 to 500 km	16	18
	500 to 2 500 km	15	18
	2 500 to 10 000 km	17	20
	Above 10 000 km	21	25
Wood briquettes or pellets from stemwood (case 3a)	1 to 500 km	5	6
	500 to 2 500 km	5	6
	2 500 to 10 000 km	7	8
	Above 10 000 km	11	12

Wood briquettes or pellets from wood industry residues (case 1)	1 to 500 km	17	21
	500 to 2 500 km	17	21
	2 500 to 10 000 km	19	23
	Above 10 000 km	22	27
Wood briquettes or pellets from wood industry residues (case 2a)	1 to 500 km	9	11
	500 to 2 500 km	9	11
	2 500 to 10 000 km	10	13
	Above 10 000 km	14	17
Wood briquettes or pellets from wood industry residues (case 3a)	1 to 500 km	3	4
	500 to 2 500 km	3	4
	2 500 to 10 000	5	6
	Above 10 000 km	8	10

Comments

Case 1 refers to processes in which a Natural Gas boiler is used to provide the process heat to the pellet mill. Process electricity is purchased from the grid.

Case 2a refers to processes in which a boiler fuelled with wood chips is used to provide the process heat to the pellet mill. Process electricity is purchased from the grid.

Case 3a refers to processes in which a CHP, fuelled with wood chips, is used to provide heat and electricity to the pellet mill.

Biomass fuel production system	**Transport distance**	**Greenhouse gas emissions – typical value (g CO_2eq/MJ)**	**Greenhouse gas emissions – default value (g CO_2eq/MJ)**
Agricultural Residues with density < 0,2 t/m^3 **(17)**	1 to 500 km	4	4
	500 to 2 500 km	8	9
	2 500 to 10 000 km	15	18
	Above 10 000 km	29	35
Agricultural Residues with density > 0,2 t/m^3 **(18)**	1 to 500 km	4	4
	500 to 2 500 km	5	6
	2 500 to 10 000 km	8	10
	Above 10 000 km	15	18
Straw pellets	1 to 500 km	8	10
	500 to 10 000 km	10	12
	Above 10 000 km	14	16

Bagasse briquettes	500 to 10 000 km	5	6
	Above 10 000 km	9	10
Palm Kernel Meal	Above 10 000 km	54	61
Palm Kernel Meal (no CH_4 emissions from oil mill)	Above 10 000 km	37	40

(*17) This group of materials includes agricultural residues with a low bulk density and it comprises materials such as straw bales, oat hulls, rice husks and sugar cane bagasse bales (not exhaustive list).

(*18) The group of agricultural residues with higher bulk density includes materials such as corn cobs, nut shells, soybean hulls, palm kernel shells (not exhaustive list).

Typical and default values – biogas for electricity

Biogas production system		**Technological option**	**Typical value**	**Default value**
			Greenhouse gas emissions (g CO_2eq/MJ)	**Greenhouse gas emissions (g CO_2eq/MJ)**
Biogas for electricity from wet manure	Case 1	Open digestate (19)	– 28	3
		Close digestate (20)	– 88	– 84
	Case 2	Open digestate	– 23	10
		Close digestate	– 84	– 78
	Case 3	Open digestate	– 28	9
		Close digestate	– 94	– 89
Biogas for electricity from maize whole plant	Case 1	Open digestate	38	47
		Close digestate	24	28
	Case 2	Open digestate	43	54
		Close digestate	29	35
	Case 3	Open digestate	47	59
		Close digestate	32	38
Biogas for electricity from biowaste	Case 1	Open digestate	31	44
		Close digestate	9	13
	Case 2	Open digestate	37	52
		Close digestate	15	21
	Case 3	Open digestate	41	57
		Close digestate	16	22

(*19) Open storage of digestate accounts for additional emissions of methane which change with the weather, the substrate and the digestion efficiency. In these calculations the amounts are taken to be equal to 0,05 MJ CH4/MJ biogas for manure, 0,035 MJ CH4/MJ biogas for maize and 0,01 MJ CH4/MJ biogas for biowaste.

(*20) Close storage means that the digestate resulting from the digestion process is stored in a gas tight tank and the additional biogas released during storage is considered to be recovered for production of additional electricity or biomethane.

Typical and default values for biomethane

Biomethane production system	**Technological option**	**Greenhouse gas emissions – typical value** ($g\ CO_2eq/MJ$)	**Greenhouse gas emissions – default value** ($g\ CO_2eq/MJ$)
Biomethane from wet manure	Open digestate, no off-gas combustion (21)	– 20	22
	Open digestate, off-gas combustion (22)	– 35	1
	Close digestate, no off-gas combustion	– 88	– 79
	Close digestate, off-gas combustion	– 103	– 100
Biomethane from maize whole plant	Open digestate, no off-gas combustion	58	73
	Open digestate, off-gas combustion	43	52
	Close digestate, no off-gas combustion	41	51
	Close digestate, off-gas combustion	26	30
Biomethane from bio-waste	Open digestate, no off-gas combustion	51	71
	Open digestate, off-gas combustion	36	50
	Close digestate, no off-gas combustion	25	35
	Close digestate, off-gas combustion	10	14

(*21) This category includes the following categories of technologies for biogas upgrade to biomethane: Pressure Swing Adsorption (PSA), Pressure Water Scrubbing (PWS), Membranes, Cryogenic, and Organic Physical Scrubbing (OPS). It includes an emission of 0,03 MJ CH4/MJ biomethane for the emission of methane in the off-gases.

(*22) This category includes the following categories of technologies for biogas upgrade to biomethane: Pressure Water Scrubbing (PWS) when water is recycled, Pressure Swing Adsorption (PSA), Chemical Scrubbing, Organic Physical Scrubbing (OPS), Membranes and Cryogenic upgrading. No methane emissions are considered for this category (the methane in the off-gas is combusted, if any).

Typical and default values – biogas for electricity – mixtures of manure and maize: greenhouse gas emissions with shares given on a fresh mass basis

Biogas production system		Technological options	Greenhouse gas emissions – typical value ($g CO_2eq/MJ$)	Greenhouse gas emissions – default value ($g CO_2eq/MJ$)
Manure – Maize 80 % - 20 %	Case 1	Open digestate	17	33
		Close digestate	– 12	– 9
	Case 2	Open digestate	22	40
		Close digestate	– 7	– 2
	Case 3	Open digestate	23	43
		Close digestate	– 9	– 4
Manure – Maize 70 % - 30 %	Case 1	Open digestate	24	37
		Close digestate	0	3
	Case 2	Open digestate	29	45
		Close digestate	4	10
	Case 3	Open digestate	31	48
		Close digestate	4	10
Manure – Maize 60 % - 40 %	Case 1	Open digestate	28	40
		Close digestate	7	11
	Case 2	Open digestate	33	47
		Close digestate	12	18
	Case 3	Open digestate	36	52
		Close digestate	12	18

Comments

Case 1 refers to pathways in which electricity and heat required in the process are supplied by the CHP engine itself.

Case 2 refers to pathways in which the electricity required in the process is taken from the grid and the process heat is supplied by the CHP engine itself. In some Contracting Parties, operators are not allowed to claim the gross production for subsidies and case 1 is the more likely configuration.

Case 3 refers to pathways in which the electricity required in the process is taken from the grid and the process heat is supplied by a biogas boiler. This case applies to some installations in which the CHP engine is not on-site and biogas is sold (but not upgraded to biomethane).

Typical and default values – biomethane - mixtures of manure and maize: greenhouse gas emissions with shares given on a fresh mass basis

Biomethane production system	**Technological options**	**Typical value**	**Default value**
		(g CO_2eq/MJ)	**(g CO_2eq/MJ)**
Manure – Maize 80 % - 20 %	Open digestate, no off-gas combustion	32	57
	Open digestate, off-gas combustion	17	36
	Close digestate, no off-gas combustion	– 1	9
	Close digestate, off-gas combustion	– 16	– 12
Manure – Maize 70 % - 30 %	Open digestate, no off-gas combustion	41	62
	Open digestate, off-gas combustion	26	41
	Close digestate, no off-gas combustion	13	22
	Close digestate, off-gas combustion	– 2	1
Manure – Maize 60 % - 40 %	Open digestate, no off-gas combustion	46	66
	Open digestate, off-gas combustion	31	45
	Close digestate, no off-gas combustion	22	31
	Close digestate, off-gas combustion	7	10

Where biomethane is used as Compressed Biomethane as a transport fuel, a value of 3,3 g CO_2eq/MJ biomethane needs to be added to the typical values and a value of 4,6 g CO_2eq/MJ biomethane to the default values.

ANNEX VII
ACCOUNTING OF ENERGY FROM HEAT PUMPS

The amount of aerothermal, geothermal or hydrothermal energy captured by heat pumps to be considered to be energy from renewable sources for the purposes of this Directive, E_{RES}, shall be calculated in accordance with the following formula:

$$\mathbf{E_{RES} = Q_{usable} * (1 - 1/SPF)}$$

where

— = Q_{usable} = the estimated total usable heat delivered by heat pumps fulfilling the criteria referred to in Article 7(4), implemented as follows: Only heat pumps for which SPF > 1,15 * 1/η shall be taken into account,

— = SPF = the estimated average seasonal performance factor for those heat pumps,

— = η = the ratio between total gross production of electricity and the primary energy consumption for the production of electricity and shall be calculated as an EU average based on Eurostat data.

ANNEX VIII

PART A. PROVISIONAL ESTIMATED INDIRECT LAND-USE CHANGE EMISSIONS FROM BIOFUEL, BIOLIQUID AND BIOMASS FUEL FEEDSTOCK (g CO_2eq/MJ) [1]

Feedstock group	Mean [2]	Interpercentile range derived from the sensitivity analysis [3]
Cereals and other starch-rich crops	12	8 to 16
Sugars	13	4 to 17
Oil crops	55	33 to 66

PART B. BIOFUELS, BIOLIQUIDS AND BIOMASS FUELS FOR WHICH THE ESTIMATED INDIRECT LAND-USE CHANGE EMISSIONS ARE CONSIDERED TO BE ZERO

Biofuels, bioliquids and biomass fuels produced from the following feedstock categories will be considered to have estimated indirect land-use change emissions of zero:

(1) feedstocks which are not listed under part A of this Annex.

(2) feedstocks, the production of which has led to direct land-use change, namely, a change from one of the following IPCC land cover categories: forest land, grassland, wetlands, settlements, or other land, to cropland or perennial cropland [4]. In such a case a direct land-use change emission value (e_l) should have been calculated in accordance with point 7 of part C of Annex V.

[1] The mean values reported here represent a weighted average of the individually modelled feedstock values. The magnitude of the values in the Annex is sensitive to the range of assumptions (such as treatment of co-products, yield developments, carbon stocks and displacement of other commodities) used in the economic models developed for their estimation. Although it is therefore not possible to fully characterise the uncertainty range associated with such estimates, a sensitivity analysis conducted on the results based on a random variation of key parameters, a so-called Monte Carlo analysis, was conducted.

[2] The mean values included here represent a weighted average of the individually modelled feedstock values.

[3] The range included here reflects 90 % of the results using the fifth and ninety-fifth percentile values resulting from the analysis. The fifth percentile suggests a value below which 5 % of the observations were found (namely, 5 % of total data used showed results below 8, 4, and 33 g CO_2eq/MJ). The ninety-fifth percentile suggests a value below which 95 % of the observations were found (namely, 5 % of total data used showed results above 16, 17, and 66 g CO_2eq/MJ).

[4] Perennial crops are defined as multi-annual crops, the stem of which is usually not annually harvested such as short rotation coppice and oil palm.

ANNEX IX

PART A.

Feedstocks for the production of biogas for transport and advanced biofuels, the contribution of which towards the minimum shares referred to in the first and fourth subparagraphs of Article 25(1) may be considered to be twice their energy content:

(a) Algae if cultivated on land in ponds or photobioreactors;

(b) Biomass fraction of mixed municipal waste, but not separated household waste subject to recycling targets under point (a) of Article 11(2) of Directive 2008/98/EC;

(c) Biowaste as defined in point (4) of Article 3 of Directive 2008/98/EC from private households subject to separate collection as defined in point (11) of Article 3 of that Directive;

(d) Biomass fraction of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in part B of this Annex;

(e) Straw;

(f) Animal manure and sewage sludge;

(g) Palm oil mill effluent and empty palm fruit bunches;

(h) Tall oil pitch;

(i) Crude glycerine;

(j) Bagasse;

(k) Grape marcs and wine lees;

(l) Nut shells;

(m) Husks;

(n) Cobs cleaned of kernels of corn;

(o) Biomass fraction of wastes and residues from forestry and forest-based industries, namely, bark, branches, pre-commercial thinnings, leaves, needles, tree tops, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin and tall oil;

(p) Other non-food cellulosic material;

(q) Other ligno-cellulosic material except saw logs and veneer logs.

PART B.

Feedstocks for the production of biofuels and biogas for transport, the contribution of which towards the minimum share established in the first subparagraph of Article 25(1) shall be limited and may be considered to be twice their energy content:

(a) Used cooking oil;

(b) Animal fats classified as categories 1 and 2 in accordance with Regulation (EC) No 1069/2009.

ANNEX X

PART A

Repealed Directive with a list of the successive amendments thereto (referred to in Article 37)

Directive 2009/28/EC of the European Parliament and of the Council (**OJ L 140, 5.6.2009, p. 16**)	
Council Directive 2013/18/EU (**OJ L 158, 10.6.2013, p. 230**)	
Directive (EU) 2015/1513 of the European Parliament and of the Council (**OJ L 239, 15.9.2015, p. 1**)	Only Article 2

PART B

Time-limits for transposition into national law

(referred to in Article 36)

Directive	**Time-limit for transposition**
2009/28/EC	25 June 2009
2013/18/EU	1 July 2013
(EU) 2015/1513	10 September 2017

ANNEX XI
Correlation table

Directive 2009/28/EC	This Directive
Article 1	Article 1
Article 2, first subparagraph	Article 2, first subparagraph
Article 2, second subparagraph, introductory wording	Article 2, second subparagraph, introductory wording
Article 2, second subparagraph, point (a)	Article 2, second subparagraph, point (1)
Article 2, second subparagraph, point (b)	—
—	Article 2, second subparagraph, point (2)
Article 2, second subparagraph, point (c)	Article 2, second subparagraph, point (3)
Article 2, second subparagraph, point (d)	—
Article 2, second subparagraph, points (e), (f), (g), (h), (i), (j), (k), (l), (m), (n), (o), (p), (q), (r), (s), (t), (u), (v) and (w)	Article 2, second subparagraph, points (24), (4), (19), (32), (33), (12), (5), (6), (45), (46), (47), (23), (39), (41), (42), (43), (36), (44) and (37)
—	Article 2, second subparagraph, points (7), (8), (9), (10), (11), (13), (14), (15), (16), (17), (18), (20), (21), (22), (25), (26), (27), (28), (29), (30), (31), (34), (35), (38) and (40)
Article 3	—
—	Article 3
Article 4	—
—	Article 4
—	Article 5
—	Article 6
Article 5(1)	Article 7(1)
Article 5(2)	—
Article 5(3)	Article 7(2)
Article 5(4), first, second, third and fourth subparagraphs	Article 7(3), first, second, third and fourth subparagraphs
—	Article 7(3), fifth and sixth subparagraphs
—	Article 7(4)
Article 5(5),	Article 27(1), first subparagraph, point (c)
Article 5(6) and (7)	Article 7(5) and (6)
Article 6(1)	Article 8(1)
—	Article 8(2) and (3)
Article 6(2) and (3)	Article 8(4) and (5)

Article 7(1), (2), (3), (4) and (5)	Article 9(1), (2), (3), (4) and (5)
—	Article 9(6)
Article 8	Article 10
Article 9(1)	Article 11(1)
Article 9(2), first subparagraph, points (a), (b) and (c)	Article 11(2), first subparagraph, points (a), (b) and (c)
—	Article 11(2), first subparagraph, point (d)
Article 10	Article 12
Article 11(1), (2) and (3)	Article 13(1), (2) and (3)
—	Article 13(4)
Article 12	Article 14
Article 13(1), first subparagraph	Article 15(1), first subparagraph
Article 13(1), second subparagraph	Article 15(1), second subparagraph
Article 13(1), second subparagraph, points (a) and (b)	—
Article 13(1), second subparagraph, points (c), (d), (e) and (f)	Article 15(1), second subparagraph, points (a), (b), (c) and (d)
Article 13(2), (3), (4) and (5)	Article 15(2), (3), (4) and (5)
Article 13(6), first subparagraph	Article 15(6), first subparagraph
Article 13(6), second, third, fourth and fifth sub-paragraphs	—
—	Article 15, (7) and (8)
—	Article 16
—	Article 17
Article 14	Article 18
Article 15(1)	Article 19(1)
Article 15(2), first, second and third subparagraphs	Article 19(2) first, second and third subparagraphs
—	Article 19(2), fourth and fifth subparagraphs
Article 15(2), fourth subparagraph	Article 19(2), sixth subparagraph
Article 15(3)	—
—	Article 19(3) and (4)
Article 15(4) and (5)	Article 19(5) and (6)
Article 15(6), first subparagraph, point (a)	Article 19(7), first subparagraph, point (a)
Article 15(6), first subparagraph, point (b)(i)	Article 19(7), first subparagraph, point (b)(i)
—	Article 19(7), first subparagraph, point (b)(ii)
Article 15(6), first subparagraph, point (b)(ii)	Article 19(7), first subparagraph, point (b)(iii)

Article 15(6), first subparagraph, points (c), (d), (e) and (f)	Article 19(7), first subparagraph, points (c), (d), (e) and (f)
—	Article 19(7), second subparagraph
Article 15(7)	Article 19(8)
Article 15(8)	—
Article 15(9) and (10)	Article 19(9) and (10)
—	Article 19(11)
Article 15(11)	Article 19(12)
Article 15(12)	—
—	Article 19(13)
Article 16(1), (2), (3), (4), (5), (6), (7) and (8)	—
Article 16(9), (10) and (11)	Article 20(1), (2) and (3)
—	Article 21
—	Article 22
—	Article 23
—	Article 24
—	Article 25
—	Article 26
—	Article 27
—	Article 28
Article 17(1), first and second subparagraphs	Article 29(1), first and second subparagraphs
—	Article 29(1), third, fourth and fifth subparagraphs
—	Article 29(2)
Article 17(2), first and second subparagraphs	—
Article 17(2), third subparagraph	Article 29(10), third subparagraph
Article 17(3), first subparagraph, point (a)	Article 29(3), first subparagraph, point (a)
—	Article 29(3), first subparagraph, point (b)
Article 17(3), first subparagraph, points (b) and (c)	Article 29(3), first subparagraph, points (c) and (d)
—	Article 29(3), second subparagraph
Article 17(4)	Article 29(4)
Article 17(5)	Article 29(5)
Article 17(6) and (7)	—
—	Article 29(6), (7), (8), (9), (10) and (11)
Article 17(8)	Article 29(12)
Article 17(9)	—
—	Article 29(13) and (14)
Article 18(1), first subparagraph	Article 30(1), first subparagraph

Article 18(1), first subparagraph, points (a), (b) and (c)	Article 30(1), first subparagraph, points (a), (c) and (d)
—	Article 30(1), first subparagraph, point (b)
—	Article 30(1), second subparagraph
Article 18(2)	—
—	Article 30(2)
Article 18(3), first subparagraph	Article 30(3), first subparagraph
Article 18(3), second and third subparagraphs	—
Article 18(3), fourth and fifth subparagraphs	Article 30(3), second and third subparagraphs
Article 18(4), first subparagraph	—
Article 18(4), second and third subparagraphs	Article 30(4), first and second subparagraphs
Article 18(4), fourth subparagraph	—
Article 18(5), first and second subparagraphs	Article 30(7), first and second subparagraphs
Article 18(5), third subparagraph	Article 30(8), first and second subparagraphs
Article 18(5), fourth subparagraph	Article 30(5), third subparagraph
—	Article 30(6), first subparagraph
Article 18(5), fifth subparagraph	Article 30(6), second subparagraph
Article 18(6), first and second subparagraphs	Article 30(5), first and second subparagraphs
Article 18(6), third subparagraph	—
Article 18(6), fourth subparagraph	Article 30(6), third subparagraph
—	Article 30(6), fourth subparagraph
Article 18(6), fifth subparagraph	Article 30(6), fifth subparagraph
Article 18(7)	Article 30(9), first subparagraph
—	Article 30(9), second subparagraph
Article 18(8) and (9)	—
—	Article 30(10)
Article 19(1), first subparagraph	Article 31(1), first subparagraph
Article 19(1), first subparagraph, points (a), (b) and (c)	Article 31(1), first subparagraph, points (a), (b) and (c)
—	Article 31(1), first subparagraph, point (d)
Article 19(2), (3) and (4)	Article 31(2), (3) and (4)
Article 19(5)	—
Article 19(7), first subparagraph	Article 31(5), first subparagraph
Article 19(7), first subparagraph, first, second third and fourth indents	—
Article 19(7), second and third subparagraphs	Article 31(5), second and third subparagraphs
Article 19(8)	Article 31(6)

Article 20	Article 32
Article 22	—
Article 23(1) and (2)	Article 33(1) and (2)
Article 23(3), (4), (5), (6), (7) and (8)	—
Article 23(9)	Article 33(3)
Article 23(10)	Article 33(4)
Article 24	—
Article 25(1)	Article 34(1)
Article 25(2)	Article 34(2)
Article 25(3)	Article 34(3)
Article 25a(1)	Article 35(1)
Article 25a(2)	Article 35(2) and (3)
Article 25a(3)	Article 35(4)
—	Article 35(5)
Article 25a(4) and (5)	Article 35(6) and (7)
Article 26	—
Article 27	Article 36
—	Article 37
Article 28	Article 38
Article 29	Article 39
Annex I	Annex I
Annex II	Annex II
Annex III	Annex III
Annex IV	Annex IV
Annex V	Annex V
Annex VI	—
—	Annex VI
Annex VII	Annex VII
Annex VIII	Annex VIII
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—	Annex X
—	Annex XI

II. PART

GOVERNANCE ACQUIS

REGULATION (EU) 2018/1999 of 11 December 2018 on the Governance of the Energy Union and Climate Action

Incorporated and adapted by the Ministerial Council Decision 2021/14/MC-EnC of 30 November 2021 on incorporating Regulation (EU) 2018/1999 in the Energy Community acquis communautaire and amending Annex I of the Treaty and amended by the Ministerial Council Decision 2022/02/MC-EnC of 15 December 2022.

The adaptations made by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC are highlighted in **bold and blue**.

CHAPTER 1
General provisions

Article 1
Subject matter and scope

1. This Regulation establishes a governance mechanism to:

(a) implement strategies and measures designed to meet the objectives and targets of the **Contracting Parties** and the **Contracting Parties**' long-term greenhouse gas emissions commitments consistent with the Paris Agreement, and for the first **<…>** period, from **2025** to 2030, in particular the **Energy Community's** 2030 targets for energy and climate;

(b) stimulate cooperation between **Contracting Parties**, **and between Contracting Parties and** Member States **of the European Union**, including, where appropriate, at regional level, designed to achieve the objectives and targets of the **Contracting Parties**;

(c) ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of reporting by the **Contracting Parties** to the UNFCCC and Paris Agreement secretariat;

(d) contribute to greater regulatory certainty as well as contribute to greater investor certainty and help take full advantage of opportunities for economic development, investment stimulation, job creation and social cohesion.

The governance mechanism is based on long-term strategies, integrated national energy and climate plans covering **firstly a period from 2025 to 2030 and thereafter** ten-year periods starting from **2031 to 2040**, corresponding integrated national energy and climate progress reports by the **Contracting Parties** and integrated monitoring arrangements by the **Energy Community Secretariat**. The governance mechanism ensures effective opportunities for the public to participate in the preparation of those national plans and those long-term strategies. It comprises a structured, transparent, iterative process between the **Secretariat** and **Contracting Parties** for the purpose of the finalisation of the integrated national energy and climate plans and their subsequent implementation, including with regard to regional cooperation, and corresponding **Secretariat** action.

2. This Regulation applies to the five dimensions of the Energy Union, which are closely related and mu-

tually reinforcing:

(a) energy security;

(b) internal energy market;

(c) energy efficiency;

(d) decarbonisation; and

(e) research, innovation and competitiveness.

Article 2

Definitions

The following definitions apply:

(1) 'policies and measures' means all instruments which contribute to meeting the objectives of the integrated national energy and climate plans and/or to implement commitments under points (a) and (b) of Article 4(2) of the UNFCCC, which may include those that do not have the limitation and reduction of greenhouse gas emissions or change in the energy system as a primary objective;

(2) 'existing policies and measures' means implemented policies and measures and adopted policies and measures;

(3) 'implemented policies and measures' means policies and measures for which one or more of the following applies at the date of submission of the integrated national energy and climate plan or of the integrated national energy and climate progress report: directly applicable **Energy Community** or national law is in force, one or more voluntary agreements have been established, financial resources have been allocated, human resources have been mobilised;

(4) 'adopted policies and measures' means policies and measures for which an official government decision has been made by the date of submission of the integrated national energy and climate plan or of the integrated national energy and climate progress report and there is a clear commitment to proceed with implementation;

(5) 'planned policies and measures' means options that are under discussion and that have a realistic chance of being adopted and implemented after the date of submission of the integrated national energy and climate plan or of the integrated national energy and climate progress report;

(6) 'system for policies and measures and projections' means a system of institutional, legal and procedural arrangements established for reporting policies and measures and projections relating to anthropogenic emissions by sources and removals by sinks of greenhouse gases and to the energy system, inter alia as required by Article 39;

(7) 'projections' means forecasts of anthropogenic greenhouse gas emissions by sources and removals by sinks or developments of the energy system, including at least quantitative estimates for a sequence of **six** future years ending with 0 or 5 immediately following the reporting year;

(8) 'projections without measures' means projections of anthropogenic greenhouse gas emissions by sources and removals by sinks that exclude the effects of all policies and measures which are planned, adopted or implemented after the year chosen as the starting point for the relevant projection;

(9) 'projections with measures' means projections of anthropogenic greenhouse gas emissions by sources and removals by sinks that encompass the effects, in terms of greenhouse gas emission reductions or developments of the energy system, of policies and measures that have been adopted and implemented;

(10) 'projections with additional measures' means projections of anthropogenic greenhouse gas emissions by sources and removals by sinks or developments of the energy system that encompass the effects, in terms of greenhouse gas emission reductions, of policies and measures which have been adopted and implemented to mitigate climate change or meet energy objectives, as well as policies and measures which are planned for that purpose;

(11) **'the Energy Community 2030 targets for energy and climate', 'the Energy Community 2030 targets' or 'the 2030 targets of the Energy Community' means the value calculated on the basis of the targets adopted for each Contracting Party as follows: a minimum domestic reduction in economy-wide greenhouse gas emissions as compared to 1990 to be achieved by 2030, a minimum share of renewable energy consumed in the Energy Community in 2030, a minimum headline target for improving energy efficiency in 2030, <…> or any subsequent targets <…>.**

(11bis) 'the Energy Community 2030 headline target for energy efficiency' means the target for reduction of primary and/or final energy consumption of the Contracting Parties by 2030, <…> in accordance with Annex XIV of Directive 2012/27/EU, as amended by Directive (EU) 2018/2002 and adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC;

(11cis) 'Energy Community's energy consumption' means the energy consumption of the Contracting Parties <…>;

(12) 'national inventory system' means a system of institutional, legal and procedural arrangements es-tab-lished within a **Contracting Party** for estimating anthropogenic emissions by sources and removals by sinks of greenhouse gases, and for reporting and archiving inventory information;

(13) 'indicator' means a quantitative or qualitative factor or variable that contributes to better understanding progress in implementing;

(14) 'key indicators' mean the indicators for the progress made with regard to the five dimensions of the Energy Union as proposed by the **European** Commission;

(15) 'technical corrections' means adjustments to the national greenhouse gas inventory estimates made in the context of the review carried out pursuant to Article 38 when the submitted inventory data are incom-plete or are prepared in a way that is not consistent with relevant international or **Energy Community** rules or guidelines and that are intended to replace originally submitted estimates;

(16) 'quality assurance' means a planned system of review procedures to ensure that data quality objectives are met and that the best possible estimates and information are reported to support the effectiveness of the quality control programme and to assist **Contracting Parties**;

(17) 'quality control' means a system of routine technical activities to measure and control the quality of the information and estimates compiled with the purpose of ensuring data integrity, correctness and completeness, identifying and addressing errors and omissions, documenting and archiving data and other material used, and recording all quality assurance activities;

(18) 'energy efficiency first' means taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response

initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions;

(19) **<…>**

(20) 'early efforts' means:

(a) in the context of the assessment of a potential gap between the **Contracting Party's reference point in its trajectory and its** 2030 target for energy from renewable sources **<…>** a **Contracting Party's** achievement of a share of energy from renewable sources above its national binding target for 2020 as set out in Annex I to Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**, or a **Contracting Party's** early progress towards its national binding target for 2020;

(b) in the context of **Secretariat** recommendations based on the assessment pursuant to point (b) of Article 29(1) with regard to energy from renewable sources, a **Contracting Party's** early implementation of its **<…> reference point in the trajectory towards its 2030 target <…>**;

(21) 'regional cooperation' means cooperation between two or more **Contracting Parties and/or** Member States **of the European Union** engaged in a partnership covering one or more of the five dimensions of the Energy Union;

(22) 'energy from renewable sources' or 'renewable energy' means energy from renewable sources or renewable energy as defined in point (1) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(23) 'gross final consumption of energy' means gross final consumption of energy as defined in point (4) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(24) 'support scheme' means support scheme as defined in point (5) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(25) 'repowering' means repowering as defined in point (10) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(26) 'renewable **Energy Community**' means renewable **Energy Community** as defined in point (16) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(27) 'district heating' or 'district cooling' means district heating or district cooling as defined in point (19) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(28) 'waste' means waste as defined in point (23) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(29) 'biomass' means biomass as defined in point (24) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(30) 'agricultural biomass' means agricultural biomass as defined in point (25) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(31) 'forest biomass' means forest biomass as defined in point (26) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(32) 'biomass fuels' means biomass fuels as defined in point (27) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(33) 'biogas' means biogas as defined in point (28) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(34) 'bioliquids' means bioliquids as defined in point (32) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(35) 'biofuels' means biofuels as defined in point (33) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(36) 'advanced biofuels' means advanced biofuels as defined in point (34) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(37) 'recycled carbon fuels' means recycled carbon fuels as defined in point (35) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(38) 'starch-rich crops' means starch-rich crops as defined in point (39) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(39) 'food and feed crops' means food and feed crops as defined in point (40) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(40) 'ligno-cellulosic material' means ligno-cellulosic material as defined in point (41) of Article 2 of Direc-tive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(41) 'residue' means residue as defined in point (43) of Article 2 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(42) 'primary energy consumption' means primary energy consumption as defined in point (2) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(43) 'final energy consumption' means final energy consumption as defined in point (3) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(44) 'energy efficiency' means energy efficiency as defined in point (4) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/ MC-EnC and 2022/02/MC-EnC**;

(45) 'energy savings' means energy savings as defined in point (5) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(46) 'energy efficiency improvement' means energy efficiency improvement as defined in point (6) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(47) 'energy service' means energy service as defined in point (7) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/ MC-EnC and 2022/02/MC-EnC**;

(48) 'total useful floor area' means total useful floor area as defined in point (10) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(49) 'energy management system' means energy management system as defined in point (11) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(50) 'obligated party' means obligated party as defined in point (14) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(51) 'implementing public authority' means implementing public authority as defined in point (17) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(52) 'individual action' means individual action as defined in point (19) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/ MC-EnC and 2022/02/MC-EnC**;

(53) 'energy distributor' means energy distributor as defined in point (20) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/ MC-EnC and 2022/02/MC-EnC**;

(54) 'distribution system operator' means 'distribution system operator' as defined in point (6) of Article 2 of Directive 2009/72/EC **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC** and in point (6) of Article 2 of Directive 2009/73/EC, **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC**;

(55) 'retail energy sales company' means retail energy sales company as defined in point (22) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(56) 'energy service provider' means energy service provider as defined in point (24) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(57) 'energy performance contracting' means energy performance contracting as defined in point (27) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(58) 'cogeneration' means cogeneration as defined in point (30) of Article 2 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(59) 'building' means a building as defined in point (1) of Article 2 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(60) 'nearly zero-energy building' means a nearly zero-energy building as defined in point (2) of Article 2 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(61) 'heat pump' means heat pump as defined in point (18) of Article 2 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(62) 'fossil fuel' means non-renewable carbon-based energy sources such as solid fuels, natural gas and oil.

CHAPTER 2
INTEGRATED NATIONAL ENERGY AND CLIMATE PLANS

Article 3

Integrated national energy and climate plans

1. By **30 June 2024**, and subsequently by 1 January 2029 and every ten years thereafter, each **Contracting Party** shall notify to the **Secretariat** an integrated national energy and climate plan. The plans shall contain the elements set out in paragraph 2 of this Article and in Annex I. The first plan shall cover the period from **2025** to 2030, taking into account the longer term perspective. The subsequent plans shall cover the ten-year period immediately following the end of the period covered by the previous plan.

2. The integrated national energy and climate plans shall consist of the following main sections:

(a) an overview of the process followed for establishing the integrated national energy and climate plan consisting of an executive summary, a description of the public consultation and involvement of stakeholders and their results, and of regional cooperation with other **Contracting Parties** in preparing the plan, as established in Articles 10, 11 and 12 and in point 1 of Section A of Part I of Annex I;

(b) a description of national objectives, targets and contributions relating to the dimensions of the Energy Union, as set out in Article 4 and Annex I;

(c) a description of the planned policies and measures in relation to the corresponding objectives, targets and contributions set out under point (b) as well as a general overview of the investment needed to meet the corresponding objectives, targets and contributions;

(d) a description of the current situation of the five dimensions of the Energy Union, including with regard to the energy system and greenhouse gas emissions and removals as well as projections with regard to the objectives referred to in point (b) with already existing policies and measures;

(e) where applicable, a description of the regulatory and non-regulatory barriers and hurdles to delivering the objectives, targets or contributions related to renewable energy and energy efficiency;

(f) an assessment of the impacts of the planned policies and measures to meet the objectives referred to in point (b) **of this paragraph**, including their consistency with the long-term greenhouse gas emission reduction objectives under the Paris Agreement and the long-term strategies as referred to in Article 15;

(g) a general assessment of the impacts of the planned policies and measures on competitive-ness linked

to the five dimensions of the Energy Union;

(h) an annex, drawn up in accordance with the requirements and structure laid down in Annex III to this Regulation, setting out the **Contracting Party's** methodologies and policy measures for achieving the energy savings requirement in accordance with Article 7 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** and Annex V thereto.

3. With regard to their integrated national energy and climate plans, **Contracting Parties** shall:

(a) limit administrative complexity and costs for all relevant stakeholders;

(b) take into account the interlinkages between the five dimensions of the Energy Union, in particular the energy efficiency first principle;

(c) use robust and consistent data and assumptions across the five dimensions where relevant;

(d) assess the number of households in energy poverty taking into account the necessary domestic energy services needed to guarantee basic standards of living in the relevant national context, existing social policy and other relevant policies, as well as indicative **European** Commission guidance on relevant indicators for energy poverty, **as adapted for the Energy Community by the Energy Community Secretariat**.

In the event that a **Contracting Party** finds, pursuant to point (d) of the first subparagraph, that it has a significant number of households in energy poverty, on the basis of its assessment of verifiable data, it shall include in its plan a national indicative objective to reduce energy poverty. The **Contracting Parties** concerned shall outline in their integrated national energy and climate plans, the policies and measures, which address energy poverty, if any, including social policy measures and other relevant national programmes.

4. Each **Contracting Party** shall make its integrated national energy and climate plan submitted to the **Secretariat** pursuant to this Article publicly available.

5. **The Secretariat shall inform the Permanent High Level Group about any delegated acts adopted pursuant to Article 3(5) of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.**

Article 4

National objectives, targets and contributions for the five dimensions of the Energy Union

Each **Contracting Party** shall set out in its integrated national energy and climate plan the following main objectives, targets and contributions, as specified in point 2 of section A of Annex I:

(a) *as regards the dimension 'Decarbonisation':*

(1) with respect to greenhouse gas emissions and removals and with a view to contributing to the achievement of the economy wide **Contracting Parties'** greenhouse gas emission reduction target:

(i) **the Contracting Party's binding national target for greenhouse gas emissions <…> in accordance with Annex XIV of this Regulation;**

(ii) **<…>;**

(iii) where applicable to meet the objectives **<…>** of the Energy Union, the **targets of the Contracting Parties** and the **Contracting Party's** long-term greenhouse gas emissions commitments consistent with the Paris Agreement, other objectives and targets, including sector targets and adaptation goals.

(2) with respect to renewable energy:

With a view to achieving the **Contracting Parties**' **economy-wide target of the relevant share** of renewable energy in 2030 a contribution to that target in terms of **each Contracting Party**'s share of energy from renewable sources in gross final consumption of energy in 2030 **not lower than the share set by Part A of Annex I to Directive (EU) 2018/2001, as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** with an indicative trajectory for that contribution from **2025** onwards. **<…>** By 2027, the indicative trajectory shall reach a reference point of at least 65 of the total increase in the share of energy from renewable sources between that **Contracting Party** binding 2020 national target and its contribution to the 2030 target.

By 2030, the indicative trajectory shall reach at least the **Contracting Party 's** planned contribution. If a **Contracting Party** expects to surpass its binding 2020 national target, its indicative trajectory may start at the level it is projected to achieve. The **Contracting Parties'** indicative trajectories, taken together, shall add up to the **Contracting Parties**' reference point in 2027 and to the **Contracting Parties**' target of renewable energy in 2030. Separately from its contribution to the **Contracting Parties**' target and its indicative trajectory for the purposes of this Regulation, **each Contracting Party** shall be free to indicate higher ambitions for national policy purposes;

(b) *as regards the dimension 'Energy Efficiency':*

(1) the indicative national energy efficiency contribution to achieving the **Energy Community 2030 headline target for energy efficiency** as referred to in Article 1(1) and Article 3(5) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**, based on either primary or final energy consumption, primary or final energy savings, or energy intensity.

Contracting Parties shall express their contribution in terms of absolute level of primary energy consump-tion and final energy consumption in 2020, and in terms of absolute level of primary energy consumption and final energy consumption in 2030, with an indicative trajectory for that contribution from **2025** onwards. They shall explain their underlying methodology and the conversion factors used;

(2) the cumulative amount of end-use energy savings to be achieved over the period **2025**-2030 under point (b) of Article 7(1) on the energy saving obligations pursuant to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(3) the indicative milestones of the long-term strategy for the renovation of the national stock of residential and non-residential buildings, both public and private, the roadmap with domestically established measurable progress indicators, an evidence-based estimate of expected energy savings and wider benefits, and the contributions to the **Energy Community**'**s** energy efficiency **2030** target pursuant to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with Article 2a of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC;**

(4) the total floor area to be renovated or equivalent annual energy savings to be achieved from **2025** to 2030 under Article 5 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council**

Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC on the exemplary role of public bodies' buildings;

(c) *as regards the dimension 'Energy Security':*

(1) national objectives with regard to:

- increasing the diversification of energy sources and supply from third countries, the purpose of which may be to reduce energy import dependency,

- increasing the flexibility of the national energy system, and

- addressing constrained or interrupted supply of an energy source, for the purpose of improving the resilience of regional and national energy systems, including a timeframe for when the objectives should be met;

(d) *as regards the dimension 'Internal Energy Market':*

(1) the level of electricity interconnectivity that the **Contracting Party** aims for in 2030 **<…> <…>**, with a strategy with the level from **2025** onwards defined in close cooperation with the **Contracting Parties** and Member States **of the European Union** affected, taking into account **<…>** the indicators of the urgency of action based on price differential in the wholesale market, nominal transmission capacity of interconnectors in relation to peak load and to installed renewable generation capacity as set out in point 2.4.1 of Section A of Part I of Annex I. Each new interconnector shall be subject to a socioeconomic and environmental cost-benefit analysis and implemented only if the potential benefits outweigh the costs;

(2) key electricity and gas transmission infrastructure projects, and, where relevant, modernisation projects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union;

(3) national objectives related to other aspects of the internal energy market such as: increasing system flexibility, in particular through policies and measures related to market-based price formation in compliance with applicable law; market integration and coupling, aiming to increase the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment and real-time price signals, including a timeframe for when the objectives should be met, and other national objectives related to the internal energy market as set out in point 2.4.3 of Section A of Part 1 of Annex I;

(e) *as regards the dimension 'Research, Innovation and Competitiveness':*

(1) national objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union, including, where appropriate, a timeframe for when the objectives should be met; reflecting the priorities of the Energy Union Strategy **<…>**. In setting out its objectives, targets and contributions, the **Contracting Party** may build upon existing national strategies or plans that are compatible with **Energy Community** law;

(2) where available, national 2050 objectives related to the promotion of clean energy technologies.

Article 5

Contracting Parties' contribution setting process in the area of renewable energy

1. In its contribution for its share of energy from renewable sources in gross final consumption of energy in 2030 and the last year of the period covered for the subsequent national plans, pursuant to point (a)(2) of Article 4, each **Contracting Party** shall take into account all of the following:

(a) the measures provided for in Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(b) the measures adopted to reach **its** energy efficiency target adopted pursuant to Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC;**

(c) any other existing measures to promote renewable energy within the **Contracting Party** and, where relevant, at **Energy Community** level;

(d) the binding 2020 national target of energy from renewable sources in its gross final consumption of energy set out in Annex I to Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(e) any relevant circumstances affecting renewable energy deployment, such as:

(i) equitable distribution of deployment across the **Energy Community**;

(ii) economic conditions and potential, including GDP per capita; potential for cost-effective renewable energy deployment;

(iii) geographical, environmental and natural constraints, including those of non-interconnected areas and regions;

(iv) the level of power interconnection between **Contracting Parties and between Contracting Parties and** Member States **of the European Union**;

(v) other relevant circumstances, in particular early efforts.

With regard to point (e) of the first subparagraph, each **Contracting Party** shall indicate in its integrated national energy and climate plan which relevant circumstances affecting renewable energy deployment it has taken into account.

2. **Contracting Parties** shall **<…>** ensure that the sum of their contributions amounts to **a target of energy from renewable sources in gross final energy consumption at Energy Community level by 2030.**

Article 6

Contracting Parties' contribution setting process in the area of energy efficiency

1. In its indicative national energy efficiency contribution for 2030 and for the last year of the period covered for the subsequent national plans pursuant to point (b)(1) of Article 4, each **Contracting Party** shall take into account that, in accordance with Article 3 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**,

the **Energy Community's energy consumption in 2020** is to be no more than **187** Mtoe of primary energy or no more than **137** Mtoe of final energy and **Energy Community's energy consumption** in 2030 is to be no more than **a quantity of** Mtoe of primary energy and/or no more than **a quantity of** Mtoe of final energy **in accordance with Annex XIV of Directive 2012/27/EU, as amended by Directive (EU) 2018/2002 and adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC.** In addition, each **Contracting Party** shall take into account:

(a) the measures provided for in Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(b) other measures to promote energy efficiency within the **Contracting Party** and at **Energy Community** level.

2. In its contribution referred to in paragraph 1, each **Contracting Party** may take into account national circumstances affecting primary and final energy consumption, such as:

(a) remaining cost-effective energy-saving potential;

(b) evolution and forecast of gross domestic product;

(c) changes of energy imports and exports;

(d) changes in the energy mix and the development of carbon capture and storage; and

(e) early actions.

With regard to the first subparagraph, each **Contracting Party** shall indicate in its integrated national energy and climate plan which relevant circumstances affecting primary and final energy consumption it has taken into account, if any.

Article 7

National policies and measures for each of the five dimensions of the Energy Union

Contracting Parties shall describe, in accordance with Annex I, in their integrated national energy and climate plan, the main existing and planned policies and measures to achieve in particular the objectives set out in the national plan, including, where applicable, measures providing for regional cooperation and appropriate financing at national and regional level, including mobilisation of **programmes and instruments by international financial organisations.**

Contracting Parties shall provide a general overview of the investment needed to achieve the objectives, targets and contributions set out in the national plan, as well as a general assessment on the sources of that investment.

Article 8

Analytical basis of the integrated national energy and climate plans

1. **Contracting Parties** shall describe, in accordance with the structure and format specified in Annex I, the current situation for each of the five dimensions of the Energy Union, including of the energy system and greenhouse gas emissions and removals at the time of submission of the integrated national energy

and climate plan or on the basis of the latest available information. **Contracting Parties** shall also set out and describe projections for each of the five dimensions of the Energy Union, for at least the duration of that plan, expected to result from existing policies and measures. **Contracting Parties** shall endeavour to describe additional longer term perspectives for the five dimensions beyond the duration of the integrated national energy and climate plan, where relevant and possible.

2. **Contracting Parties** shall describe in their integrated national energy and climate plan their assessment, at national and, where applicable, regional level, of:

(a) the impacts on the development of the energy system and greenhouse gas emissions and removals for the duration of the plan and for a period of ten years following the latest year covered by the plan, under the planned policies and measures or groups of measures, including a comparison with the projections based on existing policies and measures or groups of measures as referred to in paragraph 1;

(b) the macroeconomic and, to the extent feasible, the health, environmental, skills and social impact of the planned policies and measures or groups of measures referred to in Article 7 and further specified in Annex I, for the first ten-year period at least until the year 2030, including a comparison with the projections based on existing policies and measures or groups of measures as referred to in paragraph 1 of this Article. The methodology used to assess those impacts shall be made public;

(c) interactions between existing policies and measures or groups of measures and planned policies and measures or groups of measures within a policy dimension and between existing policies and measures or groups of measures and planned policies and measures or groups of measures of different dimensions for the first ten-year period at least until the year 2030. Projections concerning security of supply, infrastructure and market integration shall be linked to robust energy efficiency scenarios;

(d) the manner in which existing policies and measures and planned policies and measures are to attract the investment necessary for their implementation.

3. **Contracting Parties** shall make available to the public comprehensive information concerning the assumptions, parameters and methodologies used for the final scenarios and projections, taking into account statistical restrictions, commercially sensitive data, and compliance with the data protection rules.

Article 9

Draft integrated national energy and climate plans

1. By **30 June 2023**, and subsequently by 1 January 2028 and every ten years thereafter, each **Contracting Party** shall prepare and submit to the **Secretariat** a draft of the integrated national energy and climate plan in accordance with Article 3(1) and Annex I.

2. The **Secretariat** shall assess the draft integrated national energy and climate plans and may issue country-specific recommendations to **Contracting Parties** in accordance with Article 34 no later than six months before the deadline for submitting those integrated national energy and climate plans. Those recommendations may, in particular address:

(a) the level of ambition of objectives, targets and contributions with a view to **<…>** achieving the Energy Union objectives and, in particular, the **Energy Community**'s 2030 targets for renewable energy and energy efficiency as well as the level of electricity interconnectivity that the **Contracting Party** aims for in 2030 as referred to in point (d) of Article 4, taking due account of relevant circumstances affecting

the deployment of renewable energy and energy consumption, as indicated by the **Contracting Party** concerned in the draft integrated national energy and climate plan and the indicators of the urgency of action for interconnectivity established in point 2.4.1 of Section A of Part 1 of Annex I;

(b) policies and measures relating to **Contracting Party** - and **Energy Community**-level objectives and other policies and measures of potential cross-border relevance;

(c) any additional policies and measures that might be required in the integrated national energy and climate plans;

(d) interactions between and consistency of existing and planned policies and measures included in the integrated national energy and climate plan within one dimension and among different dimensions of the Energy Union.

3. Each **Contracting Party** shall take due account of any recommendations from the **Secretariat** in its integrated national energy and climate plan. If the **Contracting Party** concerned does not address a recommendation or a substantial part thereof, that **Contracting Party** shall provide and make public its reasons.

4. In the context of the public consultation as referred to in Article 10, each **Contracting Party** shall make available to the public its draft integrated national energy and climate plan.

Article 10

Public consultation

Without prejudice to any other **Energy Community** law requirements, each **Contracting Party** shall ensure that the public is given early and effective opportunities to participate in the preparation of the draft integrated national energy and climate plan — as regards the plans for the **2025** to 2030 period, in the preparation of the final plan well before its adoption — as well as of the long-term strategies referred to in Article 15. Each **Contracting Party** shall attach to the submission of such documents to the **Secretariat** a summary of the public's views or provisional views. In so far as Directive 2001/42/EC, **as adapted and adopted by Ministerial Council Decision 2016/13/MC-EnC** is applicable, consultations undertaken on the draft in accordance with that Directive shall be deemed to satisfy the obligations to consult the public under this Regulation.

Each **Contracting Party** shall ensure that the public is informed. Each **Contracting Party** shall set reason-able timeframes allowing sufficient time for the public to be informed, to participate and express its views.

Each **Contracting Party** shall limit administrative complexity when implementing this Article.

Article 11

Multilevel climate and energy dialogue

Each **Contracting Party** shall establish a multilevel climate and energy dialogue pursuant to national rules, in which local authorities, civil society organisations, business community, investors and other relevant stakeholders and the general public are able actively to engage and discuss the different scenarios envisaged for energy and climate policies, including for the long term, and review progress, unless it already has a

structure which serves the same purpose. Integrated national energy and climate plans may be discussed within the framework of such a dialogue.

Article 12

Regional cooperation

1. **Contracting Parties** shall cooperate with each other **and with Member States of the European Union**, taking account of all existing and potential forms of regional cooperation, to meet the objectives, targets and contributions set out in their integrated national energy and climate plan effectively.

2. Each **Contracting Party** shall, well before submitting its draft integrated national energy and climate plan to the **Energy Community Secretariat** pursuant to Article 9(1) — as regards the plans for the **2025** to 2030 period, in the preparation of the final plan well before its adoption — identify opportunities for regional cooperation and consult neighbouring **Contracting Parties and** Member States **of the European Union**, including in the **Energy and Climate Committee and** regional cooperation fora. If deemed **<…>** appropriate by the **Contracting Party** authoring the plan, that **Contracting Party** may consult other **Contracting Parties,** Member States **of the European Union** or third countries that have expressed an interest. **Contracting Parties** without energy interconnections to other **Contracting Parties and** Member States **of the European Union** shall carry out such consultations with neighbouring **Contracting Parties and** Member States **of the European Union** with maritime borders. The **Contracting Parties and** Member States **of the European Union** consulted should be given a reasonable time within which to react. Each **Contracting Party** shall set out in its draft integrated national energy and climate plan — as regards the plans for the **2025**-2030 period, in its final national energy and climate plan — at least the provisional results of such regional consultations, including, where applicable, how the comments of the **Contracting Parties**, Member States **of the European Union** or third countries consulted have been taken into account.

3. **Contracting Parties** may engage in voluntary joint drafting of parts of their integrated national energy and climate plans and progress reports, including in **the Energy and Climate Committee and** regional cooperation fora. If they do so, the result shall replace the equivalent parts of their integrated national energy and climate plan and progress reports. Upon a request by two or more **Contracting Parties**, the **Secretariat** shall facilitate that exercise.

4. In order to facilitate market integration and cost-efficient policies and measures, **Contracting Parties** shall, in the period between the deadline for submission of their draft integrated national energy and climate plans and the deadline for submission of their final plans, present the relevant parts of their draft integrated national energy and climate plan in **the Energy and Climate Committee and** relevant regional cooperation fora with a view to their finalisation. Where necessary, the **Secretariat** shall facilitate such cooperation and consultation among the **Contracting Parties**, and if it identifies opportunities for further regional cooperation, it may provide **Contracting Parties** with indicative guidance in order to facilitate the effective cooperation and consultation process.

5. **Contracting Parties** shall consider the comments received from other **Contracting Parties and** Member States **of the European Union** pursuant to paragraphs 2 and 3 in their final integrated national energy and climate plan, and explain in those plans how such comments have been considered.

6. For the purposes referred to in paragraph 1, **Contracting Parties** shall continue to cooperate at regional level, and, as appropriate, in **the Energy and Climate Committee and** regional cooperation fora, when implementing the relevant policies and measures of their integrated national energy and climate plans.

7. **<…>**

8. In so far as the provisions of Directive 2001/42/EC, **as adapted and adopted by Ministerial Council Decision 2016/13/MC-EnC** are applicable, transboundary consultation undertaken on the draft in accordance with Article 7 of that Directive shall be deemed to satisfy the obligations on regional cooperation pursuant to this Regulation, provided that the requirements of this Article are complied with.

Article 13

Assessment of the integrated national energy and climate plans

On the basis of the integrated national energy and climate plans and their updates as notified pursuant to Articles 3 and 14, the **Secretariat** shall assess, in particular, whether:

(a) the objectives, targets and contributions are sufficient for the achievement of the Energy Union objectives and, for the first **five**-year period in particular, the **Energy Community's** 2030 **targets;**

(b) the plans comply with requirements of Articles 3 to 12 and **Contracting Parties** have taken due account of the **Secretariat** recommendations issued pursuant to Article 34.

Article 14

Update of the integrated national energy and climate plan

1. By **<…>** 1 January 2033 and **subsequently** every 10 years thereafter, each **Contracting Party** shall submit to the **Secretariat** a draft update of the latest notified integrated national energy and climate plan or shall provide the **Secretariat** with reasons justifying why the plan does not require updating.

2. By **<…>** 1 January 2034 and **subsequently** every 10 years thereafter, each **Contracting Party** shall submit to the **Secretariat** an update of its latest notified integrated national energy and climate plan, unless they have provided reasons why the plan does not require updating pursuant to paragraph 1.

3. In the update referred to in paragraph 2, each **Contracting Party** shall modify its national objective, target or contribution with regard to any of the quantified **Contracting Parties'** objectives, targets or contributions set out in point (a)(1) of Article 4 in order to reflect an increased ambition as compared to that set out in its latest notified integrated national energy and climate plan. In the update referred to in paragraph 2, each **Contracting Party** shall modify its national objective, target, or contribution with regard to any of the quantified **Contracting Parties'** objectives, targets or contributions set out in points (a)(2) and (b) of Article 4 only in order to reflect an equal or increased ambition as compared to that set out in its latest notified integrated national energy and climate plan.

4. **Contracting Parties** shall make efforts to mitigate in their updated integrated national energy and climate plan any adverse environmental impacts that become apparent as part of the integrated reporting pursuant to Articles 17 to 25.

5. In its updates referred to in paragraph 2, **Contracting Parties** shall take into consideration **<…>** obligations deriving from the Paris Agreement.

6. The procedures laid down in Article 9(2) and Articles 10 and 12 shall apply to the preparation and assessment of the updated integrated national energy and climate plans.

7. This Article is without prejudice to the right of **Contracting Parties** to make changes and adaptations in national policies set out or referred to in their integrated national energy and climate plans at any time, provided such changes and adaptations are included in the integrated national energy and climate progress report.

CHAPTER 3
LONG-TERM STRATEGIES

Article 15
Long-term strategies

1. By **the time this Regulation comes into force**, and subsequently by 1 January 2029 and every 10 years thereafter, each **Contracting Party** shall prepare and submit to the **Secretariat** its long-term strategy with a 30 years **perspective and consistent with the Energy Community's climate-neutrality objective. Contracting Parties** should, where necessary, update those strategies every five years.

2. **<…>**

3. The **Contracting Parties**' **<…>** strategies shall contribute to:

(a) fulfilling the **<…> Contracting Parties**' commitments under the UNFCCC and the Paris Agreement to reduce anthropogenic greenhouse gas emissions and enhance removals by sinks and to promote increased carbon sequestration;

(b) fulfilling the objective of the Paris Agreement of holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1,5 °C above pre-industrial levels;

(c) achieving long-term greenhouse gas emission reductions and enhancements of removals by sinks in all sectors in accordance with the **Energy Community's objective**, in the context of necessary reduc-tions **and enhancements of removals by sinks** according to the Intergovernmental Panel on Climate Change (IPCC) to reduce the **Contracting Parties**' greenhouse gas emissions in a cost-effective manner and enhance removals by sinks in pursuit of the **long-term** temperature goals in the Paris Agreement so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases within the **Energy Community <…>** and, as appropriate, achieve negative emissions thereafter;

(d) a highly energy efficient and highly renewables-based energy system within the **Energy Community**.

4. **Contracting Parties** ' long-term strategies should contain the elements set out in Annex IV. Further-more, the **Contracting Parties**' **<…>** long-term strategies shall cover:

(a) total greenhouse gas emission reductions and enhancements of removals by sinks;

(b) emission reductions and enhancements of removals in individual sectors, including electricity, industry,

transport, the heating and cooling and buildings sector (residential and tertiary), agriculture, waste and land use, land-use change and forestry (LULUCF);

(c) expected progress on transition to a low greenhouse gas emission economy, including greenhouse gas intensity, CO_2 intensity of gross domestic product, related estimates of long-term investment, and strategies for related research, development and innovation;

(d) to the extent feasible, expected socio-economic effect of the decarbonisation measures, including, inter alia, aspects related to macro-economic and social development, health risks and benefits and en-vironmental protection;

(e) links to other national long-term objectives, planning and other policies and measures, and investment.

5. **The Secretariat shall inform the Permanent High Level Group about any delegated acts adopted pursuant to Article 15 paragraph 5 of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant delegated acts into the Energy Community acquis.**

6. The integrated national energy and climate plans shall be consistent with the long-term strategies referred to in this Article.

7. **Contracting Parties** shall inform and make available to the public forthwith their respective long-term strategies and any updates thereof, including by means of the **dedicated section of the Energy Community e-platform** referred in Article 28. **Contracting Parties** shall make relevant data of the final results available to the public, taking into account commercially sensitive data and compliance withthe data protection rules.

8. The **Secretariat** shall support **Contracting Parties** in the preparation of their long-term strategies by providing information on the state of the underlying scientific knowledge and opportunities for sharing knowledge and best practices, including, where relevant, guidance for **Contracting Parties** during the development and implementation phase of their strategies.

9. The **Energy Community Secretariat** shall assess whether the national long-term strategies are adequate for the achievement of the objectives **<…>** of the Energy Union **and the targets of the Energy Community** set out in Article 1 and shall provide information on any remaining gap.

Article 16

Strategic plan for methane

Given the high global warming potential and relatively short atmospheric lifetime of methane, the purpose of reducing the short- and middle-term impact of methane emissions on **Contracting Parties**' greenhouse gas emissions, **as well as t**aking into account the circular economy objectives as appropriate, the **Contracting Parties assisted by the Energy Community Secretariat** shall consider policy options for rapidly addressing methane emissions and shall put forward **a strategic plan for methane at Energy Community level**.

CHAPTER 4
REPORTING

Section 1
Biennial progress reports and their follow up

Article 17
Integrated national energy and climate progress reports

1. Without prejudice to Article 26, **by 15 March 2025**, and every two years thereafter, each **Contracting Party** shall report to the **Secretariat** on the status of implementation of its integrated national energy and climate plan by means of an integrated national energy and climate progress report covering all five dimensions of the Energy Union.

2. The integrated national energy and climate progress report shall cover the following elements:

(a) information on the progress accomplished towards reaching the objectives, **including progress towards the Energy Community's climate-neutrality objective**, targets and contributions set out in the integrated national energy and climate plan, and towards financing and implementing the policies and measures necessary to meet them, including a review of actual investment against initial investment assumptions;

(b) where applicable, information on the progress in establishing the dialogue referred to in Article 11;

(c) the information referred to in Articles 20 to 25 and, where appropriate, updates on policies and measures, in accordance with those articles;

(d) information on adaptation in accordance with point (a)(1) of Article 4;

(e) as far as possible quantification of the impact of the policies and measures in the integrated national energy and climate plan on air quality and on emissions of air pollutants.

<...>

3. The integrated national energy and climate progress report shall cover the information contained in the annual reports referred to in Article 26(3) and the information on policies and measures and projections of anthropogenic greenhouse gas emissions by sources and removals by sinks contained in the reports referred to in Article 18.

4. **The Secretariat shall inform the Permanent High Level Group about any implementing acts adopted pursuant to Article 17(4) of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

5. The frequency and scale of the information and updates referred to in point (c) of paragraph 2 shall be balanced against the need to ensure sufficient certainty for investors.

6. Where the **Secretariat** has issued recommendations pursuant to Article 32(1) or (2), the **Contracting Party** concerned shall include in its integrated national energy and climate progress report information on

the policies and measures adopted, or intended to be adopted and implemented, to address those rec-ommendations. Where applicable, such information shall include a detailed timetable for implementation.

Where the **Contracting Party** concerned decides not to address a recommendation or a substantial part thereof, it shall provide its reasoning.

7. **Contracting Parties** shall make available to the public the reports submitted to the **Secretariat** pursuant to this Article.

Article 18

Integrated reporting on greenhouse gas policies and measures and on projections

1. <…> Contracting Parties shall report to the **Secretariat** information on:

(a) their national policies and measures or group of measures as set out in Annex VI **by 15 March 2023 and every two years thereafter**, and

(b) their national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks, organised by gas or group of gases (Hydrofluorocarbons and Perfluorocarbons) listed in Part 2 of Annex V, **by 15 March 2025 and every two years thereafter**. National projections shall take into consider-ation any policies and measures adopted at **Energy Community** level and shall include the information set out in Annex VII.

2. Contracting Parties shall report the most up-to-date projections available. Where a **Contracting Party** does not submit complete projection estimates by 15 March every second year, and the **Secretar-iat** has established that gaps in the estimates cannot be filled by that **Contracting Party** once identified through the **Secretariat's** quality assurance or quality control procedures, the **Secretariat** may prepare estimates as required to compile **Contracting Parties'** projections, in consultation with the **Contracting Party** concerned.

3. A **Contracting Party** shall communicate to the **Secretariat** any substantial changes to the information reported pursuant to paragraph 1 during the first year of the reporting period, by 15 March of the year following the previous report.

4. **Contracting Parties** shall make available to the public, in electronic form, their national projections pur-suant to paragraph 1 and any relevant assessment of the costs and effects of national policies and measures on the implementation of **Contracting Parties'** policies relevant for limiting greenhouse gas emissions along with any relevant underpinning technical reports. Those projections and assessments should include descriptions of the models and methodological approaches used, definitions and underlying assumptions.

Article 19

Integrated reporting on national adaptation actions, financial and technology support provided to developing countries and carbon price revenues

1. By 15 March **2023**, and every two years thereafter, **Contracting Parties** shall report to the **Secre-tariat** information on their national climate change adaptation planning and strategies, outlining their implement-

ed and planned actions to facilitate adaptation to climate change, including the information specified in Part 1 of Annex VIII and in accordance with the reporting requirements agreed upon under the UNFCCC and the Paris Agreement.

2. By 31 July **2023** and every year thereafter (year X), **Contracting Parties** shall report to the **Energy Community Secretariat** information on the use of **any** revenues generated by the **Contracting Party from carbon price mechanisms**, including the information specified in Part 3 of Annex VIII.

3. By 30 September **2025** and every year thereafter (year X), **Contracting Parties** shall report to the **Secretariat** information on support to developing countries, including the information specified in Part 2 of Annex VIII and in accordance with the relevant reporting requirements agreed upon under the UNFCCC and the Paris Agreement.

4. **Contracting Parties** shall make available to the public the reports submitted to the **Secretariat** pursuant to this Article, with the exception of the information specified in point (b) of Part 2 of Annex VIII.

5. **The Secretariat shall inform the Permanent High Level Group about any implementing acts adopted pursuant to Article 19(5) of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

Article 20

Integrated reporting on renewable energy

Contracting Parties shall include in the integrated national energy and climate progress reports information:

(a) *on the implementation of the following trajectories and objectives:*

(1) indicative national trajectory for the overall share of renewable energy in gross final energy consumption from **2025** to 2030;

(2) estimated trajectories for the sectoral share of renewable energy in final energy consumption from **2025** to 2030 in the electricity, heating and cooling and transport sector;

(3) estimated trajectories per renewable energy technology to achieve the overall and sectoral trajectories for renewable energy from **2025** to 2030, including total expected gross final energy consumption per technology and sector in Mtoe and total planned installed capacity per technology and sector in MW;

(4) trajectories on bioenergy demand, disaggregated between heat, electricity and transport, and on biomass supply, by feedstock and origin (distinguishing between domestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink;

(5) where applicable, other national trajectories and objectives, including those that are long-term and sectoral (such as share of electricity produced from biomass without the utilisation of heat, share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, renewable energy communities and renewables self-consumers), energy recovered from the sludge acquired through the treatment of wastewater;

(b) *on the implementation of the following policies and measures:*

(1) implemented, adopted and planned policies and measures to achieve the national contribution to the 2030 **<…> Energy Community** target for renewable energy as indicated in point (a)(2) of Article 4 of this Regulation, including sector- and technology-specific measures, with a specific review of the implementa-tion of measures laid down in Articles 23 to 28 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(2) where available, specific measures for regional cooperation;

(3) without prejudice to **Articles 18 and 19 of the Energy Community Treaty**, specific measures on financial support, **<…>** for the promotion of the use of energy from renewable sources in electricity, heating and cooling, and transport;

(4) when applicable, the assessment of the support for electricity from renewable sources that **Contracting Parties** are to carry out pursuant to Article 6(4) of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(5) specific measures to fulfil the requirements of Articles 15 to 18 of Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(6) where applicable, specific measures to assess, make transparent and reduce the need for must-run capacity that can lead to curtailment of energy from renewable sources;

(7) a summary of the policies and measures under the enabling framework **Contracting Parties** are to put in place pursuant to Article 21(6) and Article 22(5) of Directive (EU) 2018/2001**, as adapted and ad-opted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** to promote and facilitate the development of renewables self-consumption and renewable energy communities;

(8) measures promoting the use of energy from biomass, especially for new biomass mobilisation taking into account biomass, including sustainable biomass availability as well as measures for the sustainability of biomass produced and used;

(9) measures in place to increase the share of renewable energy in the heating and cooling and transport sector;

(10) policies and measures facilitating the uptake of power purchase agreements;

(c) *as set out in Part 1 of Annex IX.*

Article 21

Integrated reporting on energy efficiency

Contracting Parties shall include in the integrated national energy and climate progress reports information:

(a) on the implementation of the following national trajectories, objectives and targets:

(1) the indicative trajectory for primary and final annual energy consumption from **2025** to 2030 as the national energy savings contribution to achieving the **Energy Community**-level 2030 target, including the underlying methodology;

(2) the indicative milestones of the long-term strategy for the renovation of the national stock of resi-dential and non-residential buildings, both public and private, and the contributions to the **Contracting Par-**

ties'energy efficiency targets pursuant to Directive 2012/27/EU, **as adapted and adopted by Min-isterial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with Article 2a of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(3) where applicable, an update of other national objectives set out in the national plan;

(b) *on the implementation of the following policies and measures:*

(1) implemented, adopted and planned policies, measures and programmes to achieve the indicative na-tional energy efficiency contribution for 2030 as well as other objectives referred to in Article 6, includ-ing planned measures and instruments (also of a financial nature) to promote the energy performance of buildings, measures to utilise energy efficiency potentials of gas and electricity infrastructure and other measures to promote energy efficiency;

(2) where applicable, market-based instruments that incentivise energy efficiency improvements, including but not limited to energy taxes, levies and allowances;

(3) national energy efficiency obligation scheme and alternative measures pursuant to Article 7a and 7b of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** and in accordance with Annex III to this Regulation;

(4) long-term renovation strategies in accordance with Article 2a of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(5) policy and measures to promote energy services in the public sector and measures to remove regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models;

(6) regional cooperation in the area of energy efficiency, where applicable;

(7) without prejudice to Articles **18 and 19 of the Energy Community Treaty**, financing measures, **<…>** in the area of energy efficiency at national level, where applicable;

(c) *as set out in Part 2 of Annex IX.*

Article 22

Integrated reporting on energy security

Contracting Parties shall include in the integrated national energy and climate progress reports infor-ma-tion on the implementation of:

(a) national objectives for the diversification of energy sources and supply;

(b) where applicable, national objectives with regard to reducing energy import dependency from third countries;

(c) national objectives for the development of the ability to cope with constrained or interrupted supply of an energy source, including gas and electricity;

(d) national objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage;

(e) implemented, adopted and planned policies and measures to achieve the objectives referred to in

points (a) to (d);

(f) regional cooperation in implementing the objectives and policies referred to in points (a) to (d);

(g) without prejudice to Articles **18 and 19 of the Energy Community Treaty**, financing measures **<…>** in this area at national level, where applicable.

Article 23

Integrated reporting on the internal energy market

1. **Contracting Parties** shall include in their integrated national energy and climate progress reports information on the implementation of the following objectives and measures:

(a) the level of electricity interconnectivity that the **Contracting Party** aims for in 2030 **<…> <…>** and the indicators set out in point 2.4.1 of Section A of Part I of Annex I, as well as measures for the implementation of the strategy for the achievement of this level, including those relating to the granting of authorisations;

(b) key electricity and gas transmission infrastructure projects that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union;

(c) where applicable, main infrastructure projects envisaged other than Projects of **Energy Community** Interest **or Projects of Mutual Interest,** including infrastructure projects involving **Member States of the European Union and** third countries, and, to the extent feasible, a general assessment of their compatibility with, and contribution to, the aims and targets of the **Contracting Parties;**

(d) national objectives related to other aspects of the internal energy market such as increasing system flexibility, market integration and coupling, aiming to increase the tradeable capacity of existing inter-con-nectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, real-time price signals;

(e) where applicable, national objectives and measures related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets;

(f) where applicable, national objectives and measures with regard to ensuring that consumers participate in the energy system and benefits from self-generation and new technologies, including smart meters;

(g) measures with regard to ensuring electricity system adequacy;

(h) implemented, adopted and planned policies and measures to achieve the objectives referred to in points (a) to (g);

(i) regional cooperation in implementing the objectives and policies referred to in points (a) to (h);

(j) without prejudice to Articles **18 and 19 of the Energy Community Treaty**, financing measures at national level **<…>** in the area of the internal energy market, including for the electricity interconnection target, where applicable;

(k) measures to increase the flexibility of the energy system with regard to renewable energy production, including the roll-out of intraday market coupling and cross-border balancing markets.

2. The information provided by **Contracting Parties** under paragraph 1 shall be consistent with and as appropriate be based on the report by the national regulators referred to in point (e) of Article 37(1) of Directive 2009/72/EC, **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC**

and point (e) of Article 41(1) of Directive 2009/73/EC, **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC**.

Article 24

Integrated Reporting on Energy Poverty

Where the second subparagraph of point (d) of Article 3(3) applies, the **Contracting Party** concerned shall include in its integrated national energy and climate progress report:

(a) information on progress towards the national indicative objective to reduce the number of households in energy poverty; and

(b) quantitative information on the number of households in energy poverty, and, where available, information on policies and measures addressing energy poverty.

The **Secretariat** shall share data communicated by **Contracting Parties** pursuant to this Article with the European Energy Poverty Observatory.

Article 25

Integrated reporting on research, innovation and competitiveness

Contracting Parties shall include in their integrated national energy and climate progress reports information on the implementation of the following objectives and measures:

(a) **<…>**

(b) national objectives for total public and, where available, private spending in research and innovation relating to clean energy technologies as well as for technology cost and performance development;

(c) where appropriate, national objectives, including long-term targets for 2050 for the deployment of technologies for decarbonising energy- and carbon-intensive industrial sectors and, where applicable, for related carbon transport, use, and storage infrastructure;

(d) national objectives to phase out energy subsidies, in particular for fossil fuels;

(e) implemented, adopted and planned policies and measures to achieve the objectives referred to in points (**b**) and (**c**);

(f) cooperation with other **Contracting Parties or** Member States **of the European Union** in implement-ing the objectives and policies referred to in points (**b**) to (**d**), such as alignment of research programmes and common programmes;

(g) financing measures **<…>** in this area at national **level and from non-domestic sources**, where applicable.

Section 2
Annual reporting

Article 26
Annual Reporting

1. By 15 March **2023**, and every year thereafter (year X), **Contracting Parties** shall report to the **Secretariat**:

(a) the information referred to in Article 6(2) of Directive 2009/119/EC, **as adapted and adopted by Ministerial Council Decision 2012/03/MC-EnC**;

(b) **<…>**

2. By 31 July **2025**, and every year thereafter (year X), **Contracting Parties** shall report to the **Secretariat** their approximated greenhouse gas inventories for the year X-1.

For the purposes of this paragraph, the **Secretariat** shall, on the basis of the **Contracting Parties**' approximated greenhouse gas inventories or, if a **Contracting Party** has not communicated its approximated inventories by that date, on the basis of its own estimates, annually compile a **Contracting Parties**' approximated greenhouse gas inventory. The **Secretariat** shall make that information available to the public by 30 September every year.

3. From **2025**, **Contracting Parties** shall determine and report to the **Secretariat** final greenhouse gas inventory data by 15 March each year (year X) and preliminary data by 15 January each year **in line with timelines under UNFCCC flexibilities**, including the greenhouse gases and the inventory information listed in Annex V. The report on the final greenhouse gas inventory data shall also include a complete and up-to-date national inventory report. **<…>**

4. **<…>** The **Secretariat** shall, in cooperation with the **Contracting Parties**, **<…>** compile an **Energy Community** greenhouse gas inventory and prepare an **Energy Community** greenhouse gas inventory report **<…>**.

5. **<…>**

6. **<…>**

7. **The Secretariat shall inform the Permanent High Level Group about any implementing acts pursuant to Article 26(6) of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis**.

Article 27
Reporting on the 2020 targets

By 30 April 2022, each **Contracting Party** shall report to the **Secretariat** on the achievement of its 2020 energy efficiency national target established pursuant to Article 3(1) of Directive 2012/27/EU, **as adapted**

and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC by pro-viding the information set out in Part 2 of Annex IX to this Regulation, and of the national overall targets for the share of energy from renewable sources in 2020 as set out in Annex I to 2009/28/EC, **as adapted and adopted by Ministerial Council Decision 2018/02/MC-EnC amending Decision 2012/04/MC-EnC** by providing the following information:

(a) the sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources in 2020;

(b) the measures taken to achieve the 2020 national renewable energy targets, including measures related to support schemes, guarantees of origin and simplification of administrative procedures;

(c) the share of energy from biofuels and bioliquids produced from cereal and other starch-rich crops, sugars and oil crops in energy consumption in transport;

(d) the share of energy from biofuels and biogas for transport produced from feedstocks and of other fuels listed in Part A of Annex IX to Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in energy consumption in transport.

Section 3
Reporting platform

Article 28
Energy Community E-platform

1. The **Secretariat** shall establish an online platform (**Energy Community** e-platform) to facilitate communication between the **Secretariat** and **Contracting Parties**, to promote cooperation among **Contracting Parties** and to facilitate public access to information.

2. **Contracting Parties** shall use the e-platform for the purposes of submitting to the **Secretariat** the reports referred to in this Chapter once it becomes operational.

3. The **Energy Community** e-platform shall become operational by 1 January **2023**. The **Secretariat** shall use the **Energy Community** e-platform to facilitate public online access to the reports referred to in this Chapter, the final integrated national energy and climate plans, the updates thereof, and the long-term strategies referred to in Article 15, taking into account commercially sensitive data and compliance with the data protection rules.

CHAPTER 5
AGGREGATE ASSESSMENT OF PROGRESS AND POLICY RESPONSE TO ENSURE CONTRACTING PARTIES' TARGETS ACHIEVEMENT — SECRETARIAT MONITORING

Article 29

Assessment of progress

1. By 31 October **2025** and every two years thereafter, the **Secretariat** shall assess, in particular on the basis of the integrated national energy and climate progress reports, of other information reported under this Regulation, of the indicators and of **<…>** statistics and data where available:

(a) the progress made at **Contracting Parties**' level **as a whole** towards meeting the objectives of the Energy Union, including for the first ten-year period the **Energy Community's** 2030 targets for energy and climate, in particular for the purpose of avoiding any gaps to the **Energy Community's** 2030 targets for renewable energy and energy efficiency;

(b) the progress made by each **Contracting Party** towards meeting its objectives, **including progress towards the Energy Community's climate-neutrality objective**, targets and contributions and im-plementing the policies and measures set out in its integrated national energy and climate plan;

(c) the overall impact of aviation on the global climate, including through non-CO_2 emissions or effects, based on the emission data provided by **Contracting Parties** pursuant to Article 26, and improve that assessment by reference to scientific advancements and air traffic data, as appropriate; the overall impact of the policies and measures of the integrated national energy and climate plans on the operation of the **Energy Community** climate and energy policy measures;

(d) **<…>**

2. In the area of renewable energy, as part of its assessment referred to in paragraph 1, the **Secretariat** shall assess the progress made in the share of energy from renewable sources in the **Contracting Parties**' gross final consumption on the basis of an indicative **Contracting Parties**' trajectory that starts **<…>** in 2020, reaches reference points of at least **<…>** 65 % in 2027 of the total increase in the share of energy from renewable sources between the **Contracting Parties**' 2020 renewable energy target and the **Contracting Parties**' 2030 renewable energy target, and reaches the **Contracting Parties**' 2030 renewable energy target **<…>** in 2030.

3. In the area of energy efficiency, as part of its assessment referred to in paragraph 1, the **Energy Community Secretariat** shall assess progress towards achieving a maximum energy consumption at **Contracting Parties**' level of **<…>** primary energy and **<…>** of final energy in 2030 in accordance with Article 3(5) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC.**

In carrying out its assessment, the **Secretariat** shall take the following steps:

(a) consider whether the **Contracting Parties'** milestone of **<…>** primary energy and of **<…>** final energy in 2020 is achieved;

(b) assess whether **Contracting Parties** ' progress indicates that the **Contracting Parties** as a whole **are** on track towards the level of energy consumption in 2030 as referred to in **Article 2(11),** taking into account the assessment of information provided by **Contracting Parties** in their integrated national energy and climate progress reports;

(c) use results from modelling exercises in relation to future trends in energy consumption at level **of Con-tracting Parties as a whole** and national level and use other complementary analysis;

(d) take due account of relevant circumstances affecting primary and final energy consumption indicated by the **Contracting Parties** in their integrated national energy and climate plans, in accordance with Article 6(2).

4. In the area of the internal energy market, as part of its assessment referred to in paragraph 1, the **Secretariat** shall assess the progress made towards the level of electricity interconnectivity that the **Con-tracting Party** aims for in 2030.

5. By 31 October **2025** and every year thereafter, the **Secretariat** shall assess, in particular on the basis of the information reported pursuant to this Regulation, whether the **<…> Contracting Parties** have made sufficient progress towards meeting the following requirements:

(a) commitments under Article 4 of the UNFCCC and under Article 3 of the Paris Agreement as set out in decisions adopted by the Conference of the Parties to the UNFCCC, or by the Conference of the Parties to the UNFCCC serving as the meeting of the Parties to the Paris Agreement;

(b) **<…>**

(c) the objectives set out in the integrated national energy and climate plan with a view to achieving the Energy Union objectives and for the first **five-year** period with a view to fulfilling the 2030 targets for energy and climate.

6. **<…>**

7. The **Energy Community Secretariat** shall report on its assessment in accordance with this Article as part of the **annual implementation report.**

Article 30

Inconsistencies with overarching Energy Union objectives <…>

1. Based on the assessment pursuant to Article 29, the **Secretariat** shall issue recommendations to a **Contracting Party** pursuant to Article 34 if policy developments in that **Contracting Party** show inconsistencies with the overarching objectives of the Energy Union.

2. **<…>**

Article 31

Response to insufficient ambition of integrated national energy and climate plans

1. Where, on the basis of its assessment of the draft integrated national energy and climate plans pursuant to Article 9 or its assessment of the draft updates of the final plans pursuant to Article 14, and as part of the iterative process, the **Energy Community Secretariat** concludes that the objectives, targets and contributions of the **Contracting Parties** are insufficient for the **<…>** achievement of the Energy Union objectives and in particular, for the **2025 to 2030** period, for the **Energy Community's <…>** 2030 target for renewable energy and **the Energy Community 2030 headline target for energy efficiency**, it shall — as regards the **Energy Community**'s target for renewable energy — and may — as regards the other Energy Union objectives — issue recommendations to **Contracting Parties** whose contributions it

deems insufficient to increase their ambition in order to ensure a sufficient level of **<…>** ambition.

2. Where a gap between the **Energy Community's** 2030 target and the **<…>** contributions of **Con-tracting Parties** occurs in the area of renewable energy, the **Secretariat** shall base its assessment on **<…>** Annex II which is based on the objective criteria listed in point (e)(i) to (v) of the first subparagraph of Article 5(1), whilst having due regard to relevant circumstances affecting renewable energy deployment as indicated by the **Contracting Party** in accordance with the second subparagraph of Article 5(1).

Where a gap between the **Energy Community's** 2030 target and the sum of the national contributions occurs in the area of energy efficiency, the **Secretariat** shall, in particular, evaluate the relevant circumstanc-es listed in Article 6(2), information provided by **Contracting Parties** in their integrated national energy and climate plans, results from modelling exercises in relation to future trends in energy consumption and other complementary analysis as appropriate.

Without prejudice to the other provisions of this Article, and for the sole purpose of assessing whether a gap between the **Energy Community's** 2030 target and the contributions of **Contracting Parties** occurs, the **Secretariat** shall, in its assessment, assume a national contribution of the **Contracting Party** which did not submit their draft integrated national energy and climate plans in accordance with Article 9(1).

In its assumption, in the area of renewable energy, the **Secretariat** shall take into account the **Contracting Party**'s national binding target for 2020 as set out in Annex I to Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** results from modelling exercises on renewable energy development and **<…>** Annex II to this Regulation. In the area of energy efficiency, it shall take into account modelling exercises in relation to future trends in energy consumption and other complementary analysis as appropriate.

In its assessment of the renewable energy contributions, based on Annex II, the **Secretariat** shall take into consideration any potential negative impacts on the security of supply and grid stability in small or isolated energy systems or in **Contracting Parties**' systems where there may be significant implications due to the change of synchronous area.

In its assessment of the energy efficiency contributions, the **Secretariat** shall take into consideration the potential impact on electricity system operation and grid stability in **Contracting Parties** where there may be significant implications due to the change of synchronous area.

3. Where, on the basis of its assessment of the integrated national energy and climate plans and their updates pursuant to Article 14, the **Secretariat** concludes that the objectives, targets and contributions of the integrated national energy and climate plans or their updates are insufficient for the **<…>** achievement of the Energy Union objectives and, in particular, for the **2025 to 2030** period, for the **Energy Community's** 2030 targets for renewable energy and energy efficiency, it shall propose measures and exercise its powers at **Energy Community** level in order to ensure the **<…>** achievement of those objec-tives and targets. With regard to renewable energy, such measures shall take into consideration the level of ambition of contributions to the **Energy Community's** 2030 target by **Contracting Parties** set out in the integrated national energy and climate plans and their updates.

Article 32

Response to insufficient progress towards the <…> energy and climate objectives and targets of Contracting Parties as a whole

1. Where, on the basis of its assessment pursuant to point (b) of Article 29(1), the **Secretariat** concludes that insufficient progress is made by a **Contracting Party** towards meeting its objectives, targets and contributions, its reference points for renewable energy, or in implementing the policies and measures set out in its integrated national climate and energy plan, it shall issue recommendations to the **Contracting Party** concerned pursuant to Article 34.

In its recommendations in the area of renewable energy, the **Secretariat** shall take into consideration the relevant circumstances indicated by the **Contracting Party** in accordance with the second subparagraph of Article 5(1). The **Secretariat** shall also take into consideration renewable energy projects for which a final investment decision has been taken, provided that those projects become operational in the period **2025** to 2030 and have a significant impact on a **Contracting Party**'s national contribution.

In its recommendations in the area of energy efficiency, the **Secretariat** shall take due account of the objective criteria listed in points (a) and (b) of Article 6(1) and the relevant national circumstances indicated by the **Contracting Party** in accordance with Article 6(2).

2. Where, on the basis of its aggregate assessment of **Contracting Parties**' integrated national energy and climate progress reports pursuant to point (a) of Article 29(1), and supported by other information sources, as appropriate, the **Energy Community Secretariat** concludes that the **Contracting Parties** are at risk of not meeting the objectives of the Energy Union and, in particular, for the **2025 to 2030** period, the targets of the **Energy Community's** 2030 targets, it may issue recommendations to all **Contracting Parties** pursuant to Article 34 to mitigate such a risk.

In the area of renewable energy, the **Secretariat** shall assess if the national measures provided for in paragraph 3 are sufficient to achieve the **Energy Community's** renewable energy targets. In the case of insufficient national measures, the **Secretariat** shall, as appropriate, propose measures and exercise its power at **Energy Community** level in addition to those recommendations in order to ensure, in particular, the achievement of the **Energy Community**'**s** 2030 target for renewable energy.

In the area of energy efficiency, the **Secretariat** shall as appropriate, propose measures and exercise its powers at **Energy Community** level in addition to those recommendations in order to ensure, in particular the achievement of the **Energy Community**'**s** 2030 target for energy efficiency.

In the area of energy efficiency, such additional measures may in particular improve the energy efficiency of:

(a) products, pursuant to **<…>** Regulation (EU) 2017/1369**, as adapted and adopted by Ministerial Council Decision 2018/03/MC-EnC;**

(b) buildings, pursuant to Directive 2010/31/EU **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC** and **Directive** 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**; and

(c) transport.

3. Where, in the area of renewable energy the **Energy Community Secretariat** concludes, based on its assessment pursuant to Article 29(1) and (2), that **the reference point of the indicative Contracting**

Parties' trajectory in 2027 referred to in Article 29(2) **was not met, Contracting Parties** that have fallen below **their national reference point in 2027** as referred to in point (a)(2) of Article 4 shall ensure that additional measures are implemented within one year following the date of reception of the **Secretariat's** assessment in order to cover the gap compared to their national reference point, such as:

(a) national measures to increase deployment of renewable energy;

(b) adjusting the share of renewable energy in the heating and cooling sector set out in Article 23(1) of Di-rective (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(c) adjusting the share of renewable energy in the transport sector set out in Article 25(1) of Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;**

(d) making a voluntary financial payment to the **Energy Community** renewable energy financing mech-anism **once set up**, contributing to renewable energy projects **<…>** as set out in Article 33;

(e) using cooperation mechanisms set out in Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.**

Such measures shall take into account the **Secretariat's** considerations as set out in the second subpa-ra-graph of paragraph 1 of this Article. The **Contracting Parties** concerned shall include those measures as part of their integrated national energy and climate progress report.

4. From 1 January **2022** onwards, the share of energy from renewable sources in each **Contracting Party's** gross final consumption of energy shall not be lower than a baseline share that is equal to its mandatory national overall target for the share of energy from renewable sources in 2020 set out in Article 3(4) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decisions 2021/14/MC/EnC and 2022/02/MC-EnC.** If a **Contracting Party** does not maintain its baseline share as measured over a one-year period, the **Contracting Party** concerned shall take, within one year, additional measures such as those as set out in points (a) to (e) of the first subparagraph of paragraph 3 of this Article sufficient to cover the gap within one year.

Contracting Parties fulfilling the obligation to cover the gap to the baseline shall be deemed to be in compliance with the obligations set out in the first sentence of the first subparagraph of this paragraph and in Article 3(4) of Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** throughout the period where the gap occurred.

<…>

5. Where a **Contracting Party's** share of energy from renewable sources falls below one or more of its national reference points **<…>** as referred to in point (a)(2) of Article 4, it shall include in the next integrated report submitted to the **Secretariat** pursuant to Article 17 an explanation of how it will cover the gap compared to its national reference points.

6. Where, in the area of energy efficiency, without prejudice to other measures at **Energy Community** level pursuant to the third subparagraph of paragraph 2 of this Article, the **Secretariat** concludes, based on its assessment pursuant to Article 29(1) and (3), carried out by the years **<…>** 2025 and 2027 that progress towards **<…>** achieving the **Contracting Parties**' energy efficiency targets referred to in the first subparagraph of Article 29(3) is insufficient, it shall propose measures and exercise its power at **Energy Community** level in addition to those set out in Directive 2010/31/EU, **as adapted and adopted by**

Ministerial Council Decision 2010/02/MC-EnC and by the Ministerial Council Decision 2021/14/MC-EnC and Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** to ensure that the **Contracting Parties**' 2030 energy efficiency targets are met.

7. Each **Contracting Party** concerned referred to in paragraph 3 of this Article shall detail the additional im-plemented, adopted and planned measures as part of its following progress report referred to in Article 17.

8. Where, in the area of interconnections, the **Secretariat** concludes, based on its assessment pursuant to Article 29(1) and (4), in the year 2025 that progress is insufficient, the **Secretariat** shall cooperate with the **Contracting Party** concerned by the year 2026 with the aim of addressing the circumstances encountered.

Article 33

Energy Community renewable energy financing mechanism

1. **By 2023**, the **European** Commission **may make a proposal to include the Contracting Parties in the European Union's** renewable energy financing mechanism **as established in accordance with Article 33 of Regulation (EU) 1999/2018. <…>**

Article 34

Secretariat recommendations to Contracting Parties

1. The **Secretariat** shall as appropriate issue recommendations to **Contracting Parties** to ensure the achievement of the objectives of the Energy Union. The **Secretariat** shall make such recommendations publicly available forthwith.

2. Where reference in this Regulation is made to this Article the following principles shall apply:

(a) the **Contracting Party** concerned shall take due account of the recommendation in a spirit of solidarity between **Contracting Parties** and the **Energy Community** and between **Contracting Parties, and Contracting Parties and** Member States of the **European Union**;

(b) the **Contracting Party** shall set out, in its integrated national energy and climate progress report made in the year following the year the recommendation was issued, how it has taken due account of the recommendation. If the **Contracting Party** concerned decides not to address a recommendation or a substantial part thereof, that **Contracting Party** shall provide its reasoning;

(c) **<…>**

Article 35

Implementation report

1. By 31 October of every year, the **Energy Community Secretariat** shall submit to **Ministerial Council its annual Implementation Report.**

2. **Besides the state of implementation by Contracting Parties of the acquis communautaire under the Energy Community Treaty, the Implementation R**eport shall include the following elements:

(a) the assessment carried out pursuant to Article 29;

(b) where appropriate, recommendations pursuant to Article 34;

(c) the report on the **development of carbon pricing instruments in the Contracting Parties and in the Energy Community and when relevant, a report on the functioning of the carbon market or any carbon pricing instruments**;

(d) biennially, from 2023, a report on **<…>** bioenergy sustainability **of Contracting Parties as a whole**, containing the information specified in Annex X;

(e) biennially, a report on voluntary schemes in respect of which the **Secretariat** has **issued an opinion** pursuant to Article 30(4) of Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** containing the information specified in Annex XI to this Regulation;

(f) an overall progress report on the application of Directive 2009/72/EC, **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC**;

(g) an overall progress report on the application of Directive 2009/73/EC**, as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC <…>**;

(h) an overall progress report on energy efficiency obligation schemes and alternative policy measures as referred to in Articles 7a and 7b of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(i) biennially, an overall progress report on the renovation of the national stock of residential and non-residential buildings, both public and private, in line with the roadmaps set out in the long-term renovation strategies that each **Contracting Party** shall establish in accordance with Article 2a of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(j) every four years, an overall progress report on **Contracting Parties** ' increase in the number of nearly zero-energy buildings in accordance with Article 9(5) of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**;

(k) an overall progress report on **Contracting Parties**' progress in creating a complete and operational energy market;

(l) **<…>**

(m) a progress report on competitiveness;

(n) **Contracting Parties**' progress towards phasing out energy subsidies, in particular for fossil fuels;

(o) other issues of relevance to the implementation of the **acquis communautaire under the Energy Community Treaty**, including public and private support;

(p) **<…>**

Article 36

Monitoring of the governance mechanism

In the context of the **Implementation Report** as referred to in Article 35, the **Secretariat** shall inform the **Ministerial Council** on the implementation of the integrated national energy and climate plans. The **Ministerial Council** shall, on an annual basis, address the progress achieved by the **Contracting Parties** in this respect.

CHAPTER 6
<…> NATIONAL SYSTEMS ON GREENHOUSE GAS EMISSIONS AND REMOVALS BY SINKS

Article 37

Energy Community and national inventory systems

1. By 1 January **2023**, **Contracting Parties** shall establish, operate and seek to continuously improve national inventory systems to estimate anthropogenic emissions by sources and removals by sinks of greenhouse gases listed in Part 2 of Annex V and to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of their greenhouse gas inventories.

2. **Contracting Parties** shall ensure that their competent inventory authorities have access to the information specified in Annex XII to this Regulation, **<…>** and are able to undertake the annual consistency checks referred to in **point** (j) of Part 1 of Annex V to this Regulation.

3. **Unless Contracting Parties can be included in the European Union's inventory system established in accordance with Article 37 of Regulation (EU) 1999/2018, an Energy Community** inventory system to ensure the timeliness, transparency, accuracy, consistency, comparability and com-pleteness of national inventories with regard to **the Energy Community greenhouse gas inventory shall be established**. The **Secretariat** shall manage, maintain and seek to continuously improve that system which shall include the setting of a quality assurance and quality control programme, setting quality objectives and drafting an inventory quality assurance and quality control plan, procedures for completing emission estimates to compile the **Energy Community** inventory pursuant to paragraph 5 of this Article and the reviews referred to in Article 38.

4. **In the case envisaged by paragraph 3,** the **Secretariat** shall perform an initial check of the accuracy of the preliminary greenhouse gas inventory data to be submitted by **Contracting Parties** pursuant to Article 26(3). It shall send the results of that check to **Contracting Parties** within six weeks of the sub-mission deadline. **Contracting Parties** shall respond to any relevant questions raised by the initial check by 15 March, together with the final inventory submission for the year X-2.

5. **In the case envisaged by paragraph 3,** where a **Contracting Party** does not submit the inventory data required to compile the **Energy Community** inventory by 15 March, the **Secretariat** may prepare estimates to complete the data submitted by the **Contracting Party**, in consultation and close coopera-tion with the **Contracting Party** concerned. The **Secretariat** shall use, for that purpose, the

guidelines applicable for preparing the national greenhouse gas inventories.

6. **<…>**

7. **The Secretariat shall inform the Permanent High Level Group about any implementing and delegated acts adopted pursuant to Article 37(6) and (7), respectively, of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing and delegated acts into the Energy Community acquis.**

Article 38

Inventory review

1. With a view to monitoring **Contracting Parties**' greenhouse gas emission reductions or limitation **<…>** targets set out in **Energy Community** law, the **Energy Community Secretariat** shall, in 2027 and 2032, carry out a comprehensive review of the national inventory data submitted by **Contracting Parties <…>**. **Contracting Parties** shall participate fully in that process.

2. The comprehensive review referred to in paragraph 1 shall include:

(a) checks to verify the transparency, accuracy, consistency, comparability and completeness of information submitted;

(b) checks to identify cases where inventory data are prepared in a manner which is inconsistent with UNFCCC guidance documentation or **Energy Community** rules;

(c) **<…>**

(d) where appropriate, calculating the resulting technical corrections necessary, in consultation with the **Contracting Parties**.

3. **The Secretariat shall inform the Permanent High Level Group about any implementing acts adopted pursuant to Article 38(3) of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

4. The **Energy Community Secretariat** shall **<…>** determine the total sum of emissions for the relevant years arising from the corrected inventory data for each **Contracting Party** upon completion of the review **of <…>** emission data referred to in point (c) of Part 1 of Annex V to this Regulation **<…>**.

5. **<…>**

6. **<…>**

Article 39

<…> National systems for policies and measures and projections

1. By 1 January **2023**, **Contracting Parties** and the **Secretariat** shall operate and seek to continuously improve national and **Energy Community** systems **<…>** for reporting on policies and measures and for

reporting on projections of anthropogenic greenhouse gas emissions by sources and removals by sinks. Those systems shall include the relevant institutional, legal and procedural arrangements established within a **Contracting Party** and the **Energy Community** for evaluating policy and making projections of an-thropogenic greenhouse gas emissions by sources and removals by sinks.

2. **Contracting Parties** and the **Secretariat** shall aim to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported on policies and measures and projections of anthropogenic greenhouse gas emissions by sources and removals by sinks, as referred to in Article 18, including the use and application of data, methods and models, and the implementation of quality assurance and quality control activities and sensitivity analysis.

3. **The Secretariat shall inform the Permanent High Level Group about any implementing acts adopted pursuant to Article 39 paragraph 3 of Regulation (EU) 2018/1999 within one week of their adoption. The Permanent High Level Group is empowered pursuant to Article 53(d) of the Energy Community Treaty to take measures to incorporate the relevant implementing acts into the Energy Community acquis.**

Article 40

<…>

CHAPTER 7
COOPERATION AND SUPPORT

Article 41

Cooperation between the Contracting Parties and Energy Community Secretariat

1. The **Contracting Parties shall cooperate with each other and with** Member States **of the European Union and the Energy Community Secretariat** and coordinate fully with each other in relation to obligations under this Regulation, in particular concerning:

(a) the process for preparing, adopting, notifying and assessing the integrated national energy and climate plans pursuant to Articles 9 to 13;

(b) the process for preparing, adopting, notifying and assessing the integrated national energy and climate progress report pursuant to Article 17 and annual reporting pursuant to Article 26;

(c) the process related to the **Secretariat** recommendations and addressing those recommendations pursuant to Article 9(2) and (3), Article 17(6), Article 30(1), Article 31(1) and Article 32(1) and (2);

(d) compiling the **Energy Community** greenhouse gas inventory and preparing the **Energy Community** greenhouse gas inventory report, pursuant to Article 26(4);

(e) **<…>**

(f) **<…>**

(g) **<…>**

(h) compiling the **Energy Community** approximated greenhouse gas inventory, pursuant to Article 26(2).

2. The **Secretariat** may provide technical support to the **Contracting Parties** in relation to obligations under this Regulation upon request from a **Contracting Party**.

Article 42

Role of the European Environment Agency

The European Environment Agency**, based on a bilateral arrangement, may** assist the **Energy Community Secretariat** in its work as regards the decarbonisation and energy efficiency dimensions to comply with Articles 15 to 21, 26, 28, 29, 35, 37, 38, 39 and 41 in accordance with its annual work programme. That shall include assistance, as required, with:

(a) compiling the information reported by **Contracting Parties** on policies and measures and projections;

(b) performing quality assurance and quality control procedures on the information reported by **Contract-ing Parties** on projections and policies and measures;

(c) preparing estimates or complementing those available to the **Secretariat** for data on projections not reported by the **Contracting Parties**;

(d) compiling data, wherever available taken from European statistics and appropriate in terms of timing, as required for **Implementation Report** prepared by the **Energy Community Secretariat**;

(e) **<…>**

(f) performing quality assurance and quality control procedures in the preparation of the **Energy Com-munity** greenhouse gas inventory;

(g) compiling the **Contracting Parties**' greenhouse gas inventory and preparing the **Contracting Parties**' greenhouse gas inventory report;

(h) preparing estimates for data not reported in the national greenhouse gas inventories;

(i) conducting the review referred to in Article 38;

(j) compiling the **Energy Community** approximated greenhouse gas inventory.

CHAPTER 8
FINAL PROVISIONS

Article 43

<…>

Article 44

Committees

The Energy Community Secretariat shall closely cooperate with the Energy and Climate Committee of the Energy Community.

Article 45

<...>

Article 46

<...>

Article 47

<...>

Article 48

<...>

Article 49

<...>

Article 50

Amendment to Regulation (EC) No 715/2009 as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC;

In Regulation (EC) No 715/2009, **as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC,** Article 29 is deleted.

Article 51

Amendments to Directive 2009/73/EC as adapted and adopted by Ministerial Council Decision 2011/02/MC-EnC;

Directive 2009/73/EC, **as adapted and adopted by Ministerial Council Decision 2011/02/MCEnC,** is amended as follows:

(1) Article 5 is deleted;

(2) Article 52 is replaced by the following:

Article 52

Reporting

The **Secretariat** shall monitor and review the application of this Directive and submit an **annual Implementation Report to the Ministerial Council**.'

Article 52

Amendment to Council Directive 2009/119/EC as adapted and adopted by Ministerial Council Decision 2012/03/MC-EnC;

In Article 6 of Directive 2009/119/EC, paragraph 2 **as adapted and adopted by Ministerial Council Decision 2012/03/MC-EnC** is replaced by the following:

'2. By 15 March each year, each **Contracting Party** shall send the **Secretariat** a summary copy of the stock register referred to in paragraph 1 showing at least the quantities and nature of the emergency stocks included in the register on the last day of the preceding calendar year.'

Article 53

Amendments to Directive 2010/31/EU as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC;

Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** is amended as follows:

(1) **An** Article 2a is **included** as follows:

Article 2a Long-term renovation strategy

1. **Each Contracting Party shall establish a long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, into a highly energy efficient and decarbonised building stock by 2050, facilitating the cost-effective transformation of existing buildings into nearly zero-energy buildings. Each long-term renovation strategy shall encompass:**

(a) **an overview of the national building stock, based, as appropriate, on statistical sampling and expected share of renovated buildings in 2020;**

(b) **the identification of cost-effective approaches to renovation relevant to the building type and climatic zone, considering potential relevant trigger points, where applicable, in the life-cycle of the building;**

(c) **policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation, and to support targeted cost-effective measures and renovation for example by introducing an optional scheme for building renovation passports;**

(d) **an overview of policies and actions to target the worst performing segments of the na-tional building stock, split-incentive dilemmas and market failures, and an outline of relevant na-**

tional actions that contribute to the alleviation of energy poverty;

(e) **policies and actions to target all public buildings;**

(f) **an overview of national initiatives to promote smart technologies and well-connected buildings and communities, as well as skills and education in the construction and energy efficiency sectors; and**

(g) **an evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality.**

2. **In its long-term renovation strategy, each Contracting Party shall set out a roadmap with measures and domestically established measurable progress indicators, with a view to the long-term 2050 goal of reducing greenhouse gas emissions in the Energy Community by 80-95 % compared to 1990, in order to ensure a highly energy efficient and decarbonised national building stock and in order to facilitate the cost-effective transformation of existing buildings into nearly zero-energy buildings. The roadmap shall include indicative milestones for 2030, 2040 and 2050, and specify how they contribute to achieving the Energy Community's energy efficiency targets in accordance with Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC.**

3. **To support the mobilisation of investments into the renovation needed to achieve the goals referred to in paragraph 1, Contracting Parties shall facilitate access to appropriate mechanisms for:**

(a) **the aggregation of projects, including by investment platforms or groups, and by con-sortia of small and medium-sized enterprises, to enable investor access as well as packaged solutions for potential clients;**

(b) **the reduction of the perceived risk of energy efficiency operations for investors and the private sector;**

(c) **the use of public funding to leverage additional private-sector investment or address specific market failures;**

(d) **guiding investments into an energy efficient public building stock, in line with Eurostat guidance; and**

(e) **accessible and transparent advisory tools, such as one-stop-shops for consumers and en-ergy advisory services, on relevant energy efficiency renovations and financing instruments.**

4. **The Energy Community Secretariat shall collect and disseminate, at least to public author-ities, best practices on successful public and private financing schemes for energy efficiency renovation as well as information on schemes for the aggregation of small-scale energy effi-ciency renovation projects. The Energy Community Secretariat shall identify and disseminate best practices on financial incentives to renovate from a consumer perspective taking into account cost-efficiency differences between Contracting Parties.**

5. **To support the development of its long-term renovation strategy, each Contracting Party shall carry out a public consultation on its long-term renovation strategy prior to submitting it to the Energy Community Secretariat. Each Contracting Party shall annex a summary of the results of its public consultation to its long-term renovation strategy.**

Each Contracting Party shall establish the modalities for consultation in an inclusive way during the imple-

mentation of its long-term renovation strategy.

6. **Each Contracting Party shall annex the details of the implementation of its most recent long-term renovation strategy to its long-term renovation strategy, including on the planned policies and actions.**

7. **Each Contracting Party may use its long-term renovation strategy to address fire safety and risks related to intense seismic activity affecting energy efficiency renovations and the lifetime of buildings.**

8. **Each Contracting Party's long-term renovation strategy shall be submitted to the Energy Community Secretariat as part of its final integrated national energy and climate plan referred to in Article 3 of Regulation (EU) 2018/1999, as incorporated in the Energy Community. As a derogation from Article 3(1) of that Regulation, the first long-term renovation strategy under paragraph 1 of this Article shall be submitted to the Secretariat by 10 March 2023.**

(2) in the second subparagraph of Article 5(2), the sentence 'The report may be included in the Energy Efficiency Action Plans referred to in Article 14(2) of Directive 2006/32/EC' is deleted;

(3) in Article 9, paragraph 5 is replaced by the following:

'5. As part of its **annual Implementation Report**, the **Secretariat** shall report every four years to the **Ministerial Council** on the progress of **Contracting Parties** in increasing the number of nearly zero-en-ergy buildings. On the basis of this reported information the **Secretariat** shall, where necessary, develop an action plan and propose recommendations and measures in accordance with Article 34 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** to increase the number of those buildings and encourage best practices as regards the cost-effective transformation of existing buildings into nearly zero-energy buildings.';

(4) in Article 10, paragraphs 2 and 3 are deleted;

(5) in Article 14(3), the third subparagraph is replaced by the following:

'Such a report shall be submitted to the **Secretariat** as part of the **Contracting Parties**' integrated national energy and climate plans referred to in Article 3 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**';

(6) in Article 15(3), the third subparagraph is replaced by the following:

'Such a report shall be submitted to the **Secretariat** as part of the **Contracting Parties**' integrated national energy and climate plans referred to in Article 3 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**'.

Article 54

Amendments to Directive 2012/27/EU as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC;

Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC** is amended as follows:

(1) Article 4 is deleted;

(2) in Article 18(1), point (e) is deleted;

(3) Article 24 is amended as follows:

(a) paragraphs 1, 3 **<…>** and 11, are deleted;

(b) paragraph 2 is deleted;

(4) Annex XIV is deleted.

Article 55

<…>

Article 56

<…>

Article 57

<…>

Article 58

<…>

Article 59

Entry into force

This Regulation enters into force on the date of adoption of Ministerial Council Decision 2021/14/MC-EnC and is addressed to the Contracting Parties and the institutions of the Energy Community.

ANNEX I

GENERAL FRAMEWORK FOR INTEGRATED NATIONAL ENERGYAND CLIMATE PLANS

Part 1

General framework

SECTION A: NATIONAL PLAN

1. OVERVIEW AND PROCESS FOR ESTABLISHING THE PLAN

1.1. Executive summary

i. Political, economic, environmental, and social context of the plan

ii. Strategy relating to the five dimensions of the Energy Union

iii. Overview table with key objectives, policies and measures of the plan

1.2. Overview of current policy situation

i. National and **Energy Community** energy system and policy context of the national plan

ii. Current energy and climate policies and measures relating to the five dimensions of the Energy Union

iii. Key issues of cross-border relevance

iv. Administrative structure of implementing national energy and climate policies

1.3. Consultations and involvement of national and **Energy Community** entities and their outcome

i. Involvement of the national parliament

ii. Involvement of local and regional authorities

iii. Consultations of stakeholders, including the social partners, and engagement of civil society and the general public

iv. Consultations of other **Contracting Parties** and Member States **of the European Union**

v. Iterative process with the **Secretariat**

1.4. Regional cooperation in preparing the plan

i. Elements subject to joint or coordinated planning with other **Contracting Parties and** Member States **of the European Union**

ii. Explanation of how regional cooperation is considered in the plan

2. NATIONAL OBJECTIVES AND TARGETS

2.1. Dimension decarbonisation

2.1.1. GHG emissions and removals[1]

i. The elements set out in point (a)(1) of Article 4

ii. Where applicable, other national objectives and targets consistent with the Paris Agreement and the existing long-term strategies. Where applicable for the contribution to the overall **Contracting**

1 Consistency to be ensured with long-term strategies pursuant to Article 15.

Parties' commitment of reducing the GHG emissions, other objectives and targets, including sector targets and adaptation goals, if available

2.1.2. Renewable energy

i. The elements set out in point (a)(2) of Article 4

ii. Estimated trajectories for the sectoral share of renewable energy in final energy consumption from 202**5** to 2030 in the electricity, heating and cooling, and transport sector

iii. Estimated trajectories by renewable energy technology that the **Contracting Party** projects to use to achieve the overall and sectoral trajectories for renewable energy from 202**5** to 2030, including expected total gross final energy consumption per technology and sector in Mtoe and total planned installed capacity (divided by new capacity and repowering) per technology and sector in MW

iv. Estimated trajectories on bioenergy demand, disaggregated between heat, electricity and transport, and on biomass supply by feedstocks and origin (distinguishing between domestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink

v. Where applicable, other national trajectories and objectives, including those that are long term or sectoral (e.g. share of renewable energy in district heating, renewable energy use in buildings, renew able energy produced by cities, renewable energy communities and renewables self-consumers, energy recovered from the sludge acquired through the treatment of wastewater)

2.2. Dimension energy efficiency

i. The elements set out in point (b) of Article 4

ii. The indicative milestones for 2030, 2040 and 2050, the domestically established measurable prog-ress indicators, an evidence-based estimate of expected energy savings and wider benefits, and their con-tributions as included in the roadmaps set out in the long-term renovation strategies for the national stock of residential and non-residential buildings, both public and private, in accordance with Article 2a of Directive 2010/31/EU **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC**

iii. Where applicable, other national objectives, including long-term targets or strategies and sectoral targets, and national objectives in areas such as energy efficiency in the transport sector and with regard to heating and cooling

2.3. Dimension energy security

i. The elements set out in point (c) of Article 4

ii. National objectives with regard to increasing: the diversification of energy sources and supply from third countries for the purpose of increasing the resilience of regional and national energy systems

iii. Where applicable, national objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems

iv. National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage

2.4. Dimension internal energy market

2.4.1. Electricity interconnectivity

i. The level of electricity interconnectivity that the **Contracting Party** aims for in 2030 **<…> in accor-**

dance with Article 4(d)(1) with a strategy with the level from 202**5** onwards defined in close cooperation with affected **Contracting Parties and/or Member States of the European Union**, taking into account the 2020 interconnection target and the following indicators of the urgency of action:

(1) Price differential in the wholesale market exceeding an indicative threshold of EUR 2/MWh between **Contracting Parties and/or** Member States **of the European Union**, regions or bidding zones;

(2) Nominal transmission capacity of interconnectors below 30 % of peak load;

(3) Nominal transmission capacity of interconnectors below 30 % of installed renewable generation.

Each new interconnector shall be subject to a socioeconomic and environmental cost-benefit analysis and implemented only if the potential benefits outweigh the costs

2.4.2. Energy transmission infrastructure

i. Key electricity and gas transmission infrastructure projects, and, where relevant, modernisation pro jects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union Strategy

ii. Where applicable, main infrastructure projects envisaged other than Projects of **Energy Community** Interest (PECIs) **and Projects of Mutual Interest (PMIs)**

2.4.3. Market integration

i. National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals, including a timeframe for when the objectives shall be met

ii. Where applicable, national objectives related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets, including a timeframe for when the objectives are to be met

iii. Where applicable, national objectives with regard to ensuring that consumers participate in the energy system and benefit from self-generation and new technologies, including smart meters;

iv. National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production, including a timeframe for when the objectives are to be met

v. Where applicable, national objectives to protect energy consumers and improve the competitiveness of the retail energy sector

2.4.4. Energy poverty

Where applicable, national objectives with regard to energy poverty, including a timeframe for when the objectives are to be met In accordance with Regulation (EU) No 347/2013 **as adapted and adopted by Ministerial Council Decision 2015/09/MC-EnC.**

2.5. Dimension research, innovation and competitiveness

i. National objectives and funding targets for public and, where available, private research and inno-vation, including, where appropriate, a timeframe for when the objectives are to be met

ii. Where available, national 2050 objectives related to the promotion of clean energy technologies and, where appropriate, national objectives, including long-term targets (2050) for deployment of low-carbon technologies, including for decarbonising energy and carbon-intensive industrial sectors and, where applicable, for related carbon transport and storage infrastructure

iii. Where applicable, national objectives with regard to competitiveness

3. POLICIES AND MEASURES

3.1. Dimension decarbonisation

3.1.1. GHG emissions and removals

i. Policies and measures to achieve the **economy-wide** target covering all key emitting sectors and sectors for the enhancement of removals, with an outlook to the long-term vision and goal to become a low emission economy and achieving a balance between emissions and removals in accordance with the Paris Agreement

ii. Where relevant, regional cooperation in this area

iii. Without prejudice to the applicability of State aid rules, financing measures in this area at national level, where applicable

iv. **Development of carbon pricing instruments and when relevant, functioning of the carbon market or any carbon pricing instruments**

3.1.2. Renewable energy

i. Policies and measures to achieve the national contribution to the 2030 **Energy Community** target for renewable energy and trajectories as referred to in point (a)(2) Article 4, and, where applicable or available, the elements referred to in point 2.1.2 of this Annex, including sector- and technology-specific measures[2]

ii. Where relevant, specific measures for regional cooperation, as well as, as an option, the estimated excess production of energy from renewable sources which could be transferred to other **Contracting Parties and/or** Member States **of the European Union** in order to achieve the national contribution and trajectories referred to in point 2.1.2

iii. Specific measures on financial support, where applicable for the promotion of the production and use of energy from renewable sources in electricity, heating and cooling, and transport

iv. Where applicable, the assessment of the support for electricity from renewable sources that **Contracting Parties** are to carry out pursuant to Article 6(4) of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**

v. Specific measures to introduce one or more contact points, streamline administrative procedures, provide information and training, and facilitate the uptake of power purchase agreements Summary of the policies and measures under the enabling framework **Contracting Parties** have to put in place pursuant to Article 21(6) and Article 22(5) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**, to promote and facilitate the development of self-consumption and renewable energy communities

vi. Assessment of the necessity to build new infrastructure for district heating and cooling produced

2 When planning those measures, **Contracting Parties** shall take into account the end of life of existing installations and the potential for repowering.

from renewable sources

vii. Where applicable, specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilisation taking into account:

- biomass availability, including sustainable biomass: both domestic potential and imports from third countries

- other biomass uses by other sectors (agriculture and forest-based sectors); as well as measures for the sustainability of biomass production and use

3.1.3. Other elements of the dimension

i. **<…>**

ii. Policies and measures to achieve other national targets, where applicable

iii. Policies and measures to achieve low emission mobility (including electrification of transport)

iv. Where applicable, national policies, timelines and measures planned to phase out energy subsidies, in particular for fossil fuels

3.2. Dimension energy efficiency

Planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2, including planned measures and instruments (also of a financial nature) to promote the energy performance of buildings, in particular with regard to the following:

i. Energy efficiency obligation schemes and alternative policy measures under Articles 7a and 7b and Article 20(6) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/ MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**, and to be prepared in accordance with Annex III to this Regulation

ii. Long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, including policies, measures and actions to stimulate cost-effective deep renovation and policies and actions to target the worst performing segments of the national building stock, in accordance with Article 2a of Directive 2010/31/EU **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC, and 2021/14/MC-EnC**

iii. Description of policy and measures to promote energy services in the public sector and measures to remove regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models [3]

iv. Other planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2 (for example measures to promote the exemplary role of public buildings and energy-efficient public procurement, measures to promote energy audits and energy management systems[4], consumer information and training measure[5], and other measures to promote energy efficiency)[6]

3 In accordance with Article 8 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**

4 In accordance with Article 18 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**

5 In accordance with Articles 12 and 17 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/**

6 In accordance with Article 19 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions**

v. Where applicable, a description of policies and measures to promote the role of local renewable energy communities in contributing to the implementation of policies and measures in points i, ii, iii and iv

vi. Description of measures to develop measures to utilise energy efficiency potentials of gas and electricity infrastructure[7]

vii. Regional cooperation in this area, where applicable

viii. Financing measures, in the area at national level

3.3. Dimension energy security[8]

i. Policies and measures related to the elements set out in point 2.311[9]

ii. Regional cooperation in this area

iii. Where applicable, financing measures in this area at national level

3.4. Dimension internal energy market[10]

3.4.1. Electricity infrastructure

i. Policies and measures to achieve the targeted level of interconnectivity as set out in point (d) of Article 4

ii. Regional cooperation in this area[11]

iii. Where applicable, financing measures in this area at national level

3.4.2. Energy transmission infrastructure

i. Policies and measures related to the elements set out in point 2.4.2, including, where applicable, specific measures to enable the delivery of Projects of **Energy Community** Interest (P**E**CIs), **Projects of Mutual Interest** and other key infrastructure projects

ii. Regional cooperation in this area[12]

iii. Where applicable, financing measures in this area at national level

3.4.3. Market integration

i. Policies and measures related to the elements set out in point 2.4.3

ii. Measures to increase the flexibility of the energy system with regard to renewable energy production such as smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, real-time price signals, including the roll-out of intraday market coupling and cross-border balancing markets

iii. Where applicable, measures to ensure the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets

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2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC

7 In accordance with Article 15(2) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**

8 Policies and measures shall reflect the energy efficiency first principle.

9 Consistency shall be ensured with the preventive action and emergency plans under Regulation (EU) 2017/1938 **as adapted and adopted by Ministerial Council Decisions 2021/15/MC-EnC** as well as the risk preparedness plans under Regulation (EU) 2019/941 **as adapted and adopted by Ministerial Council Decision 2021/13/MC-EnC**

10 Policies and measures shall reflect the energy efficiency first principle.

11 Other than the PCI Regional Groups established under Regulation (EU) No 347/2013 **as adapted and adopted by Ministerial Council Decision 2015/09/MC-EnC**

12 Other than the PCI Regional Groups established under Regulation (EU) No 347/2013 **as adapted and adopted by Ministerial Council Decision 2015/09/MC-EnC**

iv. Policies and measures to protect consumers, especially vulnerable and, where applicable, energy poor consumers, and to improve the competitiveness and contestability of the retail energy market

v. Description of measures to enable and develop demand response, including those addressing tariffs to support dynamic pricing[13]

3.4.4. Energy poverty

Where applicable, policies and measures to achieve the objectives set out in point 2.4.4

3.5. Dimension research, innovation and competitiveness

i. Policies and measures related to the elements set out in point 2.5

ii. Where applicable, cooperation with other **Contracting Parties and/or** Member States **of the European Union** in this area

iii. Where applicable, financing measures in this area at national

SECTION B: ANALYTICAL BASIS[14]

4. CURRENT SITUATION AND PROJECTIONS WITH EXISTING POLICIES AND MEASURES[15]

4.1. Projected evolution of main exogenous factors influencing energy system and GHG emission developments

i. Macroeconomic forecasts (GDP and population growth)

ii. Sectoral changes expected to impact the energy system and GHG emissions

iii. Global energy trends, international fossil fuel prices, EU ETS carbon price

iv. Technology cost developments

4.2. Dimension Decarbonisation

4.2.1. GHG emissions and removals

i. Trends in current GHG emissions and removals **across the economy** and different sectors

ii. Projections of sectoral developments with existing national, **Energy Community** and **European Union** policies and measures at least until 2040 (including for the year 2030)

4.2.2. Renewable energy

i. Current share of renewable energy in gross final energy consumption and in different sectors (heating and cooling, electricity and transport) as well as per technology in each of these sectors

ii. Indicative projections of development with existing policies for the year 2030 (with an outlook to the year 2040)

4.3. Dimension Energy efficiency

13 In accordance with Article 15(8) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**

14 See Part 2 for a detailed list of parameters and variables to be reported in Section B of the Plan.

15 Current situation shall reflect the date of submission of the national plan (or latest available date). Existing policies and measures encompass implemented and adopted policies and measures. Adopted policies and measures are those for which an official government decision has been made by the date of submission of the national plan and there is a clear commitment to proceed with implementation. Implemented policies and measures are those for which one or more of the following applies at the date of submission of the integrated national energy and climate plan or the integrated national energy and climate progress report: directly applicable European legislation or national legislation is in force, one or more voluntary agreements have been established, financial resources have been allocated, human resources have been mobilised.

i. Current primary and final energy consumption in the economy and per sector (including industry, residential, service and transport)

ii. Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling[16]

iii. Projections considering existing energy efficiency policies, measures and programmes as described in point 1.2.(ii) for primary and final energy consumption for each sector at least until 2040 (including for the year 2030)[17]

iv. Cost-optimal levels of minimum energy performance requirements resulting from national calculations, in accordance with Article 5 of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC and by the Ministerial Council Decision 2021/14/MC-EnC**;

4.4. Dimension energy security

i. Current energy mix, domestic energy resources, import dependency, including relevant risks

ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

4.5. Dimension internal energy market

4.5.1. Electricity interconnectivity

i. Current interconnection level and main interconnectors[18]

ii. Projections of interconnector expansion requirements (including for the year 2030)[19]

4.5.2. Energy transmission infrastructure

i. Key characteristics of the existing transmission infrastructure for electricity and gas[20]

ii. Projections of network expansion requirements at least until 2040 (including for the year 2030)[21]

4.5.3. Electricity and gas markets, energy prices

i. Current situation of electricity and gas markets, including energy prices

ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

4.6. Dimension research, innovation and competitiveness

i. Current situation of the low-carbon-technologies sector and, to the extent possible, its position on the global market (that analysis is to be carried out at **regional** or global level)

ii. Current level of public and, where available, private research and innovation spending on low-carbon-technologies, current number of patents, and current number of researchers

iii. Breakdown of current price elements that make up the main three price components (energy, network, taxes/levies)

iv. Description of energy subsidies, including for fossil fuels

16 In accordance with Article 14(1) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**

17 This reference business as usual projection shall be the basis for the 2030 final and primary energy consumption target which is described in 2.3 and conversion factors.

18 With reference to overviews of existing transmission infrastructure by Transmission System Operators (TSOs).

19 With reference to national network development plans and regional investment plans of TSOs.

20 With reference to overviews of existing transmission infrastructure by TSOs.

21 With reference to national network development plans and regional investment plans of TSOs.

5. IMPACT ASSESSMENT OF PLANNED POLICIES AND MEASURES[22]24

5.1. Impacts of planned policies and measures described in section 3 on energy system and GHG emissions and removals, including comparison to projections with existing policies and measures (as described in section 4).

i. **Projections of the development of the energy system and GHG emissions and removals as well as the impact of the implementation of Directive 2001/80/EC as adapted and ad-opted by Ministerial Council Decision 2013/05/MC-EnC, amended by Decision 2015/07/ MC-EnC and Directive 2010/75/EU as adapted and adopted by Ministerial Council Decision 2013/06/MC-EnC, amended by Decision 2015/06/MC-EnC, with particular regard to limited lifetime derogation.**

ii. Assessment of policy interactions (between existing policies and measures and planned policies and measures within a policy dimension and between existing policies and measures and planned policies and measures of different dimensions) at least until the last year of the period covered by the plan, in particular to establish a robust understanding of the impact of energy efficiency / energy savings policies on the sizing of the energy system and to reduce the risk of stranded investment in energy supply

iii. Assessment of interactions between existing policies and measures and planned policies and measures, and between those policies and measures and **Energy Community** climate and energy policy measures

5.2. Macroeconomic and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects (in terms of costs and benefits as well as cost-effectiveness) of the planned policies and measures described in section 3 at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

5.3. Overview of investment needs

i. existing investment flows and forward investment assumptions with regard to the planned policies and measures

ii. sector or market risk factors or barriers in the national or regional context

iii. analysis of additional public finance support or resources to fill identified gaps identified under point ii

5.4. Impacts of planned policies and measures described in section 3 on other **Contracting Parties and/or** Member States **of the European Union** and regional cooperation at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

i. Impacts on the energy system in neighbouring and other **Contracting Parties and/or** Member States **of the European Union** in the region to the extent possible

ii. Impacts on energy prices, utilities and energy market integration

iii. Where relevant, impacts on regional cooperation

22 Planned policies and measures are options under discussion and having a realistic chance of being adopted and implemented after the date of submission of the national plan. The resulting projections under section 5.1.i shall therefore include not only implemented and adopted policies and measures (projections with existing policies and measures), but also planned policies and measures.

Part 2

List of parameters and variables to be reported in Section B of National Plans[23]

The following parameters, variables, energy balances and indicators are to be reported in Section B 'Analytical Basis' of the National Plans, if used:

1. GENERAL PARAMETERS AND VARIABLES

(1) Population [million]

(2) GDP [euro million]

(3) Sectoral gross value added (including main industrial, construction, services, and agriculture sectors) [euro million]

(4) Number of households [thousands]

(5) Household size [inhabitants/households]

(6) Disposable income of households [euro]

(7) Number of passenger-kilometres: all modes, i.e. split between road (cars and buses separated if possible), rail, aviation and domestic navigation (when relevant) [million pkm]

(8) Freight transport tonnes-kilometres: all modes excluding international maritime, i.e. split between road, rail, aviation, domestic navigation (inland waterways and national maritime) [million tkm]

(9) International oil, gas and coal fuel import prices [EUR/GJ or euro/toe]

(10) carbon price

(11) Exchange rates to EUR and to USD (where applicable) assumptions [euro/currency and USD/currency]

(12) Number of Heating Degree Days (HDD)

(13) Number of Cooling Degree Days (CDD)

(14) Technology cost assumptions used in modelling for main relevant technologies

2. ENERGY BALANCES AND INDICATORS

2.1. Energy supply

(1) Indigenous Production by fuel type (all energy products that are produced in significant quantities) [ktoe]

(2) Net imports by fuel type (including electricity and split into intra- and extra EU net imports) [ktoe]

(3) Import dependency from third countries [%]

(4) Main import sources (countries) for main energy carriers (including gas and electricity)

(5) Gross Inland Consumption by fuel type source (including solids, all energy products: coal, crude oil and petroleum products, natural gas, nuclear energy, electricity, derived heat, renewables, waste) [ktoe]

23 For the plan covering the period from **2025** to 2030: For each parameter/variable in the list, trends over the years 2005-2040 (2005-2050 where appropriate) including for the year 2030 in five-year intervals shall be reported both in Section 4 and 5. Parameter based on exogenous assumptions v modelling output shall be indicated.

As far as possible, reported data and projections shall build on and be consistent with Eurostat data and methodology used for reporting European statistics in the relevant sectoral law.

Note: all projections are to be performed on the basis of constant prices (2016 prices used as base year)

The **Secretariat** will provide recommendations for key parameters for projections, at least covering oil, gas, and coal import prices as well as EU ETS carbon prices.

2.2. Electricity and heat

(1) Gross electricity generation [GWh]

(2) Gross electricity generation by fuel (all energy products) [GWh]

(3) Share of combined heat and power generation in total electricity and heat generation [%]

(4) Capacity electricity generation by source, including retirements and new investment [MW]

(5) Heat generation from thermal power generation

(6) Heat generation from combined heat and power plants, including industrial waste heat

(7) Cross-border interconnection capacities for gas and electricity **<…>** and their projected usage rates

2.3. Transformation sector

(1) Fuel inputs to thermal power generation (including solids, oil, gas) [ktoe]

(2) Fuel inputs to other conversion processes [ktoe]

2.4. Energy consumption

(1) Primary and final energy consumption [ktoe]

(2) Final energy consumption by sector (including industry, residential, tertiary, agriculture and transport (including split between passenger and freight transport, when available)) [ktoe]

(3) Final energy consumption by fuel (all energy products) [ktoe]

(4) Final non-energy consumption [ktoe]

(5) Primary energy intensity of the overall economy (primary energy consumption per GDP [toe/euro]

(6) Final energy intensity by sector (including industry, residential, tertiary and transport (including split between passenger and freight transport, when available))

2.5. Prices

(1) Electricity prices by type of using sector (residential, industry, tertiary)

(2) National retail fuel prices (including taxes, per source and sector) [euro/ktoe]

2.6. Investment

Investment costs in energy transformation, supply, transmission and distribution sectors

2.7. Renewables

(1) Gross final consumption of energy from renewable sources and share of renewable energy in gross final energy consumption and by sector (electricity, heating and cooling, transport) and by technology

(2) Electricity and heat generation from renewable energy in buildings; this shall include, where available, disaggregated data on energy produced, consumed and injected into the grid by solar photovoltaic systems, solar thermal systems, biomass, heat pumps, geothermal systems, as well as all other decentralised renewables systems

(3) Where applicable, other national trajectories, including those that are long-term or sectoral the share of food-based and advanced biofuels, the share of renewable energy in district heating, as well as the renewable energy produced by cities and renewable energy communities.

3. GHG EMISSIONS AND REMOVALS RELATED INDICATORS

(1) GHG emissions by policy sector**, including LULUCF**

(2) GHG emissions by IPCC sector and by gas [tCO_2eq]

(3) Carbon Intensity of the overall economy [tCO_2eq/GDP]

(4) CO_2 emission related indicators

(a) GHG intensity of domestic power and heat generation [tCO_2eq/MWh]

(b) GHG intensity of final energy consumption by sector [tCO_2eq/toe]

(5) Non-CO_2 emission related parameters

(a) Livestock: dairy cattle [1 000 heads], non-dairy cattle [1 000 heads], sheep [1 000 heads], pig [1 000 heads], poultry [1 000 heads]

(b) Nitrogen input from application of synthetic fertilisers [kt nitrogen]

(c) Nitrogen input from application of manure [kt nitrogen]

(d) Nitrogen fixed by N-fixing crops [kt nitrogen]

(e) Nitrogen in crop residues returned to soils [kt nitrogen]

(f) Area of cultivated organic soils [hectares]

(g) Municipal solid waste (MSW) generation

(h) Municipal solid waste (MSW) going to landfills

(i) Share of CH_4 recovery in total CH_4 generation from landfills [%]

ANNEX II

NATIONAL CONTRIBUTIONS FOR THE SHARE OF ENERGY FROM RENEWABLE SOURCES IN GROSS FINAL CONSUMPTION OF ENERGY IN 2030

<...>

ANNEX III

NOTIFICATION OF CONTRACTING PARTIES' MEASURES AND METHODOLOGIES TO IMPLEMENT ARTICLE 7 OF DIRECTIVE 2012/27/EU AS ADAPTED AND ADOPTED BY MINISTERIAL COUNCIL DECISIONS 2015/08/MC-ENC, 2021/14/MC-EnC AND 2022/02/MC-EnC,

Contracting Parties shall notify to the **Secretariat** their proposed detailed methodology pursuant to point 5 of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** for the operation of the energy efficiency obligation schemes and alternative policy measures referred to in Articles 7a and 7b and Article 20(6) of that Directive.

1. Calculation of the level of the energy savings requirement to be achieved over the whole period from 1 January 202**4** to 31 December 2030, showing how the following elements are taken into account:

(a) the annual final energy consumption, averaged over the most recent three-year period prior to **1 January 2022** [in ktoe];

(b) the total cumulative amount of end-use energy savings to be achieved [in ktoe] in accordance with point (b) of Article 7(1) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(c) data used in the calculation of final energy consumption and sources of such data, including justification for the use of alternative statistical sources and any differences of the resulting quantities (if other sources than Eurostat are used);

2. **Contracting Parties** that decide to use any of the possibilities under Article 7(2) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/ MC-EnC and 2022/02/MC-EnC**, shall also notify their calculation of the level of the energy savings requirement to be achieved over the whole period from 1 January 202**5** to 31 December 2030, showing how the following elements are taken also into account:

(a) their own annual savings rate;

(b) their own calculation baseline and energy used in transport, in whole or in part, excluded from the calculation [in ktoe];

(c) calculated cumulative amount of energy savings over the whole period from 1 January 2025 to 31 December 2030 (before application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC)** [in ktoe];

(d) application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC:**

(i) **<…>**

(ii) amount of energy savings [in ktoe] achieved in the energy transformation, distribution and trans-mission sectors, including efficient district heating and cooling infrastructure, in accordance with point (c) of Article 7(4) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions**

2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC;

(iii) amount of energy savings [in ktoe] resulting from individual actions newly implemented since 31 December 2008 that continue to have an impact in 2020 and beyond, in accordance with point (d) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(iv) amount of energy savings [in ktoe] that stem from policy measures, provided it can be demonstrat-ed that those policy measures result in individual actions carried out from 1 January 2018 and until 31 December 2020, which deliver savings after 31 December 2020, in accordance with point (e) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(v) amount of energy generated [in ktoe] on or in buildings for own use as a result of policy measures promoting new installation of renewable energy technologies, in accordance with point (f) of Article 7(4)of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(vi) amount of energy savings [in ktoe] that exceed the cumulative energy savings required in the period from 1 January 2018 to 31 December 2020, which **Contracting Parties** count towards the period from 1 January 2025 to 31 December 2030 in accordance with point (g) of Article 7(4) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(e) total cumulative amount of energy savings (after application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**).

3. Policy measures in view of the achievement of the savings requirement referred to in Article 7(1) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**:

3.1. Energy efficiency obligation schemes referred to in Article 7a of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decision 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**:

(a) description of the energy efficiency obligation scheme;

(b) expected cumulative and annual amount of savings and duration of the obligation period(s);

(c) obligated parties and their responsibilities;

(d) target sectors;

(e) eligible actions provided for under the measure;

(f) information on the application of the following provisions of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**:

(i) where applicable, specific actions, share of savings to be achieved in households affected by energy poverty in accordance with Article 7(11);

(ii) savings achieved by energy service providers or other third parties in accordance with point (a) of Article 7a(6);

(iii) 'banking and borrowing' in accordance with point (b) of Article 7a(6);

(g) where relevant, information on trading of energy savings.

3.2. Alternative measures referred to in Article 7b and Article 20(6) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC,** (except taxation):

(a) type of policy measure;

(b) brief description of the policy measure, including the design features per each policy measure notified;

(c) expected total cumulative and annual amount of savings per each measure and/ or amount of energy savings in relation to any intermediate periods;

(d) implementing public authorities, participating or entrusted parties and their responsibilities for implementing the policy measure(s);

(e) target sectors;

(f) eligible actions provided for under the measure;

(g) where applicable, specific policy measures or individual actions targeting energy poverty.

3.3. Information on taxation measures:

(a) brief description of taxation measure;

(b) duration of taxation measure;

(c) implementing public authority;

(d) expected cumulative and annual amount of savings per measure;

(e) target sectors and segment of taxpayers;

(f) calculation methodology, including which price elasticities are used and how they have been estab-lished, in accordance with point (4) of Annex V to Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**.

4. Calculation methodology for measures notified under Articles 7a and 7b and Article 20(6) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC,** (except for taxation measures):

(a) measurement methods used referred to in point 1 of Annex V to Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC;**

(b) method to express the energy savings (primary or final energy savings);

(c) lifetimes of measures, rate at which the savings decline over time and approach used to take into account the lifetime of savings;

(d) brief description of the calculation methodology, including how additionality and materiality of savings are ensured and which methodologies and benchmarks are used for deemed and scaled savings;

(e) information on how the possible overlaps between the measures and individual actions are addressed to avoid double counting of energy savings;

(f) where relevant, climatic variations and approach used.

5. Monitoring and verification

(a) brief description of the monitoring and verification system and the process of the verification;

(b) implementing public authority and its main responsibilities in charge of monitoring and verification system in relation to the energy efficiency obligation scheme or alternative measures;

(c) independence of monitoring and verification from the obligated, participating or entrusted parties;

(d) statistically significant proportion of energy efficiency improvement measures and proportion and criteria used to define and select a representative sample;

(e) reporting obligations for obligated parties (savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme).

(f) publication of energy savings achieved (each year) under the energy efficiency obligation scheme and alternative measures;

(g) information on **Contracting Party** law on penalties to be applied in the case of non-compliance;

(h) Information on policy measures provided for in the event that progress is not satisfactory.

ANNEX IV
GENERAL FRAMEWORK FOR LONG-TERM STRATEGIES

1. OVERVIEW AND PROCESS FOR DEVELOPING THE STRATEGIES

1.1. Executive summary

1.2. Legal and policy context

1.3. Public consultation

2. CONTENT

2.1. TOTAL GHG EMISSION REDUCTIONS AND ENHANCEMENTS OF REMOVALS BY SINKS

2.1.1. Projected emission reductions and enhancement of removals by 2050

2.1.2. National target for 2030 and beyond, if available, and indicative milestones for 2040 and 2050

2.1.3. Adaptation policies and measures

2.2. RENEWABLE ENERGY

2.2.1. To the extent feasible, the estimated likely share of renewable energy in final energy consumption by 2050

2.3. ENERGY EFFICIENCY

2.3.1. To the extent feasible, the estimated likely energy consumption by 2050

2.4. SECTOR-SPECIFIC RELATED CONTENT

2.4.1. Energy system

2.4.1.1. Intended or likely future emissions trajectory or range

2.4.1.2. General description of main drivers for energy efficiency, demand-side flexibility and energy consumption and their evolution from 2025 and beyond

2.4.2. Industry

2.4.2.1. Expected emission reductions by sector and energy demands

2.4.2.2. General overview of the policies, existing plans and measures for decarbonisation as described in point 2.1 of Section A of Part I of Annex I

2.4.3. Transport

2.4.3.1. Expected emissions and energy sources by transport type (e.g. cars and vans, heavy duty road transport, shipping, aviation, rail)

2.4.3.2. Decarbonisation options

2.4.4. Agriculture and land use, land-use change and forestry (LULUCF)

2.4.4.1. To the extent feasible, expected emissions by sources and by individual GHGs

2.4.4.2. Emission reduction options envisaged

2.4.4.3. Links to agricultural and rural development policies

3. FINANCING

3.1. Estimates of investment needed

3.2. Policies and measures for related research, development and innovation

4. IMPACT ASSESSMENT OF THE SOCIO-ECONOMIC ASPECTS

5. ANNEXES (as necessary)

5.1. Details on modelling (including assumptions) and/or analysis, indicators, etc.

ANNEX V
GHG INVENTORIES INFORMATION

Part 1

Information to be included in the reports referred to in Article 26(3):

(a) their anthropogenic emissions of GHGs listed in Part 2 of this Annex **<…>**

(b) data on their anthropogenic emissions of carbon monoxide (CO), sulphur dioxide (SO_2), nitrogen oxides (NOx) and volatile organic compounds, consistent with data already reported **<…>** for the year X-2;

(c) their anthropogenic GHG emissions by sources and removals of CO_2 by sinks resulting from LULUCF, for the year X-2, in accordance with the methodologies specified in Part 3 of this Annex.

(d) any changes to the information referred to in points (a), (b) and (c) for the years between the relevant base year or period and the year X-3, indicating the reasons for those changes;

(e) information on indicators, as set out in Part 4 of this Annex, for the year X-2;

(f) **<…>**

(g) information on the steps taken to improve inventory estimates, in particular in areas of the inventory that have been subject to adjustments or recommendations following expert reviews;

(h) the actual or estimated allocation of the verified emissions reported by installation operators to the source categories of the national GHG inventory and the ratio of those verified emissions to the total reported GHG emissions in those source categories, for the year X-2;

(i) where relevant, the results of the checks performed on the consistency of the data used to estimate emissions in preparation of the GHG inventories, for the year X-2, with:

(i) **<…>**;

(ii) **<…>;**

(iii) the energy data reported pursuant to Article 4 of, and Annex B to, Regulation (EC) No 1099/2008, **as adapted and adopted by Ministerial Council Decision 2012/02/MC-EnC, amended by Decisions 2013/02/MC-EnC and 2015/02/MC-EnC**;

(j) a description of changes to their national inventory system, if any;

(k) a description of changes to the national registry, if any;

(l) information on their quality assurance and quality control plans, a general uncertainty assessment, a general assessment of completeness and, any other elements of the national GHG inventory report needed to prepare the **Contracting Parties**' GHG inventory report;

(m) **<…>**

A **Contracting Party** may request to be granted a derogation by the **Secretariat** from point (c) of the first paragraph to apply a different methodology from that specified in Part 3 of this Annex where the methodology improvement required cannot be achieved in time for the improvement to be taken into account in the GHG inventories for the period from **2025** to 2030, or where the cost of the methodology improvement would be disproportionately high compared to the benefits of applying such methodology to improve accounting for emissions and removals due to the low significance of the emissions and removals from the carbon pools concerned. **Contracting Party** wishing to benefit from this derogation

shall submit a reasoned request to the **Secretariat** by 31 December **2023**, indicating by which time the methodology improvement could be implemented, the alternative methodology proposed or both, and an assessment of the potential impacts on the accuracy of accounting. The **Secretariat** may request additional information to be submitted within a specific, reasonable time period. Where the **Secretariat** considers that the request is justified, it shall grant the derogation. If the **Secretariat** rejects the request, it shall give reasons for its decision.

Part 2

The GHGs to be covered are:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous Oxide (N_2O)
- Sulphur hexafluoride (SF_6)
- Nitrogen trifluoride (NF_3)

Hydrofluorocarbons (HFCs):

- HFC-23 CHF_3
- HFC-32 CH_2F_2
- HFC-41 CH_3F
- HFC-125 CHF_2CF_3
- HFC-134 CHF_2CHF_2
- HFC-134a CH_2FCF_3
- HFC-143 CH_2FCHF_2
- HFC-143a CH_3CF_3
- HFC-152 CH_2FCH_2F
- HFC-152a CH_3CHF_2
- HFC-161 CH_3CH_2F
- HFC-227ea CF_3CHFCF_3
- HFC-236cb $CF_3CF_2CH_2F$
- HFC-236ea $CF_3CHFCHF_2$
- HFC-236fa CF_3CH2CF_3
- HFC-245fa $CHF_2CH_2CF_3$
- HFC-245ca $CH_2FCF_2CHF_2$
- HFC-365mfc $CH_3CF_2CH_2CF_3$
- HFC-43-10mee $CF_3CHFCHFCF_2CF_3$ or ($C_5H_2F_{10}$) Perfluorocarbons (PFCs):
- PFC-14, Perfluoromethane, CF_4
- PFC-116, Perfluoroethane, C_2F_6

- PFC-218, Perfluoropropane, C_3F_8
- PFC-318, Perfluorocyclobutane, c-C_4F_8
- Perfluorocyclopropane c-C_3F_6
- PFC-3-1-10, Perfluorobutane, C_4F_{10}
- PFC-4-1-12, Perfluoropentane, C_5F_{12}
- PFC-5-1-14, Perfluorohexane, C_6F_{14}
- PFC-9-1-18, $C_{10}F_{18}$

Part 3

Methodologies for monitoring and reporting in the LULUCF sector

Geographically explicit land-use conversion data in accordance with the 2006 IPCC Guidelines for national GHG inventories.

Tier 1 methodology in accordance with the 2006 IPCC guidelines for national GHG inventories.

For emissions and removals for a carbon pool that accounts for at least 25-30 % of emissions or removals in a source or sink category which is prioritised within a **Contracting Party's** national inventory system because its estimate has a significant influence on a country's total inventory of GHGs in terms of the ab-solute level of emissions and removals, the trend in emissions and removals, or the uncertainty in emissions and removals in the land-use categories, at least Tier 2 methodology in accordance with the 2006 IPCC guidelines for national GHG inventories.

Contracting Parties are encouraged to apply Tier 3 methodology, in accordance with the 2006 IPCC guidelines for national GHG inventories.

Part 4	
Inventory indicators	
Indicator title	**Indicator**
TRANSFORMATION B0	Specific CO_2 emissions of public and auto-producer powerplants, t/TJ
	CO_2 emissions from public and auto-producer thermal power stations, kt
	divided by all products — output by public and auto-producer thermal power stations, PJ
TRANSFORMATION E0	Specific CO_2 emissions of auto-producer plants t/TJ
	CO_2 emissions from auto-producers, kt divided by All products output by
	auto-producer thermal power stations, PJ

INDUSTRY A1.1	Total CO_2 intensity — iron and steel industry, t/million euro
	Total CO_2 emissions from iron and steel, kt divided by gross value added — iron and steel industry
INDUSTRY A1.2	Energy-related CO_2 intensity — chemical industry, t/million euro
	Energy-related CO_2 emissions chemical industries, kt divided by gross value added — chemical industry

INDUSTRY A1.3	Energy-related CO_2 intensity — glass, pottery and building materials industry, t/million euro
	Energy-related CO_2 emissions glass, pottery and building materials, kt divided by gross value added — glass, pottery and buildings material industry
INDUSTRY A1.4	Energy-related CO_2 intensity — food, drink and tobacco industry, t/million euro
	Energy-related CO_2 emissions from food, drink and tobacco industry, kt divided by gross value-added — food, drink and tobacco industry, million euro (EC95)
INDUSTRY A1.5	Energy-related CO_2 intensity — paper and printing industry, t/million euro
	Energy-related CO_2 emissions paper and printing, kt — Gross value-added — paper and printing industry, million euro (EC95)
HOUSEHOLDS A0	Specific CO_2 emissions of households for space heating, t/m^2
	CO_2 emissions of households for space heating divided by surface area of permanently occupied dwellings, million m^2
SERVICES B0	Specific CO_2 emissions of commercial and institutional sector for space heating, kg/m^2
	CO_2 emissions from space heating in commercial and institutional, kt divided by Surface area of services buildings, million m^2
TRANSPORT B0	Specific diesel related CO_2 emissions of passenger cars, g/100 km
	Specific petrol related CO2 emissions of passenger cars, g/100 km

ANNEX VI
POLICIES AND MEASURES INFORMATION IN THE AREA OF GHG EMISSIONS

Information to be included in the reports referred to in Article 18:

(a) a description of their national system for reporting on policies and measures, or groups of measures, and for reporting on projections of anthropogenic GHG emissions by sources and removals by sinks pursuant to Article 39(1) or information on any changes made to that system where such a description has already been provided;

(b) updates relevant to their long-term strategies referred to in Article 15 and progress in implementing those strategies;

(c) information on national policies and measures, or groups of measures, and on implementation of **Energy Community** policies and measures, or groups of measures, that limit or reduce GHG emissions by sources or enhance removals by sinks, presented on a sectoral basis and organised by gas or group of gases (HFCs and PFCs) listed in Part 2 of Annex V. That information shall refer to applicable and relevant national **or Energy Community** policies and shall include:

(i) the objective of the policy or measure and a short description of the policy or measure;

(ii) the type of policy instrument;

(iii) the status of implementation of the policy or measure or group of measures;

(iv) indicators used to monitor and evaluate progress over time;

(v) where available, quantitative estimates of the effects on emissions by sources and removals by sinks of GHGs broken down into:

— the results of **ex ante** assessments of the effects of individual or groups of policies and measures on the mitigation of climate change. Estimates shall be provided for a sequence of four future years ending with 0 or 5 immediately following the reporting year,

— the results of **ex post** assessments of the effects of individual or groups of policies and measures on the mitigation of climate change where available;

(vi) available estimates of the projected costs and benefits of policies and measures, as well as estimates of the realised costs and benefits of policies and measures;

(vii) all existing references to the assessments of the costs and effects of national policies and measures, to information in the implementation of **Energy Community** and Union policies and measures that limit or reduce GHG emissions by sources or enhance removals by sinks and to the underpinning technical reports;

(viii) an assessment of the contribution of the policy or measure to the achievement of the long-term strategy referred to in Article 15;

(d) information on planned additional national policies and measures, or groups of measures, envisaged with a view to limiting GHG emissions;

(e) information regarding the links between the different policies and measures, or groups of measures, reported pursuant to point (c) and the way such policies and measures, or groups of measures, contribute to different projection scenarios.

ANNEX VII
PROJECTIONS INFORMATION IN THE AREA OF GHG EMISSIONS

Information to be included in the reports referred to in Article 18:

(a) projections without measures where available, projections with measures, and, where available, projections with additional measures;

(b) total GHG projections;

(c) the impact of policies and measures identified pursuant to point (a) of Article 18(1). Where such policies and measures are not included, this shall be clearly stated and explained;

(d) results of the sensitivity analysis performed for the projections and information on the models and parameters used;

(e) all relevant references to the assessment and the technical reports that underpin the projections referred to in Article 18(4).

ANNEX VIII

INFORMATION ON NATIONAL ADAPTATION ACTIONS, FINANCIAL AND TECHNOLOGY SUPPORT PROVIDED TO DEVELOPING COUNTRIES AND CARBON PRICE REVENUES

Part 1

Reporting on adaptation actions

Information to be included in the reports referred to in Article 19(1):

(a) the main goals, objectives and institutional framework for adaptation;

(b) climate change projections, including weather extremes, climate-change impacts, assessment of climate vulnerability and risks and key climate hazards;

(c) adaptive capacity;

(d) adaptation plans and strategies;

(e) monitoring and evaluation framework;

(f) progress made in implementation, including good practices and changes to governance.

Part 2

Reporting on support provided to developing countries

Information to be included in the reports referred to in Article 19(3):

(a) information on financial support committed and provided to developing countries for the year X-1 including:

(i) quantitative information on public and mobilised financial resources by the **Contracting Party**. The information on financial flows is to be based on the so-called 'Rio markers' for climate change mitigation-related support and climate change adaptation-related support and other tracking systems introduced by the OECD Development Assistance Committee;

(ii) qualitative methodological information explaining the method used to calculate the quantitative information, including an explanation of methodology for quantifying their data, and, where relevant, other information on the definitions and methodologies used to determine any figures, in particular for information reported on mobilised financial flows;

(iii) available information on activities by the **Contracting Party** related to public-funded technology transfer projects and capacity-building projects for developing countries under the UNFCCC, including whether the technology transferred or capacity-building project was used for mitigating or adapting to the effects of climate change, the recipient country, where possible the amount of support provided, and the type of technology transferred or capacity-building project;

(b) available information for the year X and subsequent years on the planned provision of support, including information on planned activities related to public-funded technology transfer projects or capacity building projects for developing countries under the UNFCCC and on technologies to be transferred and capacity-building projects, including whether the technology transferred or capacity-building project is

intended for mitigating or adapting to the effects of climate change, the recipient country, where possible the amount of support to be provided, and the type of technology transferred or capacity-building project.

Part 3

Reporting on revenues from carbon price

Information to be included in the reports referred to in Article 19(2):

(a) information on the use of **any** revenues during the year X-1 generated by the **Contracting Party on carbon pricing**;

(b) **<…>**;

Revenues not disbursed at the time a **Contracting Party** submits a report to the **Secretariat** pursuant to Article 19(2) shall be quantified and reported in reports for subsequent years.

ANNEX IX
ADDITIONAL REPORTING OBLIGATIONS

Part 1

Additional reporting obligations in the area of renewable energy

The following additional information shall, unless otherwise stated, be included pursuant to point (c) of Article 20:

(a) the functioning of the system of guarantees of origin for electricity, gas and heating and cooling from renewable sources, the levels of issuance and cancellation of guarantees of origin and the resulting an-nual national renewable energy consumption, as well as the measures taken to ensure the reliability and protection against fraud of the system;

(b) amounts of biofuels, biogas renewable transport fuels of non-biological origin, recycled carbon fuels and renewable electricity consumed in the transport sector and, where relevant, their greenhouse saving performance, distinguishing between fuels produced from different types of food and feed crops and each type of feedstock listed in Annex IX to Directive (EU) 2018/2001**, as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(c) developments in the availability, origin and use of biomass resources for energy purposes;

(d) changes in commodity prices and land use within the **Contracting Party** associated with its increased use of biomass and other forms of energy from renewable sources;

(e) the estimated excess production of energy from renewable sources which could be transferred to other **Contracting Parties or** Member States **of the European Union** so that these comply with Article 3(3) of Directive (EU) 2018/2001, **as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** and achieve the national contributions and trajectories referred to in point (a)(2) of Article 4 of this Regulation;

(f) where applicable, the estimated demand for energy from renewable sources to be satisfied by means other than domestic production until 2030, including imported biomass feedstock;

(g) the technological development and deployment of biofuels made from feedstocks listed in Annex IX to Directive (EU) 2018/2001, **as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**;

(h) where available, the estimated impact of the production or use of biofuels, bioliquids and biomass fuels on biodiversity, water resources, water availability and quality, soils and air quality within the **Contracting Party;**

(i) observed cases of fraud in the chain of custody of biofuels, bioliquids and biomass fuels;

(j) information on how the share of biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates;

(k) electricity and heat generation from renewable energy in buildings, including disaggregated data on energy produced, consumed and injected into the grid by solar photovoltaic systems, solar thermal systems, biomass, heat pumps, geothermal systems, as well as all other decentralised renewables systems;

(l) where applicable, the share of renewable energy in district heating, as well as the renewable energy produced by cities and renewable energy communities;

(m) primary supply of solid biomass (in 1 000 m^3, except with regard to point (1)(b)(iii), which will be provided in tonnes)

(1) Forest biomass used for energy production (domestic production and import)

(a) Primary biomass from forest used directly for energy production

(i) Where available, branches and tree tops (reporting is voluntary)

(ii) Where applicable, stumps (reporting is voluntary)

(iii) Round wood (split into industrial roundwood and fuelwood)

(b) Where applicable, forest-based industry co-products used directly for energy

(i) Where applicable, bark

(ii) Chips, sawdust and other wood particles

(iii) Where applicable, black liquor and crude tall oil

(c) Where available, post-consumer wood used directly for energy production

(d) Processed wood-based fuel, produced from feedstocks not accounted under point (1)(a), (b) or (c):

(i) Where applicable, wood charcoal

(ii) Wood pellets and wood briquettes

(2) Where available, agricultural biomass used for energy production (domestic production, import and export)

(a) Energy crops for electricity or heat (including short rotation coppice)

(b) Agricultural crop residues for electricity or heat

(3) Where available, organic waste biomass for energy production (domestic production, import and export)

(a) Organic fraction of industrial waste

(b) Organic fraction of municipal waste

(c) Waste sludges

(n) final energy consumption of solid biomass (amount of solid biomass used for energy production in the following sectors):

(1) Energy sector

(a) Electricity

(b) Combined heat and power

(c) Heat

(2) Industry sector internal (consumed and autoproduced electricity, CHP and heat)

(3) Direct final consumption residential

(4) Other

Part 2

Additional reporting obligations in the area of energy efficiency

In the area of energy efficiency, the following additional information shall be included pursuant to point (c) of Article 21:

(a) major legislative and non-legislative policies, measures, financing measures and programmes implemented in year X-2 and X-1 (with X as the year when the report is due) to achieve their objectives referred to in point (b) of Article 4 which promote energy service markets, improve the energy performance of buildings, measures to utilise energy efficiency potentials of gas and electricity infrastructure and heating and cooling, improve information and qualification, other measures to promote energy efficiency;

(b) the cumulative amount of energy savings achieved through Article 7 of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** in years X-3 and X-2;

(c) the amount of savings achieved by policy measures aimed at alleviation of energy poverty in line with Article 7(11) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(d) where applicable, the amount of savings achieved in accordance with point (c) of Article 7(4) of Directive 2012/27/EU **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(e) progress in each sector and reasons why energy consumption remained stable or was growing in year X-3 and X-2 in final energy consumption sectors;

(f) total building floor area of the buildings with a total useful floor area over 250 m^2 owned and occupied by the **Contracting Parties'** central government that, on 1 January in year X-2 and X-1, which did not meet the energy performance requirements referred to in Article 5(1) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(g) total building floor area of heated and/or cooled buildings owned and occupied by the **Contracting Parties'** central government that was renovated in year X-3 and X-2 referred to in Article 5(1) of the Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(h) number of energy audits carried out in in year X-3 and X-2. In addition, the total estimated number of large companies in their territory to which Article 8(4) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** is applicable and the number of energy audits carried out in those enterprises in the year X-3 and X-2;

(i) applied national primary energy factor for electricity and a justification if this is different from the default coefficient referred to in footnote (3) of Annex IV to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**;

(j) number and floor area of new and renovated nearly zero-energy buildings in year X-2 and X-1, as provided

in Article 9 of the Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decisions 2010/02/MC-EnC and 2021/14/MC-EnC** where necessary based on statistical sampling;

(k) the internet link to the website where the list or the interface of energy services providers referred to in point (c) of Article 18(1) of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** can be accessible.

ANNEX X

ENERGY COMMUNITY BIOENERGY SUSTAINABILITY REPORT

The Energy Community bioenergy sustainability report on energy from biomass to be drafted biennially by the Secretariat together with the implementation report pursuant to point (d) of Article 35(2), shall contain as a minimum the following information:

(a) **the relative environmental benefits and costs of different biofuels, bioliquids and biomass fuels, the effects of the Contracting Parties' import policies thereon, the security of supply implications and the ways of achieving a balanced approach between domestic production and imports;**

(b) **the impact of the production and use of biomass on sustainability in the Energy Community and in third countries, including impacts on biodiversity;**

(c) **data and analysis of current and projected sustainable biomass availability and demand, including the impact of increased demand for biomass on biomass using sectors;**

(d) **the technological development and deployment of biofuels made from feedstocks listed in Annex IX to Directive (EU) 2018/2001, as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC, and an assessment of the feedstock availability and resource competition taking into account the principles of the circular economy;**

(e) **information on, and analysis of, the available scientific research results regarding indirect land-use change in relation to all production pathways, accompanied by an assessment of whether the range of uncertainty identified in the analysis underlying the estimations of indirect land-use change emissions may be narrowed and the possible impact of Energy Community and national policies, such as environment, climate and agricultural policies, may be factored in;**

(f) **in respect of both third countries and Contracting Parties that are a significant source of biofuels, bioliquids and biomass fuels consumed within the Energy Community, on national measures taken to respect the sustainability criteria and GHG saving criteria set out in Article 29(2) to (7) and (10), of Directive (EU) 2018/2001, as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC for soil, water and air protection; and**

(g) aggregated information from the database referred in Article 28(2) of Directive (EU) 2018/2001, **as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.**

In reporting on GHG emission savings from the use of biomass, the **Secretariat** shall use the amounts reported by **Contracting Parties** in accordance with point (b) of Part 1 of Annex IX to this Regulation, including the provisional mean values of the estimated indirect land-use change emissions and the associated range derived from the sensitivity analysis as set out in Annex VIII to Directive (EU) 2018/2001**, as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.** The Commission shall make data on the provisional mean values of the estimated indirect land-use change emissions and the associated range derived from the sensitivity analysis publicly available. In addition, the **Secretariat** shall evaluate whether and how the estimate for direct emission savings would change if co-products were accounted for using the substitution approach.

ANNEX XI

VOLUNTARY SCHEMES IN RESPECT OF WHICH THE SECRETARIAT HAS ISSUED AN OPINION PURSUANT TO ARTICLE 30(4) OF DIRECTIVE (EU) 2018/2001 AS ADOPTED AND ADAPTED BY MINISTERIAL COUNCIL DECISIONS 2021/14/MC-EnC and 2022/02/MC-EnC;

The report on voluntary schemes in respect of which the **Secretariat** has **issued an opinion** pursuant to Article 30(4) of Directive (EU) 2018/2001**, as adopted and adapted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC,** to be adopted biennially by the **Secretariat** together with the **Implementation R**eport pursuant to point (e) of Article 35(2) of this Regulation, shall contain the **Secretariat's** assessment of, as a minimum, the following:

(a) the independence, modality and frequency of audits, both in relation to what is stated on those aspects in the scheme documentation, at the time the scheme concerned was **acknowledged** by the **Secretariat**, and in relation to industry best practices;

(b) the availability of, and experience and transparency in the application of, methods for identifying and dealing with non-compliance, with particular regard to dealing with situations or allegations of serious wrongdoing on the part of members of the scheme;

(c) transparency, particularly in relation to the accessibility of the scheme, the availability of translations in the applicable languages of the countries and regions from which raw materials originate, the accessibility of a list of certified operators and relevant certificates, and the accessibility of auditor reports;

(d) stakeholder involvement, particularly as regards the consultation of indigenous and local communities prior to decision making during the drafting and reviewing of the scheme as well as during audits and the response to their contributions;

(e) the overall robustness of the scheme, particularly in light of rules on the accreditation, qualification and independence of auditors and relevant scheme bodies;

(f) where available, market updates of the scheme, the amount of feedstocks and biofuels certified, by country of origin and type, the number of participants;

(g) the ease and effectiveness of implementing a system that tracks the proofs of conformity with the sustainability criteria that the scheme gives to its member(s), such a system intended to serve as a means of preventing fraudulent activity with a view, in particular, to the detection, treatment and follow-up of suspected fraud and other irregularities and where appropriate, number of cases of fraud or irregularities detected;

(h) options for entities to be authorised to recognise and monitor certification bodies;

(i) criteria for the recognition or accreditation of certification bodies;

(j) rules on how the monitoring of the certification bodies is to be conducted;

(k) ways to facilitate or improve the promotion of best practices.

ANNEX XII
NATIONAL INVENTORY SYSTEMS

Information referred to in Article 37 includes the following:

(a) **<…>**

(b) data collected through the reporting systems on fluorinated gases in the relevant sectors [**pursuant to Montreal Protocol**] for the purpose of preparing national GHG inventories;

(c) **<…>**

(d) data reported under Regulation (EC) No 1099/2008**, as adapted and adopted by Ministerial Council Decision 2012/02/MC-EnC, amended by Decisions 2013/02/MC-EnC and 2015/02/MC-EnC**;

(e) data collected via the geographical tracking of land areas in the context of existing **Energy Community** and **Contracting Party** programmes and surveys, including the LUCAS Land Use Cover Area frame Survey and the Copernicus Programme.

ANNEX XIII
CORRELATION TABLE

<...>

ANNEX XIV[24]
TARGETS FOR NET GREENHOUSE GAS EMISSIONS IN 2030

The targets cover all domestic net GHG emissions of the Contracting Parties, including LULUCF emissions and removals (except for Montenegro)

	Target for net Greenhouse Gas Emissions compared to 1990 levels
Albania	**+53,2%** **12,00 $MtCO_{2eq}$**
Bosnia and Herzegovina	**-41,2%** **15,65 $MtCO_{2eq}$**
Georgia	**-47,0%** **20,50 $MtCO_{2eq}$**
Kosovo*[25]	**-16,3%** **8,95 $MtCO_{2eq}$**
Moldova	**-68,6** **9,10 $MtCO_{2eq}$**
Montenegro[26]	**-55,0%** **2,42 $MtCO_{2eq}$**
North Macedonia	**-82,0%** **2,20 $MtCO_{2eq}$**
Serbia	**-40,3%** **47,82 $MtCO_{2eq}$**
Ukraine	**-65,0%** **309,00 $MtCO_{2eq}$**
Energy Community 2030 target	**-60,9%[27]** **427,64 $MtCO_{2eq}$[28]**

24 The text displayed here corresponds to Article 4(13) of Ministerial Council 2022/02/MC-EnC
25 Target of Kosovo is compared to 2016 levels
26 Target of Montenegro excludes LULUCF emissions and removals
27 The base year used for Kosovo in the calculation of the percentage reduction figure is 2016
28 The absolute target figure represents the sum of the individual Contracting Parties' targets

III. PART

CLIMATE ACQUIS

DIRECTIVE 2003/87/EC of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union

Incorporated and adapted by the Ministerial Council Decision 2022/05/MC-EnC of 15 December 2022 amending Annex I to the Treaty establishing the Energy Community and incorporating Implementing Regulation (EU) 2018/2066, Implementing Regulation (EU) 2018/2067 and Directive 2003/87/EC in the Energy Community acquis communautaire.

The adaptations made by Ministerial Council Decision 2022/05/MC-EnC are highlighted in ***bold and blue.***

CHAPTER I
GENERAL PROVISIONS

Article 1
Subject Matter

<…>

Article 2
Scope

<…>

Article 3
Definitions

<…> the following definitions shall apply:

(a) 'allowance' means an allowance to emit one tonne of carbon dioxide equivalent during a specified period **<…>**;

(b) 'emissions' means the release of greenhouse gases into the atmosphere from sources in an installation or the release from an aircraft performing an aviation activity listed in Annex I of the gases specified in respect of that activity;

(c) 'greenhouse gases' means the gases listed in Annex II and other gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation;

(d) 'greenhouse gas emissions permit' means the permit issued in accordance with Articles 5 and 6;

(e) 'installation' means a stationary technical unit where one or more activities listed in Annex I are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution;

(f) 'operator' means any person who operates or controls an installation or, where this is provided for in

national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated;

(g) 'person' means any natural or legal person;

(h) 'new entrant' means any installation carrying out one or more of the activities listed in Annex I, which has obtained a greenhouse gas emissions permit for the first time **<…>**;

(i) **<…>**

(j) **<…>**

(k) **<…>**

(l) **<…>**

(m) **<…>**

(n) **<…>**

(o) 'aircraft operator' means the person who operates an aircraft at the time it performs an aviation activity listed in Annex I or, where that person is not known or is not identified by the owner of the aircraft, the owner of the aircraft;

(p) 'commercial air transport operator' means an operator that, for remuneration, provides scheduled or non-scheduled air transport services to the public for the carriage of passengers, freight or mail;

(q) 'administering **Contracting Party**' means the **Contracting Party** responsible for administering the **monitoring, reporting and verification of greenhouse gas emissions for the purpose of carbon pricing and emission allowance trading** in respect of an aircraft operator **<…>**;

(r) **<…>**

(s) **<…>**

(t) 'combustion' means any oxidation of fuels, regardless of the way in which the heat, electrical or mechanical energy produced by this process is used, and any other directly associated activities, including waste gas scrubbing;

(u) **<…>**

CHAPTER II
AVIATION

Article 3a

<…>

Article 3b

<…>

Article 3c

<…>

Article 3d

<…>

Article 3e

<…>

Article 3f

<…>

Article 3g

<…>

CHAPTER III
STATIONARY INSTALLATIONS

Article 3h

<…>

Article 4

Greenhouse gas emissions permits

Contracting Parties shall ensure that, from 1 January **2024**, no installation carries out any activity listed in Annex I resulting in emissions specified in relation to that activity unless its operator holds a permit issued by a competent authority in accordance with Articles 5 and 6 **<…>**

Article 5

Applications for greenhouse gas emissions permits

An application to the competent authority for a greenhouse gas emissions permit shall include a description of:

(a) the installation and its activities including the technology used;

(b) the raw and auxiliary materials, the use of which is likely to lead to emissions of gases listed in Annex I;

(c) the sources of emissions of gases listed in Annex I from the installation and

(d) the measures planned to monitor and report emissions **<…>**.

The application shall also include a non-technical summary of the details referred to in the first subparagraph.

Article 6

Conditions for and contents of the greenhouse gas emissions permit

1. The competent authority shall issue a greenhouse gas emissions permit granting authorisation to emit greenhouse gases from all or part of an installation if it is satisfied that the operator is capable of monitoring and reporting emissions.

A greenhouse gas emissions permit may cover one or more installations on the same site operated by the same operator.

2. Greenhouse gas emissions permits shall contain the following

(a) the name and address of the operator;

(b) a description of the activities and emissions from the installation;

(c) a monitoring plan that fulfils the requirements **defined in national rules related to the monitoring, reporting and verification of greenhouse gas emissions**. **Contracting Parties** may allow operators to update monitoring plans without changing the permit. Operators shall submit any updated monitoring plans to the competent authority for approval;

(d) reporting requirements; and

(e) **<…>**

Article 7

Changes relating to installations

The operator shall inform the competent authority of any planned changes to the nature or functioning of the installation, or any extension or significant reduction of its capacity, which may require updating the greenhouse gas emissions permit. Where appropriate, the

competent authority shall update the permit. Where there is a change in the identity of the installation's operator, the competent authority shall update the permit to include the name and address of the new operator.

Article 8

Coordination with Directive 2010/75/EU as adapted and adopted by Ministerial Council Decision 2013/06/MC-EnC

Contracting Parties shall take the necessary measures to ensure that, where installations carry out activities that are included in Annex I to Directive 2010/75/EU **as adapted and adopted by Ministerial**

Council Decision 2013/06/MC-EnC <…>, the conditions and procedure for the issue of a greenhouse gas emissions permit are coordinated with those for the issue of a permit provided for in that Directive. The requirements laid down in Articles 5, 6 and 7 of this Directive may be integrated into the procedures provided for in Directive 2010/75/EU **as adapted and adopted by Ministerial Council Decision 2013/06/MC-EnC**.

Article 9

<…>

Article 9a

<…>

Article 10

<…>

Article 10a

<…>

Article 10b

<…>

Article 10c

<…>

Article 10d

<…>

Article 11

<…>

CHAPTER IV
PROVISIONS APPLYING TO AVIATION AND STATIONARY INSTALLATIONS

Article 11a

<…>

Article 11b

<…>

Article 12

<…>

Article 13

<…>

Article 14

<…>

Article 15

Verification and accreditation

Contracting Parties shall ensure that the reports submitted by operators and aircraft operators **<…>** are verified in accordance with the criteria set out in Annex V and any detailed provisions adopted by the **European** Commission **<…>**, and that the competent authority is informed thereof **by the Energy Community Secretariat**.

<…>

<…>

<…>

Article 15a

<…>

Article 16

<…>

Article 17

<…>

Article 18

Competent authority

Contracting Parties shall make the appropriate administrative arrangements, including the designation

of the appropriate competent authority or authorities, for the implementation of the rules of this Directive.

Where more than one competent authority is designated, the work of these authorities undertaken pursuant to this Directive must be coordinated.

<...>

Article 18a

<...>

Article 18b

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Article 19

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Article 20

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Article 21

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Article 21a

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Article 22

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Article 28

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Article 28a

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Article 28b

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Article 28c

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Article 29

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Article 29a

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Article 30

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CHAPTER V
FINAL PROVISIONS

Article 31

<...>

Article 32

<...>

Article 33

<...>

ANNEX I
CATEGORIES OF ACTIVITIES TO WHICH THIS DIRECTIVE APPLIES

1. Installations or parts of installations used for research, development and testing of new products and processes and installations exclusively using biomass are not covered by this Directive.

2. The thresholds values given below generally refer to production capacities or outputs. Where several activities falling under the same category are carried out in the same installation, the capacities of such activities are added together.

3. When the total rated thermal input of an installation is calculated **<…>**, the rated thermal inputs of all technical units which are part of it, in which fuels are combusted within the installation, are added together. These units could include all types of boilers, burners, turbines, heaters, furnaces, incinerators, calciners, kilns,

ovens, dryers, engines, fuel cells, chemical looping combustion units, flares, and thermal or catalytic post-combustion units. Units with a rated thermal input under 3 MW and units which use exclusively biomass shall not be taken into account for the purposes of this calculation. 'Units using exclusively biomass' includes units which use fossil fuels only during start up or shut-down of the unit.

4. **<…>**

5. When the capacity threshold of any activity in this Annex is found to be exceeded in an installation, all units in which fuels are combusted, other than units for the incineration of hazardous or municipal waste, shall be included in the greenhouse gas emission permit.

6. From 1 January **2024** all flights which arrive at or depart from an aerodrome situated in the territory of a **Contracting Party <…>** shall be included.

Activities	**Greenhouse gases**
Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	Carbon dioxide
Refining of mineral oil	Carbon dioxide
Production of coke	Carbon dioxide
Metal ore (including sulphide ore) roasting or sintering, including pelletisation	Carbon dioxide
Production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2,5 tonnes per hour	Carbon dioxide
Production or processing of ferrous metals (including ferro-alloys) where combustion units with a total rated thermal input exceeding 20 MW are operated. Processing includes, inter alia, rolling mills, re-heaters, annealing furnaces, smitheries, foundries, coating and pickling	Carbon dioxide
Production of primary aluminium	Carbon dioxide and perfluorocarbons
Production of secondary aluminium where combustion units with a total rated thermal input exceeding 20 MW are operated	Carbon dioxide

Production or processing of non-ferrous metals, including production of alloys, refining, foundry casting, etc., where combustion units with a total rated thermal input (including fuels used as reducing agents) exceeding 20 MW are operated	Carbon dioxide
Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day	Carbon dioxide
Production of lime or calcination of dolomite or magnesite in rotary kilns or in other furnaces with a production capacity exceeding 50 tonnes per day	Carbon dioxide
Manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day	Carbon dioxide
Manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day	Carbon dioxide
Manufacture of mineral wool insulation material using glass, rock or slag with a melting capacity exceeding 20 tonnes per day	Carbon dioxide
Drying or calcination of gypsum or production of plaster boards and other gypsum products, where combustion units with a total rated thermal input exceeding 20 MW are operated	Carbon dioxide
Production of pulp from timber or other fibrous materials	Carbon dioxide
Production of paper or cardboard with a production capacity exceeding 20 tonnes per day	Carbon dioxide
Production of carbon black involving the carbonisation of organic substances such as oils, tars, cracker and distillation residues, where combustion units with a total rated thermal input exceeding 20 MW are operated	Carbon dioxide
Production of nitric acid	Carbon dioxide and nitrous oxide
Production of adipic acid	Carbon dioxide and nitrous oxide
Production of glyoxal and glyoxylic acid	Carbon dioxide and nitrous oxide
Production of ammonia	Carbon dioxide
Production of bulk organic chemicals by cracking, reforming, partial or full oxidation or by similar processes, with a production capacity exceeding 100 tonnes per day	Carbon dioxide
Production of hydrogen (H2) and synthesis gas by reforming or partial oxidation with a production capacity exceeding 25 tonnes per day	Carbon dioxide
Production of soda ash (Na2CO3) and sodium bicarbonate (NaHCO3)	Carbon dioxide
Capture of greenhouse gases from installations covered by this Directive for the purpose of transport and geological storage in a storage site permitted under Directive 2009/31/EC	Carbon dioxide
Transport of greenhouse gases by pipelines for geological storage in a storage site permitted under Directive 2009/31/EC	Carbon dioxide

Geological storage of greenhouse gases in a storage site permitted under Directive 2009/31/EC	Carbon dioxide
Aviation Flights which depart from or arrive in an aerodrome situated in the territory of a **Contracting Party <…>**. This activity shall not include: (a) flights performed exclusively for the transport, on official mission, of a reigning Monarch and his immediate family, Heads of State, Heads of Government and Government Ministers, of a country other than a **Contracting Party**, where this is substantiated by an appropriate status indicator in the flight plan; (b) military flights performed by military aircraft and customs and police flights; (c) flights related to search and rescue, fire-fighting flights, humanitarian flights and emergency medical service flights authorised by the appropriate competent authority; (d) any flights performed exclusively under visual flight rules as defined in Annex 2 to the Chicago Convention; (e) flights terminating at the aerodrome from which the aircraft has taken off and during which no intermediate landing has been made; (f) training flights performed exclusively for the purpose of obtaining a licence, or a rating in the case of cockpit flight crew where this is substantiated by an appropriate remark in the flight plan provided that the flight does not serve for the transport of passengers and/or cargo or for the positioning or ferrying of the aircraft; (g) flights performed exclusively for the purpose of scientific research or for the purpose of checking, testing or certifying aircraft or equipment whether airborne or ground-based; (h) flights performed by aircraft with a certified maximum take-off mass of less than 5 700 kg; (i) **<…>** (j) flights which, but for this point, would fall within this activity, performed by a commercial air transport operator operating either: — fewer than 243 flights per period for three consecutive four-month periods, or — flights with total annual emissions lower than 10 000 tonnes per year. **<…>**; (k) from 1 January 2013 to 31 December 2030, flights which, but for this point, would fall within this activity, performed by a non-commercial aircraft operator operating flights with total annual emissions lower than 1 000 tonnes per year **<…>**; (l) **<…>** (m) **<…>**	Carbon dioxide

ANNEX II
GREENHOUSE GASES REFERRED TO IN ARTICLES 3 AND 30

Carbon dioxide (CO_2)

Methane (CH_4)

Nitrous Oxide (N_2O)

Hydrofluorocarbons (HFCs)

Perfluorocarbons (PFCs)

Sulphur Hexafluoride (SF_6)

ANNEX IIa

<...>

ANNEX IIb

<...>

ANNEX IV
PRINCIPLES FOR MONITORING AND REPORTING <...>

PART A — Monitoring and reporting of emissions from stationary installations

Monitoring of carbon dioxide emissions

Emissions shall be monitored either by calculation or on the basis of measurement.

Calculation

Calculations of emissions shall be performed using the formula:

Activity data × Emission factor × Oxidation factor

Activity data (fuel used, production rate etc.) shall be monitored on the basis of supply data or measurement.

Accepted emission factors shall be used. Activity-specific emission factors are acceptable for all fuels. Default factors are acceptable for all fuels except non commercial ones (waste fuels such as tyres and industrial process gases). Seam specific defaults for coal, and EU-specific or producer country-specific defaults for natural gas shall be further elaborated. IPCC default values are acceptable for refinery products. The emission factor for biomass shall be zero.

If the emission factor does not take account of the fact that some of the carbon is not oxidised, then an additional oxidation factor shall be used. If activity-specific emission factors have been calculated and already take oxidation into account, then an oxidation factor need not be applied.

Default oxidation factors developed pursuant to Directive 96/61/EC shall be used, unless the operator can demonstrate that activity-specific factors are more accurate.

A separate calculation shall be made for each activity, installation and for each fuel.

Measurement

Measurement of emissions shall use standardised or accepted methods, and shall be corroborated by a supporting calculation of emissions.

<...>

Reporting of emissions

Each operator shall include the following information in the report for an installation:

A. Data identifying the installation, including:

— Name of the installation;

— Its address, including postcode and country;

— Type and number of Annex I activities carried out in the installation;

— Address, telephone, fax and email details for a contact person; and

— Name of the owner of the installation, and of any parent company.

B. For each Annex I activity carried out on the site for which emissions are calculated:

— Activity data;

— Emission factors;

— Oxidation factors;

— Total emissions; and

— Uncertainty.

C. For each Annex I activity carried out on the site for which emissions are measured:

— Total emissions;

— Information on the reliability of measurement methods; and

— Uncertainty.

D. For emissions from combustion, the report shall also include the oxidation factor, unless oxidation has already been taken into account in the development of an activity-specific emission factor.

Contracting Parties shall take measures to coordinate reporting requirements with any existing reporting requirements in order to minimise the reporting burden on businesses.

PART B — Monitoring and reporting of emissions from aviation activities

Monitoring of carbon dioxide emissions

Emissions shall be monitored by calculation. Emissions shall be calculated using the formula:

Fuel consumption × emission factor

Fuel consumption shall include fuel consumed by the auxiliary power unit.

Actual fuel consumption for each flight shall be used wherever possible and shall be calculated using the formula:

Amount of fuel contained in aircraft tanks once fuel uplift for the flight is complete – amount of fuel contained in aircraft tanks once fuel uplift for subsequent flight is complete + fuel uplift for that subsequent flight.

If actual fuel consumption data are not available, a standardised tiered method shall be used to estimate fuel consumption data based on best available information.

Default IPCC emission factors, taken from the 2006 IPCC Inventory Guidelines or subsequent updates of these Guidelines, shall be used unless activity-specific emission factors identified by independent accredited laboratories using accepted analytical methods are more accurate. The emission factor for biomass shall be zero.

A separate calculation shall be made for each flight and for each fuel.

Reporting of emissions

Each aircraft operator shall include the following information in its report **<…>**:

A. Data identifying the aircraft operator, including:

— name of the aircraft operator,

— its administering **Contracting Party**,

— its address, including postcode and country and, where different, its contact address in the administering **Contracting Party**,

— the aircraft registration numbers and types of aircraft used in the period covered by the report to perform the aviation activities listed in Annex I for which it is the aircraft operator,

— the number and issuing authority of the air operator certificate and operating licence under which the aviation activities listed in Annex I for which it is the aircraft operator were performed,

— address, telephone, fax and e-mail details for a contact person, and

— name of the aircraft owner.

B. For each type of fuel for which emissions are calculated:

— fuel consumption,

— emission factor,

— total aggregated emissions from all flights performed during the period covered by the report which fall within the aviation activities listed in Annex I for which it is the aircraft operator,

— aggregated emissions from:

— all flights performed during the period covered by the report which fall within the aviation activities listed in Annex I for which it is the aircraft operator and which departed from an aerodrome situated in the territory of a **Contracting Party** and arrived at an aerodrome situated in the territory of the same **Contracting Party**,

— all other flights performed during the period covered by the report which fall within the aviation activities listed in Annex I for which it is the aircraft operator,

— aggregated emissions from all flights performed during the period covered by the report which fall within the aviation activities listed in Annex I for which it is the aircraft operator and which:

— departed from each **Contracting Party**, and

— arrived in each **Contracting Party** from a third country,

— uncertainty.

ANNEX V
CRITERIA FOR VERIFICATION <...>

PART A — Verification of emissions from stationary installations

General Principles

1. Emissions from each activity listed in Annex I shall be subject to verification.

2. The verification process shall include consideration of the report **<...>** and of monitoring during the preceding year. It shall address the reliability, credibility and accuracy of monitoring systems and the reported data and information relating to emissions, in particular:

(a) the reported activity data and related measurements and calculations;

(b) the choice and the employment of emission factors;

(c) the calculations leading to the determination of the overall emissions; and

(d) if measurement is used, the appropriateness of the choice and the employment of measuring methods.

3. Reported emissions may only be validated if reliable and credible data and information allow the emissions to be determined with a high degree of certainty. A high degree of certainty requires the operator to show that:

(a) the reported data is free of inconsistencies;

(b) the collection of the data has been carried out in accordance with the applicable scientific standards; and

(c) the relevant records of the installation are complete and consistent.

4. The verifier shall be given access to all sites and information in relation to the subject of the verification.

5. The verifier shall take into account whether the installation is registered under the **Energy Community** eco-management and audit scheme (EMAS).

Methodology

Strategic analysis

6. The verification shall be based on a strategic analysis of all the activities carried out in the installation. This requires the verifier to have an overview of all the activities and their significance for emissions.

Process analysis

7. The verification of the information submitted shall, where appropriate, be carried out on the site of the installation. The verifier shall use spot-checks to determine the reliability of the reported data and information.

Risk analysis

8. The verifier shall submit all the sources of emissions in the installation to an evaluation with regard to the reliability of the data of each source contributing to the overall emissions of the installation.

9. On the basis of this analysis the verifier shall explicitly identify those sources with a high risk of error and other aspects of the monitoring and reporting procedure which are likely to contribute to errors in the determination of the overall emissions. This especially involves the choice of the emission factors

and the calculations necessary to determine the level of the emissions from individual sources. Particular attention shall be given to those sources with a high risk of error and the abovementioned aspects of the monitoring procedure.

10. The verifier shall take into consideration any effective risk control methods applied by the operator with a view to minimising the degree of uncertainty.

Report

11. The verifier shall prepare a report on the validation process stating whether the report **<…>** is satisfactory. This report shall specify all issues relevant to the work carried out. A statement that the report **<…>** is satisfactory may be made if, in the opinion of the verifier, the total emissions are not materially misstated.

Minimum competency requirements for the verifier

12. The verifier shall be independent of the operator, carry out his activities in a sound and objective professional manner, and understand:

(a) the provisions of this Directive, as well as relevant standards and guidance adopted by the **Ministerial Council of the Energy Community**;

(b) the legislative, regulatory, and administrative requirements relevant to the activities being verified; and

(c) the generation of all information related to each source of emissions in the installation, in particular, relating to the collection, measurement, calculation and reporting of data.

PART B — Verification of emissions from aviation activities

13. The general principles and methodology set out in this Annex shall apply to the verification of reports of emissions from flights falling within an aviation activity listed in Annex I.

For this purpose:

(a) in paragraph 3, the reference to operator shall be read as if it were a reference to an aircraft operator, and in point (c) of that paragraph the reference to installation shall be read as if it were a reference to the aircraft used to perform the aviation activities covered by the report;

(b) in paragraph 5, the reference to installation shall be read as if it were a reference to the aircraft operator;

(c) in paragraph 6 the reference to activities carried out in the installation shall be read as a reference to aviation activities covered by the report carried out by the aircraft operator;

(d) in paragraph 7 the reference to the site of the installation shall be read as if it were a reference to the sites used by the aircraft operator to perform the aviation activities covered by the report;

(e) in paragraphs 8 and 9 the references to sources of emissions in the installation shall be read as if they were a reference to the aircraft for which the aircraft operator is responsible; and

(f) in paragraphs 10 and 12 the references to operator shall be read as if they were a reference to an aircraft operator.

Additional provisions for the verification of aviation emission reports

14. The verifier shall in particular ascertain that:

(a) all flights falling within an aviation activity listed in Annex I have been taken into account. In this task the verifier shall be assisted by timetable data and other data on the aircraft operator's traffic including data from Eurocontrol requested by that operator;

(b) there is overall consistency between aggregated fuel consumption data and data on fuel purchased or otherwise supplied to the aircraft performing the aviation activity.

Additional provisions for the verification of tonne-kilometre <…>

15. The general principles and methodology for verifying emissions reports **<…>** as set out in this Annex shall, where applicable, also apply correspondingly to the verification of aviation tonne-kilometre data.

16. **<…>**

COMMISSION DELEGATED REGULATION (EU) 2020/1044 of 8 May 2020 supplementing Regulation (EU) 2018/1999 with regard to values for global warming potentials and the inventory guidelines and with regard to the Union inventory system

Incorporated and adapted by the Ministerial Council Decision 2021/14/MC-EnC of 30 November 2021 on incorporating Regulation (EU) 2018/1999 in the Energy Community acquis communautaire and amending Annex I of the Treaty.

The adaptations made by Ministerial Council Decision 2021/14/MC-EnC are highlighted in **bold and blue**.

Article 1

Scope

This Regulation applies to the reports submitted by the **Contracting Parties** containing data required for the year **2023** onwards.

Article 2

Global warming potentials

The **Contracting Parties** and the **Energy Community Secretariat** shall use the global warming potentials listed in Annex I to this Regulation for the purpose of determining and reporting greenhouse gas inventories data pursuant to paragraphs 3 **<…>** of Article 26 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

Article 3

Greenhouse gas inventory guidelines

The **Contracting Parties** and the **Energy Community Secretariat** shall determine greenhouse gas inventories referred to in paragraphs 3 **<…>** of Article 26 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with:

(a) the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories;

(b) the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement set out in the Annex to Decision 18/CMA.1 of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement ('Decision 18/CMA.1').

Article 4

Quality assurance and quality control programme objectives

1. The **Energy Community Secretariat** shall manage, maintain and seek to continuously improve the **Contracting Parties** greenhouse gas inventory system based on the following quality assurance and quality control programme objectives:

(a) that the **Contracting Parties** greenhouse gas inventory is complete by, where relevant, applying the procedure set out in Article 37(5) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, in consultation with the Contracting Party concerned;

(b) that the **Contracting Parties** greenhouse gas inventory system provides a transparent aggregation of **Contracting Parties**' greenhouse gas emissions by sources and removals by sinks as well as overviews of methodological descriptions for **Contracting Parties** key categories, and reflects in a transparent manner the contribution of **Contracting Parties**' emissions by sources and removals by sinks to the **Contracting Parties** greenhouse gas inventory;

(c) that the total of the **Contracting Parties** greenhouse gas emissions by sources and removals by sinks for a reporting year is equal to the sum of **Contracting Parties**' greenhouse gas emissions by sources and removals by sinks reported pursuant to paragraphs 3 **<…>** of Article 26 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** for that same year;

(d) that the **Contracting Parties** greenhouse gas inventory includes a consistent time series of emissions by sources and removals by sinks for all reported years.

2. The **Energy Community Secretariat** and the **Contracting Parties** shall increase, where possible, the comparability of national greenhouse gas inventories by seeking synergy of methods, activity data, notation keys and the allocation of emissions by sources and removals by sinks by **Contracting Parties**, where appropriate.

3. The quality assurance and quality control programme objectives of the **Contracting Parties** inventory shall complement the quality assurance and quality control programmes objectives implemented by the **Contracting Parties**.

4. **Contracting Parties** shall ensure the quality of activity data, emission factors and other parameters used for their national greenhouse gas inventory.

Article 5

Gap filling

1. The **Energy Community Secretariat** estimates for completing the inventory data submitted by a **Contracting Party** as referred to in Article 37(5) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall be based on the following methodologies and data:

(a) where a **Contracting Party** has submitted in the previous reporting year a consistent time series of estimates for the relevant source category and:

(i) that **Contracting Party** has submitted an approximated greenhouse gas inventory for the

year X – 1 pursuant to Article 26(2) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** that includes the missing estimate, on the data from that approximated greenhouse gas inventory;

(ii) that **Contracting Party** has not submitted an approximated greenhouse gas inventory for the year X – 1 under Article 26(2) of Regulation (EU) 2018/1999, but the **Energy Community Secretariat** has estimated approximated greenhouse gas emissions for the year X – 1 for that **Contracting Party** in accordance with Article 26(2) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** on the data from that Energy Community approximated greenhouse gas inventory;

(iii) the use of the data from the approximated greenhouse gas inventory of the **Contracting Party** is not possible or may lead to a highly inaccurate estimation, for missing estimates in the energy sector, on the energy statistics data obtained in accordance with Regulation (EC) No 1099/2008 of the European Parliament and of the Council, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(iv) the use of the data from the approximated greenhouse gas inventory is not possible or may lead to a highly inaccurate estimation, for missing estimates in non-energy sectors, on estimation methodologies consistent with the technical advice on gap filling in Section 2.2.3 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Vol. 1) using, where appropriate, European statistics;

(b) where an estimate of an emission by source or removal by sink for the relevant category was subject to technical corrections in accordance with Article 38(2)(d) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in the latest review prior to the submission and the **Contracting Party** concerned has not submitted a revised estimate, on the method used by the technical expert review team to calculate the technical correction;

(c) where a consistent time series of reported estimates for the relevant source category is not available, on estimation methodologies consistent with the technical advice on gap filling in Section 2.2.3 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Vol. 1).

2. The **Energy Community Secretariat** shall prepare the estimates referred to in paragraph 1 by 31 March of the reporting year in consultation and close cooperation with the **Contracting Party** concerned.

3. **<…>**

Article 6

Initial checks

The initial checks performed by the **Energy Community Secretariat** pursuant to Article 37(4) of Regulation (EU) 2018/1999 may include:

(a) an assessment whether all categories required under the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement set out in the Annex to Decision 18/CMA.1 and all greenhouse gases referred to in Annex V of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** are reported by the **Contracting Party**;

(b) an assessment whether emissions by sources and removals by sinks data time series are consistent;

(c) an assessment whether implied emission factors across **Contracting Parties** are comparable taking into account the IPCC default emission factors for different national circumstances;

(d) an assessment of the use of 'Not Estimated' notation keys where IPCC Tier 1 methodologies exist and where the use of the notation key is not justified in accordance with point 32 of the Annex to Decision 18/CMA.1;

(e) an analysis of recalculations performed for the greenhouse gas inventory submission, including whether the recalculations are based on methodological changes;

(f) a comparison of the verified greenhouse gas emissions reported under the **Energy Community information** system with the greenhouse gas emissions reported pursuant to Article 26(3) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(g) a comparison of the results of Eurostat's reference approach with the **Contracting Parties**' reference approach;

(h) a comparison of the results of Eurostat's sectoral approach with the **Contracting Parties**' sectoral approach;

(i) an assessment whether issues from earlier **Energy Community Secretariat** initial checks and reviews as well as recommendations from UNFCCC reviews **where applicable** have been implemented by the **Contracting Party**;

(j) an assessment of the accuracy of **Contracting Parties**' emissions by sources and removals by sinks estimates in relation to **Energy Community** key categories;

(k) an assessment of the transparency and completeness of the methodological descriptions reported by **Contracting Parties** for the **Energy Community** key categories.

(l) an assessment of monitoring and reporting of emissions by sources and removals by sinks in the land use, land use change and forestry (LULUCF) sector pursuant to Part 3 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, including the assignment of key categories, Tier methodology applied, and a comparison of reported land use and land use change activity data with information derived from the Union and Member State programmes and surveys.

Article 7

<...>

Article 8

<...>

Article 9

Entry into force and application

This decision shall enter into force on the date of its adoption.

ANNEX

GLOBAL WARMING POTENTIALS

Acronym, common name or chemical name	Global warming potential
Carbon dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous oxide (N_2O)	265
Sulphur hexafluoride (SF_6)	23 500
Nitrogen trifluoride (NF_3)	16 100
Hydrofluorocarbons (HFCs):	
HFC-23 CHF_3	12 400
HFC-32 CH_2F_2	677
HFC-41 CH_3F	116
HFC-125 CHF_2CF_3	3 170
HFC-134 CHF_2CHF_2	1 120
HFC-134a CH_2FCF_3	1 300
HFC-143 CH_2FCHF_2	328
HFC-143a CH_3CF_3	4 800
HFC-152 CH_2FCH_2F	16
HFC-152a CH_3CHF_2	138
HFC-161 CH_3CH_2F	4
HFC-227ea CF_3CHFCF_3	3 350
HFC-236cb $CF_3CF_2CH_2F$	1 210
HFC-236ea $CF_3CHFCHF_2$	1 330
HFC-236fa $CF_3CH_2CF_3$	8 060
HFC-245fa $CHF_2CH_2CF_3$	858
HFC-245ca $CH_2FCF_2CHF_2$	716
HFC-365mfc $CH_3CF_2CH_2CF_3$	804
HFC-43-10mee $CF_3CHFCHFCF_2CF_3$ or ($C_5H_2F_{10}$)	1 650
Perfluorocarbons (PFCs):	
PFC-14, Perfluoromethane, CF_4	6 630
PFC-116, Perfluoroethane, C_2F_6	11 100
PFC-218, Perfluoropropane, C_3F_8	8 900
PFC-318, Perfluorocyclobutane, c-C_4F_8	9 540
Perfluorocyclopropane c-C_3F_6	9 200

PFC-3-1-10, Perfluorobutane, C_4F_{10}	9 200
PFC-4-1-12, Perfluoropentane, C_5F_{12}	8 550
PFC-5-1-14, Perfluorohexane, C_6F_{14}	7 910
PFC-9-1-18, $C_{10}F_{18}$	7 190

COMMISSION IMPLEMENTING REGULATION (EU) 2020/1208 of 7 August 2020 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999

Incorporated and adapted by the Ministerial Council Decision 2021/14/MC-EnC of 30 November 2021 on incorporating Regulation (EU) 2018/1999 in the Energy Community acquis communautaire and amending Annex I of the Treaty.

The adaptations made by Ministerial Council Decision 2021/14/MC-EnC are highlighted in **bold and blue**.

CHAPTER I
SUBJECT MATTER, SCOPE AND DEFINITIONS

Article 1
Subject matter

This Regulation establishes rules implementing Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** as regards the following:

(a) **Contracting Parties**' reporting on national adaptation actions, the use of **carbon price mechanism** revenues and financial and technology support provided to developing countries pursuant to Article 19 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(b) **Contracting Parties**' reporting on approximated greenhouse gas (or GHG) inventories, greenhouse gas inventories and accounted greenhouse gas emissions and removals pursuant to Article 26 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(c) requirements on the establishment, operation and functioning of national inventory systems pursuant to Article 37 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(d) the timing and the procedure for carrying out the comprehensive review pursuant to Article 38 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(e) **Contracting Parties**' reporting on national system for policies and measures and projections pursuant to Article 39 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

Article 2

Scope

This Regulation applies to the reports submitted by the **Contracting Parties** containing data required for the year **2023** onwards.

Article 3

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) 'common reporting table', or 'CRT', means a table for information on anthropogenic greenhouse gas emissions by sources and removals by sinks included in Annex II to Decision 24/CP.19 of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (Decision 24/CP.19);

(2) 'reference approach' means the reference approach by the Intergovernmental Panel on Climate Change (IPCC), as set out in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories ('2006 IPCC Guidelines');

(3) 'approach 1' means the basic method for the estimation of uncertainties included in the 2006 IPCC Guidelines;

(4) 'key category' means a category which has a significant influence on a **Contracting Party**'s or the **Energy Community** total inventory of greenhouse gases in terms of the absolute level of emissions and removals, the trend in emissions and removals, or uncertainty in emissions and removals;

(5) 'sectoral approach' means the IPCC sectoral approach as set out in the 2006 IPCC Guidelines;

(6) 'outline for greenhouse gas inventory documents' means the outline set out in the Appendix to the UNFCCC reporting guidelines on annual greenhouse gas inventories as included in Annex I to Decision 24/CP.19.;

(7) 'transparency MPGs' means the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement, as set out in in the Annex to Decision 18/CMA.1 of the Conference of the Parties to the UNFCCC serving as meeting of the Parties to the Paris Agreement;

(8) 'greenhouse gas inventory guidelines' mean guidelines specified in Article 3 of the Commission Delegated Regulation (EU) 2020/1044 (9), **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(9) 'recalculation' is a procedure for re-estimating, in accordance with the greenhouse gas inventory guidelines anthropogenic GHG emissions by sources and removals by sinks of previously submitted GHG inventories as a consequence of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used, or the inclusion of new source and sink categories.

CHAPTER II

REPORTING BY CONTRACTING PARTIES ON NATIONAL ADAPTATION ACTIONS, CARBON PRICE MECHANISM REVENUES AND SUPPORT TO DEVELOPING COUNTRIES

Article 4

Information on national adaptation actions

Contracting Parties shall report the information on their national adaptation actions pursuant to Article 19(1) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex I to this Regulation.

Article 5

Information on the use of carbon price mechanism revenues

Contracting Parties shall report the information on the use of revenues generated by **carbon price mechanisms** pursuant to Article 19(2) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the formats set out in Annex II to this Regulation.

Article 6

Information on financial and technology support provided to developing countries

1. **Contracting Parties** shall report the quantitative information on public and mobilised financial resources referred to in point (a)(i) and available information on activities by the Member State related to public-funded technology transfer projects and capacity-building projects for developing countries under the UNFCCC referred to in point (a)(iii) of Part 2 of Annex VIII to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, in accordance with the common tabular format introduced by the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee for reporting to the Creditor Reporting System (CRS) or the formats set out in Annex III to this Regulation.

2. **Contracting Parties** shall report the qualitative methodological information explaining the method used to calculate the quantitative information referred to in point (a)(ii) of Part 2 of Annex VIII to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex IV to this Regulation.

3. **Contracting Parties** shall report available information on the planned provision of support referred to in point (b) of Part 2 of Annex VIII to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex V to this Regulation.

CHAPTER III

REPORTING BY CONTRACTING PARTIES ON APPROXIMATED GREENHOUSE GAS INVENTORIES, GREENHOUSE GAS INVENTORIES AND ACCOUNTED GREENHOUSE GAS EMISSIONS AND REMOVALS

Article 7

Reporting on approximated greenhouse gas inventories

(a) 1. **Contracting Parties** shall report their approximated greenhouse gas inventories pursuant to Article 26(2) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex VI, at a level of disaggregation of categories reflecting the activity data and methods available for the preparation of estimates for the year X-1;

(b) **<…>**

2. **Contracting Parties** shall provide explanations including on the main drivers for the key changes in emissions and removals reported in accordance with the format set out in Annex VI compared to the most recent final greenhouse gas inventory reported.

Article 8

General rules for reporting on greenhouse gas inventories

1. **Contracting Parties** shall report the information referred to in Article 26(3) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** by completing, in accordance with the greenhouse gas inventory guidelines and with the rules provided for in this Regulation:

(a) the common reporting tables by providing a complete set of spread sheets or Extensible Markup Language (XML) files, depending on the availability of the appropriate software, and covering **Contracting Party**'s geographical scope under Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(b) the information as specified in Articles 9 to 23 of this Regulation.

2. **Contracting Parties** shall draft the national inventory report referred to in Article 26(3) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** ('national inventory report', 'NIR') based on the outline for greenhouse gas inventory documents, and following the rules provided for in this Regulation. **Contracting Parties** shall include the information reported pursuant to Articles 9, 10, 12 and 14 to 18 of this Regulation in the national inventory report or in a separate Annex to the national inventory report and indicate clearly in accordance with Annex VII where the information is provided.

Article 9

Reporting on recalculations

Contracting Parties shall report the reasons for recalculations of greenhouse gas emissions and removals referred to in point (d) of Part 1 of Annex V to Regulation (EU) 2018/1999 in the years 1990, 2005 and X-3; how the time series consistency for all reported years is maintained in writing in the form of a draft of the dedicated summary chapter on recalculations of the national inventory report.

Article 10

Reporting on implementation of recommendations

1. **Contracting Parties** shall report the information on the steps taken to improve inventory estimates referred to in point (g) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the formats set out in Annex VIII to this Regulation.

2. In their reports referred to in paragraph 1, **Contracting Parties** shall cover both issues raised for the first time in the most recent respective review reports and issues repeated from previous review reports.

Article 11

Reporting on inventory methods, emission factors and on related methodological descriptions for Energy Community key categories

1. **Contracting Parties** shall provide the following information for the preparation of the **Energy Community** inventory report referred to in point (m) of Part 1 of Annex V of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**:

(a) summary information on the methods and emission factors used for the **Energy Community**'s key categories within the relevant XML files of the common reporting tables;

(b) for those **Energy Community** key categories, where information on methods and emission factors is not contained in the common reporting tables, information in accordance with Part 3 of Annex IX of this Regulation;

(c) updated summary methodological descriptions for the **Energy Community**'s key categories in accordance with the format set out in Part 4 of Annex IX.

2. For the purpose of reporting under paragraph 1, the **Energy Community Secretariat** shall provide the **Contracting Parties** with the following:

(a) the list of the most recent **Energy Community**'s key categories by 31 October in accordance with the format set out in Part 1 of Annex IX;

(b) the updated list referred to in paragraph 2(a) with changes highlighted by 28 February;

(c) where available, information on inventory methods, emission factors and on summary methodological descriptions by 31 October in accordance with the format set out in Part 2 of Annex IX;

(d) the updated information referred to in paragraph 2(c) by 28 February.

Article 12

Reporting on uncertainty and completeness

1. **Contracting Parties** shall report at least approach 1 uncertainty estimates referred to in point (m) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex X to this Regulation.

2. **Contracting Parties shall** report the information on the general assessment of completeness referred to in point (m) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in the national inventory report, specifying:

(a) the categories, which were reported as not estimated (NE), as defined in the transparency MPGs, and detailed explanations for the use of this notation key especially where the greenhouse gas inventory guidelines provide methods for estimation of greenhouse gases;

(b) the geographical coverage of the greenhouse gas inventory, and any differences between the geographical coverage under the UNFCCC and the Paris Agreement and under Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

Article 13

Reporting on indicators

Contracting Parties shall report information on indicators referred to in point (e) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex XI.

Article 14

Reporting on consistency of reported emissions <...>

1. **Contracting Parties** shall report the information referred to in point (h) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in accordance with the format set out in Annex XII to this Regulation.

2. **Contracting Parties** shall report the information on results of the checks referred to in point (i) of Part 1 of Annex V of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in a textual format.

Article 15

<...>

Article 16

Reporting on consistency of the data reported on fluorinated greenhouse gases

Contracting Parties who have incorporated Regulation (EU) 517/2014 shall report the information on the results of the checks referred to in point (j)(ii) of Part 1 of Annex V to

Regulation (EU) 2018/1999 in a textual format, specifying:

(a) the checks performed by the Member State concerning the level of detail, the data sets and the submissions compared;

(b) the main results of the checks and explanations for the main inconsistencies;

(c) whether the data collected by operators under Article 6(1) of Regulation (EU) No 517/2014 of the European Parliament and of the Council ([10]) were made use of and how;

(d) the reasons why the checks were not considered to be relevant, where those checks were not performed.

Article 17

Reporting on consistency with energy statistics

1. **Contracting Parties** shall report information on the results of the checks referred to in point (j)(iii) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in a textual format, specifying the differences between the reference approach calculated on the basis of the data included in the greenhouse gas inventory and the reference approach calculated on the basis of the energy statistics reported pursuant to Article 4 and Annex B to Regulation (EC) No 1099/2008 of the European Parliament and of the Council (11).

2. **Contracting Parties** shall report the quantitative information and explanations for differences of more than +/– 2 % in the total national apparent fossil fuel consumption at aggregate level for all fossil fuel categories for the year X-2 referred to in paragraph 1 in accordance with Annex XIV to this Regulation.

Article 18

Reporting on changes in descriptions of national inventory systems or registries

Contracting Parties shall clearly state in the relevant chapters of the national inventory report if there were no changes in the description of their national inventory systems or, if applicable, of their national registries referred to in points (k) and (l) of Part 1 of Annex V to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** since the previous submission of the national inventory report.

Article 19

<...>

Article 20

<…>

Article 21

<…>

Article 22

<…>

Article 23

<…>

Article 24

<…>

Article 25

Timescales for cooperation and coordination in preparing the Energy Community greenhouse gas inventory <…>

1. **Contracting Parties** and the **Energy Community Secretariat** shall cooperate and coordinate in preparing the **Energy Community** greenhouse gas inventory and of the **Energy Community** inventory report in accordance with the timescales set out in Annex XXI.

2. When a **Contracting Party** re-submits its inventory to the UNFCCC Secretariat that **Contracting Party** shall provide the **Energy Community Secretariat** with a summary of the changes made in the re-submitted inventory, no later than within one week of the re-submission.

3. **<…>**

CHAPTER IV

REQUIREMENTS ON THE ESTABLISHMENT, OPERATION AND FUNCTIONING OF NATIONAL INVENTORY SYSTEMS

Article 26

Functions of national inventory systems

In the implementation of the national inventory systems pursuant to Article 37 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, each **Contracting Party** shall:

(a) establish and maintain the institutional, legal and procedural arrangements necessary to perform the functions pursuant to Articles 27 to 29, between the government agencies and other entities responsible for the performance of all functions;

(b) ensure sufficient capacity for timely performance of the functions pursuant to Articles 27 to 29, including data collection for estimating anthropogenic GHG emissions by sources and removals by sinks and arrangements for technical competence of the staff involved in the inventory development process.

Article 27

Inventory planning

1. As part of its inventory planning, each **Contracting Party** shall:

(a) designate a single national entity with overall responsibility for the national inventory and make available its postal and electronic addresses;

(b) define and allocate specific responsibilities in the inventory development process, including those relating to choice of methods, data collection, particularly activity data and emission factors from statistical services and other entities, processing and archiving, and quality control and quality assurance;

(c) elaborate an inventory quality assurance and quality control plan which describes specific quality control procedures to be implemented during the inventory development process, facilitate the overall quality assurance procedures to be conducted and establish quality objectives;

(d) consider establishing processes for the official consideration and approval of the inventory, if relevant including any recalculations, prior to its submission and to respond to any issues raised by the inventory review processes.

2. As part of its inventory planning, each **Contracting Party** shall where relevant consider ways to improve the quality of activity data, emission factors, methods and other relevant technical elements of inventories. Information obtained from the implementation of the quality assurance and quality control plan, from reviews under Article 19 of Regulation (EU) No 525/2013, Article 38 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** and under the UNFCCC shall where appropriate be considered in the development and/or revision of the quality assurance and quality control plan and the quality objectives.

Article 28

Inventory preparation

1. In accordance with the greenhouse gas inventory guidelines, each **Contracting Party** shall:

(a) identify key categories and prepare estimates applying appropriate methods to estimate emissions and removals from key categories;

(b) collect sufficient activity data, process information and emission factors necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;

(c) make a quantitative estimate of inventory uncertainty for each category and for the inventory in total and prepare recalculations of previously submitted estimates of anthropogenic GHG emissions by sources and removals by sinks;

(d) compile the national inventory and implement general inventory quality control procedures in accordance with their quality assurance and quality control plan.

2. As part of its inventory preparation, each **Contracting Party** shall where appropriate:

(a) apply category-specific quality control procedures for key categories and for individual categories where significant methodological and/or data revisions have occurred, in accordance with the greenhouse gas inventory guidelines;

(b) provide for a basic review of the inventory by an independent third party or personnel not involved in the inventory development,, before the submission of the inventory, in accordance with the planned quality assurance procedures referred to in Article 27(1)(c);

(c) provide for a more extensive review for key categories and categories where significant changes in methods occurred;

(d) based on the reviews according to the transparency MPGs and in accordance with Article 38 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** and periodic internal evaluations of the inventory preparation process, re-evaluate the inventory planning process in order to meet the established quality objectives referred to in Article 27(1)(c) of this Regulation.

Article 29

Inventory management

1. As part of their inventory management, each **Contracting Party** shall:

(a) each year for the reported time series, archive inventory information including: all disaggregated emission factors, activity data, and documentation about how these were generated and aggregated; internal documentation on quality assurance and quality control procedures, external and internal reviews, documentation on annual key sources and key source identification and planned inventory improvements.

(b) provide review teams under the transparency MPGs and Article 38 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** with access to all archived information used by the Member State to prepare the inventory, taking into account country-specific confidentiality rules.

(c) respond to requests for clarifying inventory information resulting from the different stages of the review processes of the inventory information, and information on the national system, in a timely manner.

2. As part of their inventory management, each **Contracting Party** shall where appropriate make the collection of archived information easily accessible

CHAPTER V

PROCEDURE AND SCHEDULE FOR CARRYING OUT THE COMPREHENSIVE REVIEW

Article 30

Procedure for the comprehensive review

1. When conducting the comprehensive review (or 'review') referred to in Article 38(1) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, the **Energy Community Secretariat** and the European Environment Agency shall be assisted by a technical experts review team and follow the procedure set out in Annex XXII.

2. The European Environment Agency shall perform the secretarial tasks for the comprehensive reviews as specified in Annex XXII.

3. The **Energy Community Secretariat**, assisted by the European Environment Agency, shall select a sufficient number of review experts to cover the appropriate inventory sectors. The review experts selected shall have experience in the area of greenhouse gas inventories compilation and, where possible, be active in greenhouse gas review processes. Technical experts who have contributed to the compilation of an individual **Contracting Party**'s greenhouse gas inventory, or are national of that **Contracting Party**, shall not take part in the review of that inventory.

4. The comprehensive reviews shall be carried out as desk-based and centralized reviews, as specified in Annex XXII. In addition, in-country visits may be organised upon recommendation of the technical experts review team and in consultation with the **Contracting Party** concerned.

5. The checks pursuant to Article 38(2)(b) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall include, where appropriate, information specified in Annex XXII.

6. The checks referred to in Article 38(2)(c) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall include, where appropriate, a detailed examination on consistency of the accounted emissions and removals with Union rules.

7. The comprehensive reviews shall include, where appropriate, checks to identify whether areas of improvement identified for one **Contracting Party** in the UNFCCC or **Energy Community** reviews may also constitute an area of improvement for other **Contracting Parties**.

8. The review of greenhouse gas inventories shall be performed consistently for all **Contracting Parties** concerned and in an objective manner.

Article 31

Technical corrections

1. A technical correction of an emission estimate within the meaning of Article 38(2)(d) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall be deemed necessary if an underestimate or overestimate exceeds the threshold of significance established in paragraph 2 of this Article. Details of the technical corrections are specified in Annex XXII to this Regulation.

2. The threshold of significance for a given source or sink amounts to 0,05 % of a **Contracting Party**'s total national greenhouse gas emissions without LULUCF for the year of the inventory under review, or 500 kt CO_2 equivalent, whichever is smaller.

3. In response to a finding by the **Energy Community Secretariat** communicated to a **Contracting Party** during the review, the **Contracting Party** may request a change of their estimates of emissions or accounted emissions and removals by providing revised estimates. If a revised estimate is deemed appropriate by the technical review team, it shall be included in the review report referred to in Article 32 and accompanied by a justification.

Article 32

Final review reports

The **Energy Community Secretariat** shall inform the **Contracting Party** concerned of the end of the comprehensive review and provide the **Contracting Party** with a final review report by 30 August 2027 and 30 August 2032 respectively.

Article 33

Cooperation with Contracting Parties

1. **Contracting Parties** shall:

(a) participate in the review pursuant to the schedule set out in Annex XXII;

(b) nominate a National contact point for the **Energy Community**'s review;

(c) participate in and facilitate the organisation of an in-country visit, if needed;

(d) provide answers and additional information and comment on the review reports as relevant.

2. Upon request by the **Contracting Parties**, the **Energy Community Secretariat** shall include comments regarding the review findings in the final review report referred to in Article 32.

3. The **Energy Community Secretaria**t shall inform the **Contracting Parties** of the composition of the technical experts review team selected pursuant to Article 30.

Article 34

Schedule for the comprehensive reviews

The comprehensive review shall be carried out pursuant to the time schedule set out in Annex XXII.

CHAPTER VI
POLICIES AND MEASURES AND PROJECTIONS

Article 35

Submission processes for reporting

Contracting Parties shall use the e-platform referred to in Article 28 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** and linked tools and templates of the Commission, assisted by the European Environment Agency pursuant to Article 42 of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, for the submission of the information pursuant to this Chapter.

Article 36

Reporting on national systems for policies and measures and projections

Contracting Parties shall provide the description of their national systems for reporting on policies and measures, or groups of measures, and projections referred to in point (a) of Annex VI to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in the format set out in Annex XXIII to this Regulation.

Article 37

Reporting on national policies and measures

1. **Contracting Parties** shall report the information on their national policies and measures, or groups of measures, referred to in point (c) of Annex VI to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in the formats set out in Annex XXIV to this Regulation.

2. **Contracting Parties** shall report the following information in a textual format:

(a) the updates relevant to their long-term strategies referred to in point (b) of Annex VI to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(b) planned additional policies and measures referred to in point (d) of Annex VI to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(c) links between different policies and measures and the contribution of those policies and measures to different projection scenarios, as referred to in point (e) of Annex VI to Regulation (EU) 2018/1999 **as**

adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC.

Article 38

Reporting on national projections

1. **Contracting Parties** shall report the information on their national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks, organised by gas or group of gases, referred to in Article 18(1)(b) and point (a) of Annex VII of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in the format set out in Annex XXV to this Regulation.

2. **Contracting Parties** shall provide the additional information on their national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks referred to in Annex VII to Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** in a textual format, specifying:

(a) **<…>**

(b) the results of the sensitivity analysis performed pursuant to point (d) of Annex VII of Regulation (EU) 2018/1999;

(1) for the total reported greenhouse gas emissions, together with a brief explanation of which parameters were varied and how;

(2) **<…>**

(c) the year of the inventory data (base year) and the year of the inventory report used as a starting point for the projections;

(d) the methodologies used for the projections, including a brief description of the models used and their sectoral, geographical and temporal coverage, references to further information on the models and information on data sources, key exogenous assumptions and on the parameters used; pursuant to point (e) of Annex VII of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

3. In the reports on projections to be provided pursuant to Article 18(1) of Regulation (EU) 2018/1999 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**, **Contracting Parties** shall take into account the harmonised values for key parameters for projections – at least for oil, gas, and coal import prices as well as for carbon prices under **national mechanism or carbon price mechanism** – which the **Secretariat** has recommended, in consultation with the Contracting Parties, 12 months before the deadline for submission of the reports.

CHAPTER VII
TRANSITIONAL AND FINAL PROVISIONS

Article 39

<…>

Article 40

<…>

Article 41

Entry into force and application

This decision shall enter into force on the date of its adoption.

ANNEX I

Information on national adaptation actions pursuant to Article 4

1. National circumstances, impacts, vulnerabilities, risks and adaptive capacity[1]

1.1 National circumstances relevant to adaptation actions:

a) biogeophysical characteristics;

b) demographics;

c) economy and infrastructure.

1.2 Climate monitoring and modelling framework:

a) main activities on climate monitoring, modelling, projections and scenarios;

b) main approaches, methodologies and tools, and associated uncertainties and challenges.

1.3 Assessment of climate impacts, vulnerability and risks, including adaptive capacity:

a) overview of observed climate hazards among the ones listed in Table 1[2] and existing pressures[3];

b) identification of key future climate hazards from the ones listed in Table 1 and key affected sectors[4]

Table 1 - Classification of climate-related hazards[5]

Temperature-related	Wind-related	Water-related	Solid mass-related
Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
		Precipitation and/or hydrological variability	Soil degradation (including de
Temperature variability		Ocean acidification	Soil erosion
Permafrost thawing		Saline intrusion	Solifluction
		Sea level rise	
		Change in sea ice cover	
		Water scarcity	
Heat wave	Cyclone	Drought	Avalanche

1 'Adaptive capacity' as defined in the Fifth Assessment Report of the United Nations Intergovernmental Panel on Climate Change (IPCC AR5): 'The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.'

2 The list is not exhaustive.

3 **Contracting Parties** shall report existing environmental, economic and social pressures that are likely to be significantly affected by climate change: e.g. loss of biodiversity, poor harvest, energy poverty, unemployment, migration.

4 **Contracting Parties** shall select key sectors among the following: Agriculture and food, biodiversity (including ecosystem-based approaches), buildings, coastal areas, civil protection and emergency management, energy, finance and insurance, forestry, health, marine and fisheries, transport, urban, water management, ICT (information and communications technology), land use planning, business, industry, tourism, rural development, other [please specify].

5 Where relevant, **Contracting Parties** shall also consider secondary effects of these hazards, such as forest fires, spread of invasive species and tropical diseases, cascading effects, and multiple hazards occurring at the same time.

Cold wave/frost	Storm (including blizzards, dust and sand storms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water, flash)	Subsidence
		Snow and ice load	
		Glacial lake outburst	

c) For each key affected sector, overview of the following, rated on qualitative scales of high/medium/low/not applicable, with accompanying explanation as appropriate[6]:

i. observed impacts of key hazards, including changes in frequency and magnitude;

ii. likelihood of the occurrence of key hazards and exposure to them under future climate, drawing upon the best available climate modelling science;

iii. vulnerability, including adaptive capacity;

iv. risk of potential future impacts.

2. Legal and policy frameworks and institutional arrangements

2.1 Legal and policy frameworks and regulations, including National Adaptation Strategies (NAS), National Adaptation Plans (NAP)[7] and any sectoral adaptation plans.

2.2 Overview of institutional arrangements and governance at the national level for:

a) assessing climate vulnerability and risks;

b) planning, implementing, monitoring, evaluating and revising adaptation policy[8];

c) integrating climate change impacts and resilience into environmental assessment procedures;

d) collection, ownership and re-use of relevant data (such as climate-related disaster loss data or risk data) and access to it;

e) integrating climate change impacts and adaptation planning into disaster risk management frameworks and vice versa[9].

2.3 Overview of institutional arrangements and governance at the sub-national[10] ([10]) level:

a) legal requirements and strategic documents;

b) networks or other collaborations on adaptation across national authorities;

6 The analysis outlined in points (i) to (iv) shall apply the best available science for vulnerability and risk analysis by the Intergovernmental Panel on Climate Change and the latest Commission guidance on the climate proofing of the Union-funded projects.

7 **Contracting Parties** shall report the title, year of adoption and status [superseded / adopted / completed and submitted for adoption / being developed] of each NAS and NAP.

8 Aspects to consider include decision making, planning and coordination related to adaptation strategies, policies, plans and goals, addressing cross-cutting issues, adjusting adaptation priorities and activities, implementing adaptation actions, including facilitating action to avert, minimise and address the adverse effect of climate change.

9 **<…>**

10 Throughout the Annex, 'sub-national' refers to local and regional.

c) good practice examples of networks or other collaborations on adaptation across local and regional authorities.

3. Adaptation strategies, policies, plans and goals

3.1 Adaptation priorities

3.2 Challenges, gaps and barriers to adaptation[11]

3.3 Summaries of national strategies, policies, plans and efforts, with a focus on goals and objectives, foreseen actions[12], budget and timeline[13]

3.4 Overview of the content of sub-national strategies, policies, plans and efforts

3.5 Overview of efforts to integrate climate change adaptation into sectoral policies, plans and programs, including disaster risk management strategies and action plans

3.6 Stakeholder engagement

Overview of measures in adaptation policy at the national level and good practice examples from the sub-national levels to engage with:

a) stakeholders particularly vulnerable to climate change impacts;

b) the private sector[14].

4. Monitoring and evaluation of adaptation actions and processes

4.1 Monitoring and evaluation methodology[15] related to:

a) reducing climate impacts, vulnerabilities, risks, and increasing adaptive capacity;

b) implementation of adaptation actions.

4.2 State of play of the implementation of measures planned under points 3.3 to 3.6, including an overview of the subnational level and the disbursement of funding to increase climate resilience. The reporting on funding shall cover:

a) spending earmarked for climate adaptation including in disaster risk management;

b) to the extent possible, the share of spending used to support climate adaptation[16] in each sector[17].

4.3 Evaluating progress towards the following[18]:

a) reducing climate impacts, vulnerabilities and risks;

b) increasing adaptive capacity;

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11 Including those institutional, governance-related and other barriers that restrict the adaptive capacity as identified in the vulnerability assessment.

12 Including nature-based solutions and actions leading to mitigation co-benefits and other relevant co-benefits

13 The summaries shall cover also efforts to build resilience and avert, minimise and address the adverse consequences of climate change, and include an explanation how gender perspectives have been taken into account.

14 **Contracting Parties** shall provide an overview of available information on private sector plans, priorities, actions and programmes, public/ private partnerships, and other relevant private adaptation initiatives and/or projects.

15 **Contracting Parties** shall report on approaches, systems used, transparency and indicators.

16 The additional investment that makes a project (that would have been realised anyway) climate resilient.

17 **Contracting Parties** shall report on investment in adaptation actions by the following sectors: Agriculture and food, biodiversity (including ecosystem-based approaches), buildings, coastal areas, civil protection and emergency management, energy, finance and insurance, forestry, health, marine and fisheries, transport, urban, water management, ICT (information and communications technology), land use planning, business, industry, tourism, rural development; other [please specify].

18 Based on the monitoring and evaluation methodology as reported under point 4.1.

c) meeting adaptation priorities;

d) addressing barriers to adaptation.

4.4 Steps taken to review and update the following:

a) vulnerability and risk assessments;

b) national adaptation policies, strategies, plans, and measures.

4.5 Overview of good practice with regard to steps taken to review and update subnational adaptation plans, policies, strategies and measures.

5. Cooperation, good practices, synergies, experience and lessons learned in the field of adaptation

5.1 Good practices and lessons learnt, including at sub-national level[19]

5.2 Synergies of adaptation actions with other international frameworks and/or conventions, in particular the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction

5.3 Cooperation with **Contracting Parties** <…> Member States **of the European Union**, international cooperation, and with regional and international organisations[20]:

a) cooperation to share information and to strengthen science, institutions and adaptation knowledge;

b) cooperation to enhance adaptation action at the sub-national, national, macro-regional and international level, including the area, scale and types of cooperation.

6. Any other information related to climate change impacts and adaptation

6.1 Key contact details of national coordinator and organisation

6.2 Relevant websites and social media sources used for communication on adaptation action at national and sub-national level, as appropriate

6.3 Key reports and publications at national and sub-national level

6.4 Any other relevant information.

19 **Contracting Parties** may report on the good practices and lessons learnt in the following areas, when relevant: Climate modelling activities and methodologies; assessment of climate impacts, vulnerability and risks to climate change, including adaptive capacity; institutional arrangements and governance at the national level; policy and regulatory changes; coordination mechanisms; adaptation priorities; adaptation barriers; adaptation goals, objectives, undertakings, efforts, strategies, policies and plans; efforts to integrate climate change adaptation into development and sectoral policies, plans and programs; integration of gender perspectives into climate adaptation; integration of indigenous, traditional and local knowledge into climate adaptation; stakeholder engagement; climate risk communication; monitoring and evaluation; strengthening scientific research and knowledge; disaster risk reduction and management, innovative adaptation solutions and innovative financing mechanisms.

20 Excluding information on support to developing countries referred to in Part 2 of Annex VIII of Regulation (EU) 2018/1999.

ANNEX II

Information on the use of carbon price mechanism revenues pursuant to Article 5

Table 1a: Revenues generated from carbon price mechanism in year X-1

1		Amount for the year X-1		
2		1 000 Euros	1 000 in domestic currency, if applicable (1)	Comments (e.g. explain gaps, relevant national circumstances, changes since last reporting)
3	A	B	C	D
4	**Total amount of revenues generated** from carbon price mechanism **(sum of rows 5 and 6)**	Sum of B5+B6	Sum of C5+C6	
5	Of which amount of revenues generated from auctioning of allowances pursuant to **Article 10 of Directive 2003/87/EC**			
6	Of which amount of revenues generated from auctioning of allowances pursuant to **Article 3d(1) or (2) of Directive 2003/87/EC**			

Notes:

(1) An average annual exchange rate for the year X-1 or the real exchange rate applied to the amount disbursed shall be used for the currency conversion.

Table 1b: Use of revenues from carbon price mechanism in year X-1

1		Total amount disbursed in the year X-1		Of which amount disbursed in year X-1 and reported as committed in years before X-1		Total amount committed, but not disbursed, in the year X-1		Equivalent financial value used in the year X-1 (2)		
2		1 000 Euros	1 000 in domestic currency, if applicable (1)	1 000 Euros	1 000 in domestic currency, if applicable (1)	1 000 Euros	1 000 in domestic currency, if applicable (1)	1 000 Euros	1 000 in domestic currency, if applicable (1)	Comments (e.g. explain gaps, relevant national circumstances, changes since last reporting)
3	A	B	C	D	E	F	G	H	I	J
4	**Total amount of revenues from carbon price mechanism or equivalent financial value used for the purposes** specified in paragraph 3 of Article 10, and Article 3d(4) of Directive 2003/87/EC									
5	Of which amount of revenues auctioning of allowances used for the purposes specified in **Article 10(3) of Directive 2003/87/EC (if data are available for separate reporting)**									
6	Of which amount of revenues auctioning of allowances used for the purposes **specified in Article 3d(4) of Directive 2003/87/EC (if data are available for separate reporting)**									

Notation: x = reporting year

Notes:

(1) An average annual exchange rate for the year X-1 or the real exchange rate applied to the amount disbursed shall be used for the currency conversion.

(2) By reporting 'equivalent financial value', **Contracting Parties** report values which are representative for their spending in accordance with Articles 3d and 10 of Directive 2003/87/EC, and indicate that all values reported in Tables 2 to 6 also represent equivalent financial value.

Table 2: Use of revenues from carbon price mechanism for domestic <...> purposes <...>

1	Purpose for which revenues were used	Short description	Amount for year X-1		Status (2)	Revenues pursuant to [tick relevant column]		Type of use (3)	Financial instrument (4)	Implementing Agency	Comments
2	e.g. programme, activity, action or project title	Including reference to online source of more detailed description, if available	1 000 Euros	1 000 Domestic Currency (1)	Committed (but not disbursed)/ disbursed	Article 3d of Directive 2003/87/EC	Article 10 of Directive 2003/87/EC	Select type of use as outlined in Directive 2003/87/EC	To be selected: fiscal, financial support policy, domestic regulatory policy that leverage financial support, other	(e.g. responsible ministry)	e.g. explain gaps, qualitative information on specific uses if quantitative information is not available
3	A	B	C	D	E		G	H	I	J	K
4											
5											
6	**Total amount of revenues or equivalent financial value used**		Sum of column C	Sum of column D							

Notation: x = reporting year

Notes:

(1) An average annual exchange rate for the year X-1 or the real exchange rate applied to the amount disbursed shall be used for the currency conversion.

(2) **Contracting Parties** shall provide the definitions used for 'commitment' and 'disbursement' as part of their report. If part of the reported amount is committed and another part disbursed related to a specific programme/project, two separate rows should be used. If **Contracting Parties** are not able to distinguish between committed and disbursed amounts, the most appropriate category should be selected for the reported amounts. Consistent definitions should be used across the Tables.

Generally, 'committed' auction revenues are those which have been legally committed to be used for climate and energy purposes, but in some cases may not have yet been spent at the time of reporting. 'Disbursed' auction revenues are those which have been spent at the time of reporting. However, in some cases, 'Commitment' can refer to revenues that are only preliminarily planned to be used and 'disbursement' are those which have been transferred to a specific State Agency for a specific purpose or to a regional government.

(3) Categories of uses mentioned in Article 10(3) of Directive 2003/87/EC as follows:

— funding of research and development and demonstration projects for reducing emissions and for adaptation;

— funding of initiatives within the framework of the European Strategic Energy Technology Plan and the European Technology Platforms;

— development of renewable energies to meet the commitment of the Union;

— development of other technologies contributing to the transition to a safe and sustainable low-carbon economy;

— development of technologies that help meet the commitment of the Union to increase energy efficiency;

— forestry sequestration in the Union;

— environmentally safe capture and geological storage of CO_2;

— encouragement of a shift to low-emission and public forms of transport;

— financing of research and development in energy efficiency and clean technologies;

— measures intended to increase energy efficiency and insulation or to provide financial support in order to address social aspects in lower and middle income house-holds;

— coverage of administrative expenses of the management of the EU ETS;

— promotion of skill formation and reallocation of labour in order to contribute to a just transition to a low carbon economy;

— other reduction of greenhouse gas emissions;

— adaptation to the impacts of climate change;

— other domestic uses.

Categories mentioned in Article 3d(4) of Directive 2003/87/EC, but not specifically mentioned in Article 10(3) as follows:

— funding of common projects to reduce greenhouse gas emissions from the aviation sector;

— measures to avoid deforestation.

Contracting Parties shall avoid double counting of amounts in this Table. If a specific use fits to several types of uses, several types can be selected; however, the amount indicated is not to be multiplied but additional rows for types of uses are to be linked with one entry field for that amount.

(4) Several categories can be selected if several financial instruments are relevant for the reported programme or project.

Table 3

<…>

Table 4

<…>

Table 5

<…>

Table 6

<…>

ANNEX III

Information on financial and technology support provided to developing countries pursuant to Article 6(1)

Table 1: Provision of support committed and provided of public resources through bilateral and regional channels, including technology development and transfer and capacity building where relevant [1] [2]

Channel	Recipient	Title of activity/ program/ project or other*	Funding source	Financial instrument	Type of support	Sector	Committed amount (a)	Provided amount (a)	Grant equivalent* (a)(b)	Sub-sector * (c)	Technology transfer/ Capacity Building* (d)	Additional Information* (e)
Bilateral/ Regional/ Other (specify)			*ODA/ OOF/ Other (specify)*	*Grant/ Concessional loan/ Non-concessional loan/ Equity/ Guarantee/ Insurance/ Other (specify)*	*Adaptation/ Mitigation/ Cross-cutting*	*Energy/ Transport/ Industry/ Agriculture/ Forestry/ Water and sanitation/ Cross-cutting/ Other (specify)*					*T/ C/ Both/ N/A*	

Notes:

(1) The information elements marked with '*' shall be completed as available.

(2) The information shall be reported per calendar year (X-1).

(a) Amount shall be reported in domestic currency.

(b) This information is to be provided as reported to the UN or the Organisation for Economic Cooperation and Development (OECD) in accordance with any internationally agreed information requirements.

(c) The five-digit purpose codes introduced by the OECD Development Assistance Committee for reporting to the Creditor Reporting System (DAC CRS) may be used when reporting sub-sector information.

(d) **Contracting Parties** shall indicate 'T' if the activity contributes to technology development and transfer objectives, 'C' if it contributes to capacity building objectives, 'Both' if cross-cutting and 'N/A' if not applicable.

(e) Additional information shall be provided, such as a link to relevant program documentation or a description of the project.

Table 2: Provision of support committed and provided of public financial resources through multilateral channels, including technology development and transfer and capacity building where relevant [(1) (2)]

Channel	Multilateral institution	Title of activity/ program/ project or other*	Funding source	Financial instrument	Committed Amount (a) (Core/ general)	Provided amount (a) (Core/ general)	Committed Amount (a) (Climate- specific	Provided amount (a) (Climate- specific)	Recipient*	Grant equivalent * (a)(b)
Multilateral Multi- bilateral/ Other (specify)			*ODA/ OOF/ Other (specify)*	*Grant/ Concessional loan/ Non-concessional loan/ Equity/ Guarantee/ Insurance/ Other (specify)*					*Global/ Regional/ Country*	

Imputed multilateral contribution* (d)	Financial instrument	Type of support*	Sector*	Sub-Sector* (e)	Technology transfer/ Capacity building* (f)	Additional Information* (g)
Yes/ No/ N/A	*Grant/ Concessional loan/ Non-concessional loan/Equity/ Guarantee/ Insurance/Policy intervention/ Other (specify)*	*Adaptation/ Mitigation/Cross-cutting*	*Energy/ Transport/ Industry/Agriculture/ Forestry/ Water and sanitation/ Cross-cutting/ Other*			

Notes:

(1) The information elements marked with '*' shall be completed as available.

(2) The information shall be reported per calendar year (X-1).

(a) Amount shall be reported in domestic currency.

(b) This information is to be provided as reported to the UN or OECD in accordance with any internationally agreed information requirements.

(c) **Contracting Parties** shall indicate if the amount reported is based on the 'inflow contribution' to the multilateral institution or on the 'outflow share' of the multilateral institution's financial resources.

(d) **Contracting Parties** shall indicate if the 'climate-specific' amount is calculated following the OECD Imputed Multilateral Shares.

(e) The OECD-DAC CRS five-digit purpose codes may be used when reporting sub-sector information.

(f) **Contracting Parties** shall indicate 'T' if the activity contributes to technology development and transfer objectives, 'C' if it contributes to capacity building objectives, 'Both' if cross-cutting and 'N/A' if not applicable.

(g) Additional information shall be provided, such as a link to relevant program documentation and description of the project.

Table 3: Information on financial support mobilised through public interventions [1] [2]

Channel	Recipient	Title of activity/ program/ project or other*	Type of public intervention	Type of support	Sector	Amount mobilised (a)	Sub-sector* (b)	Grant equivalent* (a) (c)	Amount of resources used to mobilise the support*	Additional Information* (d)
Bilateral/ Regional/ Other (specify)	*Global/ Region/ Country*		*Grant/ Concessional loan/ Non-concessional loan/ Equity/ Guarantee/ Insurance/ Capacity building/ Technology development and transfer/ Other (specify)*	*Adaptation/ Mitigation/ Crosscutting*	*Energy/ Transport/ Industry/ Agriculture/ Forestry/ Water and sanitation/ Crosscutting/ Other (specify)*					

Notes:

(1) The information elements marked with '*' shall be completed as available.

(2) The information shall be reported per calendar year (X-1).

(a) Amount shall be reported in domestic currency.

(b) The OECD-DAC CRS five-digit purpose codes may be used when reporting sub-sectoral information.

(c) This information is to be provided as reported to the UN or OECD in accordance with any internationally agreed information requirements.

(d) Additional information shall be provided, such as a link to relevant program documentation or a description of the project.

Template 1: Information on financial support mobilised through public interventions per activity (1) (2) to be used in cases where it is impossible for a **Contracting Party** *to fill in Table 3*

Title of activity/program/project or other

1. Channel

2. Recipient

3. Type of public intervention

4. Type of support

5. Sector

6. Amount mobilised (a)

7. Sub-sector* (b)

8. Grant equivalent* (a)(c)

9. Amount of resources used to mobilise the support*

10. Addition information* (d)

Notes:

(1) The information elements marked with '*' shall be completed as available.

(2) The information shall be reported per calendar year (X-1).

(a) Amount shall be reported in domestic currency

(b) The OECD-DAC CRS five-digit purpose codes may be used when reporting sub-sector information.

(c) This information is to be provided as reported to the UN or OECD in accordance with any internationally agreed information requirements.

(d) Additional information shall be provided, such as a link to relevant program documentation or a description of the project.

ANNEX IV

Qualitative methodological information pursuant to Article 6(2)

Template 1: Provision of qualitative methodological information as applicable and other information on definitions and methodologies

1. Climate finance

2. New and additional

3. Developing Country

4. Core/general

5. Climate-specific

6. Financial instruments (e.g. grant, concessional loan, non-concessional loan, equity, guarantee, insurance, other (specify))

7. Funding source (ODA, OOF, other)

8. Status (committed and provided)

9. Support mobilised (e.g. (i) Identifying a clear causal link between a public intervention and mobilized private finance, where the activity would not have moved forward, or moved forward at scale, in the absence of the Party's intervention; (ii) Providing information on the point of measurement (e.g. point of commitment, point of disbursement) of the private finance mobilized as a result of the public intervention, to the extent possible in relation to the type of instrument or mechanism used for the mobilization; (iii) Providing information on the boundaries used to identify finance as mobilized by public intervention)

10. Sector, sub-sector

11. Type of support (climate mitigation/ climate adaptation/ cross-cutting)

12. Public finance/private finance (e.g. in particular where entities or funds are mixed)

13. Application of Rio Markers (coefficients)

14. Determining grant-equivalent component of support provided and support mobilised when grant-equivalent information has been reported

15. Methodologies used to determine figures on support mobilized

16. How double counting was avoided between the resources reported as committed or provided, and the resources used in accordance with Article 6 of the Paris Agreement by the acquiring Party for use towards the achievement of its Nationally Determined Contribution

17. A description of the systems and processes used to identify, track, and report on support committed, provided and mobilised through public interventions

18. A description of the national systems and institutional arrangements for the provision of information on planned provision of support, including information on planned activities related to public-funded technology transfer projects and capacity-building projects for developing countries under the UNFCCC

19. Information, as available, a description of national systems and institutional arrangements for the provision of technology transfer and capacity building support, including on the underlying assumptions, definitions and methodologies used to provide information on technology transfer and capacity-building support

20. Information on channels and barriers encountered, lessons learned and measures to taken to overcome them

21. Information on how it has been sought to ensure that support committed, provided and mobilised through public interventions is in line with the long-term goals of the Paris Agreement

22. Information on how support committed, provided and mobilised is targeted at helping developing countries in their efforts to meet the long-term goals of the Paris Agreement, including by assisting them in efforts to make financial flows consistent with a pathway towards low-greenhouse gas emissions and climate-resilient development

23. Information on how the information provided reflects a progression from previous levels in the provision of sup-port and mobilisation of finance under the Paris Agreement

24. How it seeks to ensure that support provided and mobilized through public interventions effectively addresses the needs and priorities of developing country Parties for the implementation of the Paris Agreement, as identified in country-driven strategies and instruments, such as biennial transparency reports, NDCs and national adaptation plans

25. Information on actions and plans to mobilise additional climate finance as part of the global effort to mobilise climate finance from a wide variety of sources, including on the relationship between the public intervention to be used and the private finance mobilised

26. Information on reporting on multilateral finance, including: (i) Whether the multilateral finance reported is based on the Party's inflow contribution to a multilateral institution and/or on the Party's share in the outflow of the multilateral institution; (ii) Whether and how multilateral finance has been reported as climate-specific and how the climate-specific share was calculated, including by, for example, using existing international standards; (iii) Whether multilateral finance has been reported as core/general, with the understanding that the actual climate finance amount it would transfer into depends on the programming choices of the multilateral institutions; (iv) Whether and how multilateral finance has been attributed to the reporting Party.

ANNEX V

Available information on the planned provision of support pursuant to Article 6(3)

Table: Available information on the planned provision of support

Year/ period	Recipient (a)	Title of activity/ program/	Projected amount to be provided (b)	Type of support	Technology transfer/ Capacity Building (c)	Additional Information (d)
	Global/Region/ Country			Mitigation/ Adaptation/ Cross-cutting	T/ C/ Both/ N/A	

Notes:

(a) **Contracting Parties** shall provide information on the recipient country/region at the preferred level of disaggregation.

(b) Where possible, **Contracting Parties** shall provide the amount of support to be provided in domestic currency (recommended to provide face-value on a commitment basis).

(c) **Contracting Parties** shall indicate 'T' if the activity contributes to technology development and transfer objectives, 'C' if it contributes to capacity building objectives, 'Both' if cross-cutting and 'N/A' if not applicable.

(d) Additional information shall be provided, such as a link to relevant program documentation, a description of the project, or available information in accordance with Article 9(5) of the Paris Agreement.

Template 1: Available information on the planned provision of support per activity/program/project to be used in cases where it is impossible for a **Contracting Party** *to fill in Table 1*

Title of activity/program/project

1. Year

2. Recipient (a)

3. Projected amount to be provided (b)

4. Type of support

5. Technology transfer/Capacity Building (c)

6. Additional Information (d)

Notes:

(a) **Contracting Parties** shall provide information on the recipient country/region at the preferred level of disaggregation.

(b) Where possible, **Contracting Parties** shall provide the amount of support to be provided in domestic currency (recommended to provide face-value on a commitment basis).

(c) **Contracting Parties** shall indicate 'T' if the activity contributes to technology development and transfer objectives, 'C' if it contributes to capacity building objectives, 'Both' if cross-cutting and 'N/A' if not applicable.

(d) Additional information shall be provided, such as a link to relevant program documentation, a description of the project, or available information in accordance with Article 9(5) of the Paris Agreement.

ANNEX VI

Reporting on approximated greenhouse gas inventories pursuant to Article 7

Memebr state:	
Reported year 't-1'	
Reporting year 't'	

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 (1)	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total	**ETS**	Effort Sharing (3)
	CO_2 equivalent (kt)									CO_2 equivalent (kt)	
Total (net emissions) (1)											
1. Energy											
A. Fuel combustion (sectoral approach)											
1. Energy industries											
2. Manufacturing industries and construction											
3. Transport											
4. Other sectors											
5. Other											
B. Fugitive emissions from fuels											
1. Solid fuels											
2. Oil and natural gas											
C. CO_2 transport and storage											
2. Industrial processes and product use											
A. Mineral industry											
B. Chemical industry											
C. Metal industry											
D. Non-energy products from fuels and solvent use											
E. Electronic Industry											
F. Product uses as ODS substitutes											
G. Other product manufacture and use											
H. Other											

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 (1)	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total		ETS	Effort Sharing (3)
	CO_2 equivalent (kt)										CO_2 equivalent (kt)	
3. Agriculture												
A. Enteric fermentation												
B. Manure management												
C. Rice cultivation												
D. Agricultural soils												
E. Prescribed burning of savannahs												
F. Field burning of agricultural residues												
G. Liming												
H. Urea application												
I. Other carbon-containing fertilizer												
J. Other												
4. Land use, land-use change and foresty (1)												
A. Forest land												
B. Cropland												
C. Grassland												
D. Wetlands												
E. Settlements												
F. Other lands												
G. Harvested wood products												
5. Waste												
A. Solid waste disposal												
B. Biological treatment of solid waste												
C. Incineration and open burning of waste												
D. Waste water treatment and discharge												
E. Other												
6. Other *(as specified in summary 1.A)*												
Memo items:												
International bunkers												
Aviation												
Navigation												

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 (1)	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total		**ETS**	Effort Sharing (3)
	CO_2 equivalent (kt)										CO_2 equivalent (kt)	
CO_2 emission from biomas												
CO_2 captured												
Indirect CO_2 (2)												
Total CO_2 equivalent emissions without land use, land-use change and forestry												
Total CO_2 equivalent emissions with land use, land-use change and forestry												
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry												
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry												

Notes:

(1) For carbon dioxide (CO_2) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
(2) For **Contracting Parties** that report indirect CO_2 the national totals shall be provided with and without indirect CO_2.

(3) Emissions within the scope of Regulation (EU) 2018/842.

Brief description of the key drivers underpinning the increase or decrease in GHG emissions in x-1 (proxy) compared to x-2 (inventory). If this information is publicly available please include the hyperlink to the relevant website.

Information on the uncertainties associated with the estimations for the LULUCF sector may also be provided.

ANNEX VII

Overview of reporting on greenhouse gas inventories pursuant to Article 8(2) (1), (2)

[Article of] This Regulation	Information to be provided in the National Inventory Report (tick)	Information to be provided in a separate annex to NIR (tick)	Reference to chapter in the NIR or in separate annex (specify)
Article 9 Reporting on recalculations	Obligatory		Chapter of the NIR on 'Recalculations and improvements'
Article 10 Reporting on implementation of recommendations in Table 1 of Annex VIII	Obligatory	Obligatory	Chapter of the NIR on recalculations and improvements
Article 10 Reporting on implementation of recommendations in Table 2 of Annex VIII	Not applicable	Obligatory	
Article 12(1) Reporting on uncertainty	Not applicable	Obligatory	
Article 12(2) Reporting on completeness	Obligatory	Not applicable	In the respective table of the CRT and in the respective chapters of the NIR
Article 14(1) Reporting on consistency of reported emissions with data from the emissions trading scheme (Annex XII data)	Not applicable	Obligatory	
Article 14(2) Reporting on consistency of reported emissions with data from the emissions trading scheme (textual information)	Possible	Possible	If in the NIR: In the relevant sections of the NIR
Article 15 Reporting on consistency of the reported data on air pollutants	Possible	Possible	If in the NIR: Chapter of the NIR on 'quality assurance, quality control and verification plan'
Article 16 Reporting on consistency of the data reported on fluorinated greenhouse gases	Possible	Possible	If in the NIR: In the relevant sections of the NIR
Article 17 Reporting on consistency with energy statistics	Possible	Possible	If in the NIR: In the relevant sections of the NIR
Article 18 Reporting on changes in descriptions of national inventory systems or registries	Obligatory	Not applicable	In the relevant chapters of the NIR

Notes:

(1) Information to be submitted by 15 January shall be submitted as draft chapters of the NIR or respective separate annexes.

(2) The entry 'possible' means that **Contracting Parties** shall choose whether to report the information either in the NIR or in a separate annex to the NIR.

ANNEX VIII

Reporting on implementation of recommendations pursuant to Article 10

Table 1: Format for reporting information on the status of implementation of each recommendation listed in the most recently published individual UNFCCC review report, including reasons for not having implemented such a recommendation

Year of latest UNFCCC inventory review					
CRT category/ issue	Review recommendation	Review report/ paragraph	Member State response/status of implementation	Reason for non-implementation	Chapter/section in the NIR

Table 2: Format for reporting information on the status of implementation of each recommendation, technical correction or revised estimate listed in the most recent review report pursuant to Article 35(2) of Commission Implementing Regulation No 749/2014 or to Article 32 of this Regulation

Year of latest **Energy Community** -internal inventory review				
CRT category/issue	Review recommendation, technical correction or revised estimate	Review report/paragraph	**Contracting Party** response/status of implementation	Chapter/section in the NIR

ANNEX IX

Reporting on inventory methods, emission factors and on related methodological descriptions for Energy Community key categories pursuant to Article 11

Part 1			Part 2				Part 3					Part 4		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Information to be provided by the **Secretariat**							Information to be reported by **Contracting Parties**							
Identification of **Energy Community** key categories			Information related to the **Energy Community** key categories											
by 31 October of the year previous to the submission and by 28 February of the current inventory submission							For **Energy Community** key categories identified in column B, by 15 January and 15 March					For **Energy Community** key categories identified in column A, by 15 January and 15 March		
List of **Energy Community** key categories (a)	tick to identify key categories where the information on methods and emission factors are not available or reported by **Contracting Party** in the CRT	tick to identify as a new **Energy Community** key category compared to the previous **Energy Community** greenhouse gas inventory	Methods used in the **Contracting Party**'s latest inventory (b)	Emission factors used in the **Contracting Party**'s latest inventory (b)	**Contracting Party**'s summary methodological descriptions in the latest inventory (c)	reference (section number) to the description in the final NIR (c) (g)	tick to identify as a new **Energy Community** key category compared to the latest **Energy Community** greenhouse gas inventory (d)	Methods used in the **Contracting Party**'s latest inventory (b)	Emission factors used in the **Contracting Party**'s latest inventory (b)	tick to identify if the methods used in the latest inventory (column I) deviate from the methods used in the previous inventory (column D)	tick to identify if the emission factors used in the latest inventory (column J) deviate from the emission factors used in the previous invetory (column E)	Summary methodological descriptions in the latest inventory	Summary methodological descriptions in the latest inventory	reference (section number) to the description in the final NIT (g)

Notes:

(a) The categories used in the Union key category analysis shall be specified by the Commission by category code, category title, assessed greenhouse gas and, where applicable, fuel type. For example: 1.A.1.a, Public Electricity and Heat Production, Gaseous Fuels, CO_2.

(b) Notation keys (abreviations) for 'method applied' and 'emission factors' used in the common reporting tables' summary sheet on methods and emission factors used.

(c) Information of the previous year's description to be included by 31 October 2023, for the first time.

(d) Column H is to be provided by the Commission.

(e) Information in column F is to be provided by the Commission by 31 October 2023, for the first time.

(f) Changes related to information reported in columns I, J, K and L shall only be reported, if applicable, for key categories identified in column B.

(g) 'Final NIR' means the latest available complete NIR submitted to the EU.

ANNEX X

Reporting on uncertainty and completeness pursuant to Article 12

A	B	C	D	F	G	H	I	J	K	L	M
IPCC category	Gas	Base year emission or removals	Year x emissions or removals	Emission factor/ estimation parameter uncertainty	Combined uncertainty	Contribution to Variance by Category in Year x	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor/ estimation parameter uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
		Input data	Input data	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\lvert\frac{D}{\sum C}\right\rvert$	I * F Note C	J * E * 2 Note D	$K^2 + L^2$
		Gg CO_2 equivalent	Gg CO_2 equivalent	%	%	%		%	%	%	%
E.g., 1.A.1. Energy industries fuel 1	CO_2										
E.g., 1.A.1. Energy industries fuel 2	CO_2										
Etc.	...										
Total		∑C	∑D				∑H				∑M
						Percentage uncertainty nin total inventory:	$\sqrt{\sum^H}$				$\sqrt{\sum^M}$

Source: 2006 IPPC guidelines, Volume 1, Table 3.2 Approach 1 uncertainty calculation

ANNEX XI

Reporting on indicators pursuant to Article 13

No	Nomenclature in Eurostat energy efficiency indicators	Indicator	Numerator / denominator (1) (4)	Guidance / definitions (2) (3)	Year X-2
1	TRANSFORMATION B0	Specific CO_2 emissions of public and auto-producer power plants, t/TJ	CO_2 emissions from public and auto-producer thermal power stations, kt	CO_2 emissions from all fossil fuel combustion for gross electricity and heat production by public and auto-producer thermal power and combinedheat and power plants. Emissions from heat only plants are not included.	
			All products – output by public and auto-producer thermal power stations, PJ	Gross electricity produced and any heat sold to third parties (combined heat and power plants - CHP) by public and auto-producer thermal power and combined heat and power plants. Output from heat only plants is not included. Public thermal plants generate electricity (and heat) for sale to third parties, as their primary activity. They may be privately or publicly owned. Auto-producer thermal power stations generate electricity (and heat) wholly or partly for their use as an activity, which supports their primary activity. The gross electricity generation is measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers is included. (source: energy balance)	
2	TRANSFORMATION E0	Specific CO_2 emissions of auto-producer plants, t/TJ	CO_2 emissions from auto-producers, kt	CO_2 emissions from all fossil fuel combustion for gross electricity and heat production by auto-producer thermal power and combined heat and power plants.	
				Gross electricity produced and any heat sold to third parties (combined heat and power - CHP) by auto-producer thermal power and combined heat and power plants. Auto-producer thermal power stations generate electricity (and heat) wholly or partly for their use as an activity, which supports their primary activity. The gross electricity generation is measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers is included (source: energy balance).	
3	INDUSTRY A1.1	Total CO_2 intensity - iron and steel industry, t/million euro	Energy-related CO_2 emissions chemical industries, kt	CO_2 emissions from combustion of fossil fuels in manufacture of chemicals and chemical products including combustion for the generation of electricity and heat (IPCC source category 1A2c).	
			gross value added - chemical industry, billion Euro	Gross value added at constant 2016 prices in manufacture of chemicals and chemical products (NACE 24) (source: National Accounts)	

No	Nomenclature in Eurostat energy efficiency indicators	Indicator	Numerator / denominator (1) (4)	Guidance / definitions (2) (3)	Year X-2
4	INDUSTRY A1.2	Energy-related CO_2 intensity - chemical industry, t/ million euro	Energy-related CO_2 emissions chemical industries, kt	CO_2 emissions from combustion of fossil fuels in manufacture of chemicals and chemical products including combustion for the generation of electricity and heat (IPCC source category 1A2c).	
			gross value added - chemical industry, billion Euro	Gross value added at constant 2016 prices in manufacture of chemicals and chemical products (NACE 24) (source: National Accounts)	
5	INDUSTRY A1.3	Energy-related CO_2 intensity - glass, pottery and building materials industry, t/ million euro	Energy-related CO_2 emissions glass, pottery and building materials, kt	CO_2 emissions from combustion of fossil fuels in manufacture of non-metallic mineral products (NACE 26) including combustion for the generation of electricity and heat.	
			gross value added - glass, pottery and buildings material industry, billion Euro	Gross value added at constant 2016 prices in manufacture of non-metallic mineral products (NACE 26) (source: National Accounts)	
6	INDUSTRY A1.4	Energy-related CO_2 intensity - food, drink and tobacco industry, t/ million euro	Energy-related CO_2 emissions from food, drink and tobacco industry, kt	CO_2 emissions from combustion of fossil fuels in manufacture of food products and beverages and tobacco products including combustion for the generation of electricity and heat (IPCC source category 1A2e).	
			gross value-added - food, drink and tobacco industry, billion Euro	Gross value added at constant 2016 prices in manufacture of food products and beverages (NACE 15) and tobacco products (NACE 16) (source: National Accounts)	
7	INDUSTRY A1.5	Energy-related CO_2 intensity paper and printing industry, t/million euro	Energy-related CO_2 emissions paper and printing, kt	CO_2 emissions from combustion of fossil fuels in manufacture of pulp, paper and paper products and publishing, printing and reproduction of recorded media including emissions from combustion for the generation of electricity and heat (IPCC source category 1A2d)	
			Gross value-added - paper and printing industry, billion Euro	Gross value added at constant 2016 prices in manufacture of pulp, paper and paper products (NACE 21) and publishing, printing and reproduction of recorded media (NACE 22) (source: National Accounts)	
8	HOUSEHOLDS A0	Specific CO_2 emissions of households for space heating, kg/m²	CO_2 emissions of households for space heating, kt	CO_2 emissions from fossil fuel combustion for space heating in households.	
			surface area of permanently occupied dwellings, million m²	Total surface area of permanently occupied dwellings	
9	SERVICES B0	Specific CO_2 emissions of commercial and institutional sector for space heating, kg/m²	CO_2 emissions from space heating in commercial and institutional, kt	CO_2 emissions from fossil fuel combustion for space heating in commercial and institutional buildings in the public and private sectors.	
			Surface area of services buildings, million m²	Total surface area of services buildings (NACE 41, 50, 51, 52, 55, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 80, 85, 90, 91, 92, 93, 99)	

No	Nomenclature in Eurostat energy efficiency indicators	Indicator	Numerator / denominator (1) (4)	Guidance / definitions (2) (3)	Year X-2
10	TRANSPORT B0	Specific diesel related CO_2 emissions of passenger cars, g/km	CO_2 emissions of diesel-driven passenger cars, kt	CO_2 emissions from the combustion of diesel for all transport activity with passenger cars (IPCC source category 1A3bi only diesel)	
			Number of kilometres of diesel-driven passenger cars, billion km	Number of vehicle kilometres of total diesel-driven passenger cars licensed to use roads open to public traffic. (source: transport statistics)	
11	TRANSPORT B0	Specific petrol related CO_2 emissions of passanger cars, g/km	CO_2 emissions of petrol-driven passenger cars, kt	CO_2 emissions from the combustion of petrol for all transport activity with passenger cars (IPCC source category 1A3bi only petrol)	
			Number of kilometres of petrol-driven passenger cars, billion km	Number of vehicle kilometres of total petrol-driven passenger cars licensed to use roads open to public traffic. (source: transport statistics)	

Notation: x = reporting year

Notes:

(1) **Contracting Parties** shall report numerator and denominator, if not included in the CRT.

(2) **Contracting Parties** shall follow this guidance. If they cannot follow exactly this guidance or if numerator and denominator are not entirely consistent, **Contracting Parties** shall clearly indicate this.

(3) The references to IPCC source categories refer to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

(4) One billion means one thousand millions.

ANNEX XII

Reporting on consistency of reported emissions with data from the EU Emissions Trading System pursuant to Article 14

Allocation of verified emissions reported by installations and operators under Directive 2003/87/EC to source categories of the national greenhouse gas inventory Contracting Party
Reporting year:
Basis for data: verified ETS emissions and greenhouse gas emissions as reported in inventory submission for the year X-2

	Total emissions (CO_2-eq)			
	Greenhouse gas inventory emissions [kt CO_2 eq] (3)	Verified emissions under Directive 2003/87/EC [kt CO_2 eq] (3)	Ratio in % (Verified emissions/ inventory emissions) (3)	Comment (2)
Greenhouse gas emissions (for GHG inventory: total GHG emissions, including indirect CO_2 emissions if reported, without LULUCF, and excluding emissions from domestic aviation; for Directive 2003/87/EC: GHG emissions from stationary installations under Article 2(1) of Directive 2003/87/EC)				
CO_2 emissions (for GHG inventory: total CO_2 emissions, including indirect CO2 emissions if reported, without LULUCF,, and excluding CO_2 emissions from domestic aviation; for Directive 2003/87/EC: CO_2 emissions from stationary installations under Article 2(1) of Directive 2003/87/EC)				

Category (1)	**CO_2 emissions**			
	Greenhouse gas inventory emissions [kt] (3)	Verified emissions under Directive 2003/87/EC [kt] (3)	Ratio in % (Verified emissions/ inventory emissions) (3)	Comment (2)
1.A **Fuel combustion activities, total**				
1.A **Fuel combustion activities, stationary combustion**				
1.A.1 **Energy industries**				
1.A.1.a Public electricity and heat production				
1.A.1.b Petroleum refining				
1.A.1.c Manufacture of solid fuels and other energy industries				

Iron and steel (for GHG inventory combined CRT categories 1.A.2.a + 2.C.1 + 1.A.1.c and other relevant CRT categories that include emissions from iron and steel (e.g. 1A1a, 1B1) (4))				
1.A.2. **Manufacturing industries and construction**				
1.A.2.a Iron and steel				
1.A.2.b Non-ferrous metals				
1.A.2.c Chemicals				
1.A.2.d Pulp, paper and print				
1.A.2.e Food processing, beverages and tobacco				
1.A.2.f Non-metallic minerals				
1.A.2.g Other				
1.A.3. **Transport**				
1.A.3.e Other transportation (pipeline transport)				
1.A.4 **Other sectors**				
1.A.4.a Commercial/Institutional				
1.A.4.c Agriculture/Forestry/Fisheries				
1.B **Fugitive emissions from Fuels**				
1.C **CO_2 Transport and storage**				
1.C.1 Transport of CO_2				
1.C.2 Injection and storage				
1.C.3 Other				
2.A **Mineral products**				
2.A.1 Cement production				
2.A.2 Lime production				
2.A.3 Glass production				
2.A.4 Other process uses of carbonates				
2.B **Chemical industry**				
2.B.1 Ammonia production				
2.B.3 Adipic acid production (CO_2)				
2.B.4 Caprolactam, glyoxal and glyoxylic acid production				
2.B.5 Carbide production				
2.B.6 Titanium dioxide production				
2.B.7 Soda ash production				
2.B.8 Petrochemical and carbon black production				
2.C **Metal production**				
2.C.1 Iron and steel production				
2.C.2 Ferroalloys production				
2.C.3 Aluminium production				

2.C.4 Magnesium production				
2.C.5 Lead production				
2.C.6 Zinc production				
2.C.7 Other metal production				

Category (1)	N2O emissions			
	Greenhouse gas inventory emissions [kt CO_2 eq] (3)	Verified emissions under Directive 2003/87/EC [kt CO_2 eq] (3)	Ratio in % (Verified emissions/ inventory emissions) (3)	Comment (2)
2.B.2 Nitric acid production				
2.B.3 Adipic acid production				
2.B.4 Caprolactam, glyoxal and glyoxylic acid production				

Category (1)	PFC emissions			
	Greenhouse gas inventory emissions [kt CO_2 eq] (3)	Verified emissions under Directive 2003/87/EC [kt CO_2 eq] (3)	Ratio in % (Verified emissions/ inventory emissions) (3)	Comment (2)
2.C.3 Aluminium production				

Notation: x = reporting year

Notes:

(1) The allocation of verified emissions to disaggregated inventory categories at four digit level must be reported where such allocation of verified emissions is possible and emissions occur. The following notation keys should be used:

NO = not occurring; IE = included elsewhere; C = confidential;

Negligible = small amount of verified emissions may occur in respective CRT category, but amount is < 5 % of the category.

(2) The column comment should be used to give a brief summary of the checks performed and if a **Contracting Party** wants to provide additional explanations with regard to the allocation reported.

(3) Data to be reported up to one decimal point for kt and % values.

(4) To be filled on the basis of combined CRT categories pertaining to 'Iron and Steel', to be determined individually by each **Contracting Party**; the stated formula is for illustration purposes only.

ANNEX XIII

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ANNEX XIV

Reporting on consistency with energy statistics pursuant to Article 17(2)

FUEL TYPES			Apparent consumption reported in GHG inventory (TJ) (3)	Apparent consumption using data reported pursuant to Regulation (EC) No 1099/2008 (TJ) (3)	Absolute difference (1) (TJ) (3)	Relative difference (2) % (3)	Explanations for differences
Liquid fossil	Primary fuels	Crude oil					
		Orimulsion					
		Natural gas liquids					
	Secondary fuels	Gasoline					
		Jet kerosene					
		Other kerosene					
		Shale oil					
		Gas/diesel oil					
		Residual fuel oil					
		Liquefied petroleum gases (LPG)					
		Ethane					
		Naphtha					
		Bitumen					
		Lubricants					
		Petroleum coke					
		Refinery feedstocks					
		Other oil					
Other liquid fossil							
Liquid fossil totals							

FUEL TYPES			Apparent consumption reported in GHG inventory (TJ) (3)	Apparent consumption using data reported pursuant to Regulation (EC) No 1099/2008 (TJ) (3)	Absolute difference (1) (TJ) (3)	Relative difference (2) % (3)	Explanations for differences
	Primary fuels	Anthracite					
		Coking coal					
		Other bituminous coal					
		Sub-bituminous coal					
		Lignite					
		Oil shale and tar sand					
	Secondary fuels	BKB and patent fuel					
		Coke oven/gas coke					
		Coal tar					
Other solid fossil							
Solid fossil totals							
Gaseous fossil		Natural gas (dry)					
Other gaseous fossil							
Gaseous fossil totals							
Waste (non-biomass fraction)							
Other fossil fuels							
Peat							
Total							

Notes:

(1) Apparent consumption reported in GHG inventory minus apparent consumption using data reported pursuant to Regulation (EC) No 1099/2008

(2) Absolute difference divided by apparent consumption reported in GHG inventory

(3) Data to be reported up to one decimal point for TJ and % values

ANNEX XV

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ANNEX XVI

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ANNEX XVII

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ANNEX XX

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ANNEX XXI

Timescales for cooperation and coordination in preparing the Energy Community greenhouse gas inventory report pursuant to Article 25(1)

Element	Who	When	What
1. Submission of annual inventories (complete CRT and elements of the national inventory report) by Member States	**Contracting Parties**	Annually by 15 January	Elements listed in Article 26(3) of Regulation (EU) 2018/1999
2. 'Initial checks' of **Contracting Party** submissions	**Secretariat** (Eurostat), DG JRC), assisted by European Environment Agency (EEA)	For the **Contracting Party** submission from 15 January at the latest until 28 February	Checks to verify the transparency, accuracy, consistency, completeness and comparability of **Contracting Parties**' inventories (by EEA). Comparison of energy data provided by **Contracting Parties in the CRT** with Eurostat energy data **(sectoral and reference approach) by Eurostat and EEA**. Check of **Contracting Parties**' agriculture inventories by JRC (in consultation with **Contracting Parties**). Check of **Contracting Parties**' land use, land-use change and forestry (LULUCF) inventories by EEA (in consultation with JRC and **Contracting Parties** **The findings of the initial checks will be documented.**
3. Compilation of draft **Energy Community** inventory and inventory report (elements of the **Energy Community** inventory report)	**Secretariat** (JRC), assisted by EEA	Until 28 February	Draft **Energy Community** inventory and inventory report (compilation of **Contracting Party** information), based on **Contracting Party** inventories and additional information where needed (as submitted on 15 January).
4. Circulation of 'initial check' findings including notification of potential gap-filling	**Secretariat** assisted by EEA	28 February	Circulation of 'initial check' findings including notification of potential gap-filling and making available the findings.
5. Circulation of draft **Energy Community** inventory and inventory report	**Secretariat** assisted by EEA	28 February	Circulation of the draft **Energy Community** inventory on 28 February to **Contracting Parties**. **Contracting Parties** check data.
6. Submission of updated or additional inventory data and complete national inventory reports by **Contracting Parties**	**Contracting Parties**	By 15 March	Updated or additional inventory data submitted by **Contracting Parties** (to remove inconsistencies or to fill gaps) and complete national inventory reports.
7. **Contracting Party** commenting on the draft **Energy Community** inventory	**Contracting Parties**	By 15 March	If necessary, provide corrected data and comments to the draft **Energy Community** inventory.
8. **Contracting Party** responses to the 'initial checks' Contracting Parties	**Contracting Parties**	By 15 March	**Contracting Parties** respond to 'initial checks' if applicable.

Element	Who	When	What
9. Circulation of follow-up initial check findings	**Secretariat** assisted by EEA	15 March – 31 March	Evaluation of **Contracting Parties**' responses to the initial-check findings and follow-up questions to **Contracting Parties**.
10. Estimates for data missing from a national inventory	**Secretariat** assisted by EEA	31 March	The **Secretariat** prepares estimates for missing data by 31 March of the reporting year and communicates these to the **Contracting Parties**.
11. Comments from **Contracting Parties** regarding the Commission estimates for missing data	**Contracting Parties**	7 April	**Contracting Parties** provide comments on the **Secretariat** estimates for missing data, for consideration by the Secretariat.
12. **Contracting Parties** responses to follow-up 'initial checks'	**Contracting Parties**	7 April	**Contracting Parties** provide responses to follow up of 'initial checks'.
13. **Contracting Parties**' submissions to the UNFCCC	**Contracting Parties**	15 April	Submissions to the UNFCCC (with a copy to EEA).
14. Final annual **Energy Community** inventory (incl. **Energy Community** inventory report)	**Secretariat** assisted by EEA	15 April	Submission to UNFCCC of the final annual **Energy Community** inventory.
15. Submission of any other resubmission after the initial check phase	**Contracting Parties**	When additional resubmissions occur	**Contracting Parties** provide to the **Secretariat** any other resubmission (CRT or national inventory report) which they provide to the UNFCCC secretariat after the initial check phase.

ANNEX XXII

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ANNEX XXIII

Format for reporting on national systems for policies and measures and projections pursuant to Article 36

The first report submitted pursuant to Article 36 shall provide a full description and contain all of the information listed in the Table below. For subsequent reporting years, only modifications of the national system for policies and measures and projections need to be reported.

Reporting obligation	Fields for textual information	Examples of details that could be reported under this specific reporting obligation
Name and contact information for the entities with overall responsibility for the National Systems for policies and measures and projections		• List the responsible entity or entities, and their specific roles and responsibilities. Identify the lead entity. • If such a description has already been provided, report changes to the name and contact information.
Institutional arrangements in place for preparation of reports on policies and measures and of projections as well as for reporting on them, including an organogram		• Define the overall structure/set-up of your national system. List all organisations involved in the preparation of the report on policies and measures and projections and in the archiving of information, their responsibilities, and their interactions. • Provide a description of the organogram to show the organisational structure of the National System for policies and measures and projections, including the functional and hierarchical interrelationships between organisations. • If such a description of the national system has already been provided, report and explain changes to institutional arrangements.
Legal arrangements in place for preparation of reports on policies and measures and of projections		• Are there any legal arrangements in place to ensure reporting is completed, and/or data provided? Report the legislation and its scope. • If such a description has already been provided, report the changes to legal arrangements in place for the preparation of the report on policies and measures and projections.
Procedural and administrative arrangements and timescales in place for the preparation of reports on policies and measures and of projections, to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported.		• Report the cycle for preparation of report on policies and measures and of projections. • Summarise the methodologies and mechanisms how timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported are ensured. • Report on assurance of consistency with preparation of reports on policies and measures, where relevant, and of projections under Directive (EU)2016/2284. • Optionally, provide diagrams that show the processes involved in the national system. These diagrams could include the information flows through the system, and at which points QC and QA measures are applied. • If such a description has already been provided, report the changes to procedural and administrative arrangements.

Description of the information collection process		• Provide a summary of the process for collecting information for developing policies and measures, evaluating policies and measures and for developing projections. Explain if and how consistent processes are used for collecting and using information for policies and measures and projections. • If such a description has already been provided, report the changes to the data collection process.
Description of the alignment with the national inventory system		• Provide information on the alignment with the national system for the GHG inventory, such as processes to ensure consistency of the data used. • Option to provide details of links to other climate reporting systems if relevant. • If such a description has already been provided, report changes to the links to the national system for greenhouse gas inventories.
Description of the links to arrangements on integrated national energy and climate-reports pursuant to Art. 17 of Regulation (EU) 2018/1999		• Provide a summary of the linkages between the processes used to collect data related to policies and measures and projections, and relevant processes to report on progress other dimensions of the Energy Union, e.g. processes to foster consistent use of energy-related data for the development of policies and measures and projections and • for integrated progress reporting. • If such a description has already been provided, report changes to the links to energy-related reporting systems.
Description of the quality assurance and quality control activities for reporting of policies and measures and projections		• Provide a summary of the Quality Control activities applied to help ensure accuracy and completeness in the policies and measures and projections reports. Report the Quality Assurance activities in place. • If such a description has already been provided, report the changes to the quality control and quality assurance activities.
Description of the process for selecting assumptions, methodologies and models for making projections of anthropogenic greenhouse gas emissions		• Describe the process behind the selection of methodologies and models used. **Contracting Parties** may also report the reasons for their choices, or cross reference to other reports providing this information. • If such a description has already been provided, report the changes to these processes.
Description of procedures for the official consideration and approval of the **Contracting Parties** national system for policies and measures and projections		• Describe the process for officially approving the national system or changes to the national system. • If such a description has already been provided, report the changes to this process.
Information on relevant institutional administrative and procedural arrangements for domestic implementation of the EU's nationally determined contribution, or changes to such arrangements		• Refer to the arrangements for implementing policies and measures as means of domestic implementation and to the arrangements for national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks as means to track domestic progress. • If such a description has already been provided, report the changes to such arrangements.
Description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections		• Report a description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections. Indicate which stakeholders were consulted, and any changes or improvements made.

ANNEX XXIV

Reporting on national policies and measures pursuant to Article 37

Table 1: Sectors, gases and type of policy instrument

	General comments	
	Reference to assessments and underpinning technical reports	
Indicators used to monitor and evaluate progress over time (j)	Value	
	Year	
	Description	
Entities responsible for implementing the policy (i)	Name	
	Type	
	Projections scenario in which the PaM is included	
Implementation period	Finish	
	Start	
	Status of implementation (h)	
Union policies which resulted in the implementationofthe PaM	Other	
	Energy Community policy (g)	
	Type of policy Instrument (f)	
	Assessment of the contribution of the policy or Measure to the achievement of the long-term strategy referred to in Article 15 Regulation (EU) 2018/1999	
	Short description	
	Quantified objective (e)	
	Objective (d)	
	GHG(s) affected (c)	
	Sector(s) affected (b)	
	Geographical coverage (a)	
	In case of a grouped policy or measure, which single policies or measures does it cover	
	Single or grouped policy or measure	
	Name of policy or measure	
	PaM number	

Notes: Abbreviations: GHG = greenhouse gas; LULUCF = land use, land-use change and forestry.

(a) **Contracting Parties** shall select from the following categories: covering two or more countries, national, regional, local.

(b) **Contracting Parties** shall select from the following sectors (more than one sector can be selected for cross-sectoral policies and measures): energy supply (comprising extraction, transmission, distribution and storage of fuels as well as the transformation of energy for heating and cooling and electricity production); energy consumption (comprising consumption of fuels and electricity by end users such as households, public administration; services, industry and agriculture); transport; industrial processes (comprising industrial activities that chemically or physically transform materials leading to greenhouse gas emissions, use of greenhouse gases in products and non-energy uses of fossil fuel carbon); agriculture; LULUCF; waste management/waste; other sectors.

(c) **Contracting Parties** shall select from the following GHGs (more than one GHG can be selected): carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFC); perfluorocarbons (PFC); sulphur hexafluoride (SF6); nitrogen trifluoride (NF_3).

(d) Objective means 'initial statement of the outcomes (including results and impacts) intended to be achieved by the intervention'. **Contracting Parties** shall select from the following objectives (more than one objective may be selected, additional objectives may be added and specified under 'other'):

For **energy supply** — increase in renewable energy sources in the electricity sector; increase in renewable energy in the heating and cooling sector; switch to less carbon-intensive fuels; enhanced non-renewable low carbon generation (nuclear); reduction of losses; efficiency improvement in the energy and transformation sector; carbon capture and storage or carbon capture and utilisation; control of fugitive emissions from energy production; other energy supply.

For **energy consumption** — efficiency improvements of buildings; efficiency improvement of appliances; efficiency improvement in services/tertiary sector; efficiency improvement in industrial end-use sectors; demand management/reduction; other energy consumption.

For **transport** — efficiency improvements of vehicles; modal shift to public transport or non-motorized transport; low carbon fuels; electric road transport; demand management/reduction; improved behaviour; improved transport infrastructure; reduce emissions from international air or maritime transport; other transport.

For **industrial processes** — installation of abatement technologies; improved control of fugitive emissions from industrial processes; improved control of manufacturing, fugitive and disposal emissions of fluorinated gases; replacement of fluorinated gases by gases with a lower GWP value; other industrial processes.

For **waste management/waste** – demand management/reduction; enhanced recycling; enhanced CH4 collection and use; improved treatment technologies; improved landfill management; waste incineration with energy use; improved wastewater management systems; reduced landfilling; other waste.

For **agriculture** — reduction of fertilizer/manure use on cropland; other activities improving cropland management; improved livestock management; improved animal waste management systems; activities improving grazing land or grassland management; improved management of organic soils; other agriculture.

For **LULUCF** — afforestation and reforestation; conservation of carbon in existing forests; enhancing production in existing forests; increasing the harvested wood products pool; enhanced forest management; prevention of deforestation; strengthening protection against natural disturbances; substitution of GHG intensive feedstocks and materials with harvested wood products; prevention of drainage or rewetting of wetlands; restoration of degraded lands; other LULUCF.

For **Othe**r — **Contracting Parties** shall provide a brief description of the objective.

(e) **Contracting Parties** shall include, as a minimum, the figure(s), unit(s), end year and base year if the objective(s) is(are) quantified. Quantified objectives shall be specific, measurable, achievable, relevant and time-related.

(f) **Contracting Parties** shall select from the following policy types: economic; fiscal; voluntary/negotiated agreements; regulatory; information; education; research; planning; other.

(g) List here only Union policy/policies that are implemented through the national policy or where national policies are aimed directly at meeting the objectives of Union policies. **Contracting Party** shall select a policy/policiesfrom a list provided in the electronic version of the tabular format, or select other and specify the name of the **Energy Community** policy. **Contracting Parties** shall select Directive (EU) 2016/2284 if the PaM has been reported under that Directive.

(h) **Contracting Parties** shall select from the following categories: planned; adopted; implemented; expired. Expired policies and measures shall be reported in the template only if they have an effect, or if they are expected to continue to have an effect on greenhouse gas emissions.

(i) **Contracting Parties** shall select from the following options and enter the name/s of entities responsible for implementing the policy or measure (more than one entity may be selected): national government; regional entities; local government; companies/businesses/industrial associations; research institutions; others not listed.

(j) **Contracting Parties** shall provide any indicator used (including the unit) and values for such indicators that they use to monitor and evaluate progress of policies and measures. Those values can be either *ex-post* or *ex-ante* values and Contracting Parties shall specify the year or years for which the value applies. Values for multiple indicators and years may be reported. Performance indicators identified by Contracting Parties shall be relevant, accepted, credible, easy and robust.

Table 2: Available results of ex-ante and ex-post assessments of the effects of individual or groups of policies and measures on mitigation of climate change (a)

Ex-post assessment (e)	Documentation/ Source of estimation if available (provide a weblink of the report where the figure is referenced from)		
	Factors affected by the PaM		
	Explanation of the basis for the mitigation estimates		
	GHG emissions reduction (kt CO_2-equivalent per year) (b)	Total (d)	
		LULUCF (c)	
		EDS/ESR	
		EU ETS	
		Year of which reduction applies	
Ex-ante assessment	Documentation / Source of estimation if available (provide a weblink of the report where the figure is referenced from)		
	Factors affected by the PaM		
	Explanation of the basis for the mitigation estimates		
	GHG emissions reductions in t + 15 (kt CO_2-equivalent per year)	Total (d)	
		LULUCF (c)	
		ESR	
		EU ETS	
	GHG emissions reductions in t + 10 (kt CO_2-equivalent per year)	Total (d)	
		LULUCF (c)	
		ESR	
		EU ETS	
	GHG emissions reductions in t + 5 (kt CO_2-equivalent per year)	Total (d)	
		LULUCF (c)	
		ESR	
		EU ETS	
	GHG emissions reductions in year t (kt CO_2-equivalent per year)	Total (d)	
		LULUCF (c)	
		ESR	
		EU ETS	
	Policy impacting EU ETS, LULUCF and/or ESD/ESR /emission		
	PaM number		

Abbreviations: EU ETS = EU Emission Trading System; ESR = Effort Sharing Regulation (EU) 2018/842; ESD = Effort Sharing Decision No 406/2009/EC; LULUCF = land use, land-use change and forestry.

Notes:

(a) **Contractinf Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available. Notation: t signifies the first future year ending with 0 or 5 immediately following the reporting year.

(b) **Contractinf Parties** may report ex-post assessments for more than one year, where available reporting shall focus on years ending with 0 or 5.

(c) Enhanced removals or decreased emissions of greenhouse gases shall be expressed as a positive number. Decreased removals or increased emissions shall be expressed as a negative number.

(d) In this field, the total of the EU ETS and ESR sectors shall be entered if the split between EU ETS and ESR is not available.

(e) Ex-post evaluations include all evaluations based on results from parts of, or the whole implementation period.

Table 3: Available projected and realised costs and benefits of individual or groups of policies and measures on mitigation of climate change (a)

Realized costs and benefits	Description of non-GHG mitigation benefits.	
	Documentation / Source of cost estimation (provide a weblink of the report where the figure is referenced from)	
	Description of cost estimates (Basis for cost estimate, what type of costs are included in the estimate, methodology) (c)	
	Price year	
	Absolute net cost per year in EUR	
	Net costs in EUR per tonne CO_2-equivalent reduced/ sequestered	
	Absolute benefit (b) per year in EUR	
	Benefits (b) in EUR per tonne CO_2-equivament reduced/ sequestered	
	Absolute gross costs per year in EUR	
	Gross costs in EUR per tonne CO_2-equivalet reduced/sequestered	
	Year(s) for which cost has been calculated	
Projected costs and benefits	Description of non-GHG mitigation benefits	
	Documentation / Source of cost estimation (provide a weblink of the report where the figure is referenced from)	
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) (c)	
	Price year	
	Absolute net cost per year in EUR	
	Net costs in EUR per tonne CO_2-equivalent reduced/ sequestered	
	Absolute benefit (b) per year in EUR	
	Benefits(b) in EUR per tonne CO_2-equivalent reduced/ sequestered	
	Absolute gross costs per year in EUR	
	Gross costs in EUR per tonne CO_2-equivalent reduced/sequestered	
	Year(s) for which cost has been calculated	
	PaM number	

Notes:

(a) **Contracting Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available.

(b) A benefit shall be indicated in the template as a negative cost.

(c) The description shall include the type of costs and benefits that have been taken into consideration, the stakeholders considered in the assessment of costs and benefits, the baseline against which costs and benefits are compared, and the methodology.

ANNEX XXV

Reporting on national projections pursuant to Article 38

Table 1a: Greenhouse gas projections by gases and categories (1)

Category (2)	Separately for: CO_2, CH_4, N_2O, SF_6, NF_3, (kt) and HFCs, PFCs, unspecified mix of HFCs and PFCs- (kt CO_2-eq) (3)						Total GHG emissions (kt CO_2 -eq)						ETS emissions (kt CO_2-eq) (4)						ESR emissions (kt CO2-eq) (5)					
	Year						Year						Year						Year					
	projection base year (6)	t - 5 (7)	t	t + 5	t + 10	t + 15	projection base year	t - 5	t	t + 5	t + 10	t + 15	projection base year	t - 5	t	t + 5	t + 10	t + 15	projection base year	t - 5	t	t + 5	t + 10	t + 15
Total excluding LULUCF																								
Total including LULUCF																								
1. Energy																								
A. Fuel combustion																								
1. Energy industries																								
a. Public electricity and heat production																								
b. Petroleum refining																								
c. Manufacture of solid fuels and other energy industries																								
2. Manufacturing industries and construction																								
3. Transport																								
a. Domestic aviation																								
b. Road transportation																								
c. Railways																								
e. Other transportation																								
4. Other sectors																								
a. Commercial/ Institutional																								
b. Residential																								
c. Agriculture/ Forestry/ Fishing																								
5. Other																								
B. Fugitive emissions from fuels																								
1. Solid fuels																								

2. Oil and natural gas and other emissions from energy production																							
C. CO_2 transport and storage																							
2. Industrial processes																							
A. Mineral Industry of which 2.A.1 (cement production)																							
B. Chemical industry																							
C. Metal industry of which 2.C.1 (Iron and steel production)																							
D. Non-energy products from fuels and solvent use																							
E. Electronics industry																							
F. Product uses as substitutes for ODS (8)																							
G. Other product manufacture and use																							
H. Other																							
3. Agriculture																							
A. Enteric fermentation																							
B. Manure management																							
C. Rice cultivation																							
D. Agricultural soils																							
E. Prescribed burning of savannahs																							
F. Field burning of agricultural residues																							
G. Liming																							
H. Urea application																							
I. Other carbon-containing fertilizers																							
J. Other (please specify)																							
4. Land Use, Land-Use Change and Forestry (LULUCF, reported emissions and removals) (9)																							
A. Forest land																							
B. Cropland																							
C. Grassland																							
D. Wetlands																							
E. Settlements																							
F. Other Land																							
G. Harvested wood products																							
H. Other																							

5. Waste																							
A. Solid Waste Disposal																							
B. Biological treatment of solid waste																							
C. Incineration and open burning of waste																							
D. Wastewater treatment and discharge																							
E. Other (please specify)																							
Memo items																							
International bunkers																							
Aviation																							
Navigation																							
CO_2 emissions from biomass																							
CO_2 captured																							
Indirect CO_2 (if available) (10)																							

Notation: t signifies the first future year ending with 0 or 5 immediately following the reporting year

Notes:

(1) Consistency with the data reported under Article 8 of this Regulation is encouraged.

(2) Use of notation keys: as regards the terms of use defined in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (chapter 8: reporting guidance and Tables), the notation keys of IE (included elsewhere), NO (not occurring), C (confidential) and NA (not applicable) may be used, as appropriate when projections do not yield data on a specific reporting level (see 2006 IPCC Guidelines).

The use of the notation key NE (Not Estimated) shall be restricted to the situation where a disproportionate amount of effort would be required to collect data for a category or a gas from a specific category that would be insignificant in terms of the overall level and trend in national emissions. In these circumstances a **Contracting Party** shall list all categories and gases from categories excluded on these grounds, together with a justification for exclusion in terms of the likely level of emissions or removals and identify the category as 'not estimated' using the notation key 'NE' in the reporting Tables.

(3) Unspecified mix of HFCs and PFCs is to be reported only if emissions are projected, for which it is not possible to report them under HFCs or under PFCs.

(4) Emissions in the scope of Directive 2003/87/EC.

(5) Emissions in the scope of Regulation (EU) 2018/842.

(6) It shall be reported to which inventory submission (year, version) the base year was calibrated.

(7) Values for t-5 shall only be provided when t-5 is after the projection base year.

(8) ODS – ozone depleting substances.

(9) For the purposes of reporting, the signs for removal shall always be negative (-) and the signs for emissions shall be positive (+). If the information requested in Table 1b is provided in full, this section does not need to be reported.

(10) Projected indirect CO_2 emissions reported in this Table are part of the projected total greenhouse gas emissions (excluding and including LULUCF) and shall be reported as such if available and projected separately from the other reported emissions.

Table 1b:

<...>

Table 2: Indicators to monitor and evaluate projected progress of policies and measures if used

Indicator (1)/ numerator/ denominator	Unit	Guidance/defenition	Guidance/ source	Indicator used (Yes/No)	With existing measures					With additional measures				
					Base year	t	t + 5	t + 10	t + 15	Base year	t	t + 5	t + 10	t + 15
Carbon Intensity of the overall economy	tCO_2eq/ GDP	EUR (2016); Carbon intensity to be calculated with GDP as defined by Eurostat												
GHG intensity of domestic power and heat generation	tCO_2/ MWh	MWh of gross electricity and heat generation as defined by Eurostat												
GHG intensity of final energy consumption by sector														
Industry	tCO_2eq/ toe													
Residential	tCO_2eq/ toe													
Tertiary	tCO_2eq/ toe													
Transport	tCO_2eq/ toe													
Passenger transport (when available)	tCO_2eq/ toe													
Freight transport (when available)	tCO_2eq/ toe													
Add a line for each other indicator														

Notation: t signifies the first future year ending with 0 or 5 immediately following the reporting year

Notes:

(1) Please add a row per indicator used in the projections.

Table 3: Reporting on parameters / variables for projections, if used (1) (2)

Parameter used (3) ('with existing measures' scenario)			Year	Values						Default unit	Sectoral projections for which the parameter is used (6)															
		Parameter / variable part of projections (6)	Base = Reference year	Base = Reference year	t - 5	t	t + 5	t + 10	t + 15		Data source	Year of publication of data source	Year of publication of data source	1 A:1 Energy industries	1:A:2 Manufacturing industries and construction	1:A:3 Transport excluding 1:A:3:a domestic aviation	1:A:4:a Commercial = institutional	1:A:4:b Residential	1B Fugitive emissions from fuels	2 Industrial Processes and product use	3 Agriculture	4 LULUCF	5 Waste	International Aviation in the EU ETS 1:A:3:a Domestic aviation	Comment for guidance
1. General parameters and variables																									
Population										Count															
Gross domestic product (GDP)	Real growth rate									%															EUR (2016) (8)
	Constant price									EUR million															EUR (2016)
Gross value added (GVA)-total										EUR million															EUR (2016)
Gross value added (GVA) - agricultures										EUR million															EUR (2016)
Gross value added (GVA)-construction										EUR million															EUR (2016)
Gross value added (GVA) - services										EUR million															EUR (2016)
Gross value added (GVA) – energy sector										EUR million															EUR (2016)
Gross value added (GVA) – industry										EUR million															EUR (2016)
Number of households										Thousands															
Household size										inhabitants/ household															

Disposable income of households								EUR / year																
Number of passenger-kilometres (all modes)								million pkm																
Number of passenger-kilometres – road								million pkm																
Of which public road transport								*million pkm*																
Of which private cars								*million pkm*																
Of which motorcycles								*million pkm*																
Of which buses								*million pkm*																
Number of passenger-kilometres – rail								million tkm																
Number of passenger-kilometres – domestic aviation								million tkm																
Number of passenger-kilometres – international aviation								million tkm																
Number of passenger-kilometres – domestic navigation								million tkm																
Freight transport tonnes-kilo metres (all modes)								million tkm																
Freight transport tonnes-kilometres - road								million tkm																
Freight transport tonnes-kilometres - rail								million tkm																
Freight transport tonnes-kilometres – international aviation								million tkm																

Freight transport tonnes-kilometres – domestic navigation (inland waterways and national maritime)									million tkm																
International (wholesale) fuel import prices	Coal								*either* EUR/GJ																EUR (2016); Indicate if Commission recommendation has been followed; for calorific values use values published by Eurostat
									or EUR/toe																
	Crude Oil								*either* EUR/GJ																EUR (2016); Indicate if Commission recommendation has been followed
									or EUR/toe																
	Natural gas								*either* EUR/GJ																EUR (2016); Indicate if Commission recommendation has been followed; for calorific values use values published by Eurostat
									or EUR/toe																
EU ETS carbon price									EUR/EUA																EUR (2016); Indicate if Commission recommendation has been followed

Exchange rates EURO (for non- EURO countries), if applicable								EUR/ currency																EUR (2016)
Exchange rates US DOLLAR, if applicable								USD/ currency																USD (2016)
Number of heating degree days (HDD)								Count																
Number of cooling degree days (CDD)								Count																
2. Energy balances and indicators																								for calorific values use values published by Eurostat
2.1 Energy supply																								
Indigenous Production by fuel type (total)								ktoe																
Solids								ktoe																
Oil								ktoe																
Natural gas								ktoe																
Nuclear								ktoe																
Renewable energy sources								ktoe																
Waste and other								ktoe																
Net imports Electricity								ktoe																
Gross inland consumption by fuel type source (total)								ktoe																
Solid fossil fuels								ktoe																
Crude oil and petroleum products								ktoe																
Natural gas								ktoe																
Nuclear energy								ktoe																

Electricity								ktoe																
Derived heat								ktoe																
Renewables								ktoe																
Waste								ktoe																
Other								ktoe																
2.2 Electricity and heat																								
Gross electricity generation (total)								GWh																
Nuclear energy								GWh																
Solids								GWh																
Oil (incl. refinery gas)								GWh																
Natural gas (including derived gases)								GWh																
Renewables								GWh																
Other fuels (hydrogen, methanol)								GWh																
Heat generation from thermal power generation								GWh																
Heat generation from combined heat and power plants, including industrial waste heat								GWh																
2.3 Transformation sector																								
Fuel inputs to thermal power generation								ktoe																
Solids								ktoe																
Oil								ktoe																
Gas								ktoe																

Fuel inputs to other conversion processes								ktoe																
2.4 Energy consumption																								
Final energy consumption								ktoe																
Solids								ktoe																
Oil								ktoe																
Gas								ktoe																
Electricity								ktoe																
Derived heat								ktoe																
Renewable energy								ktoe																
Thereof ambient heat								ktoe																
Other								ktoe																
Industry								ktoe																
Solids								ktoe																
Oil								ktoe																
Gas								ktoe																
Electricity								ktoe																
Heat								ktoe																
Renewable energy								ktoe																
Other								ktoe																
Residential								ktoe																
Solids								ktoe																
Oil								ktoe																
Gas								ktoe																
Electricity								ktoe																
Heat								ktoe																

Renewable energy								ktoe																	
Other								ktoe																	
Tertiary								ktoe																	
Solids								ktoe																	
Oil								ktoe																	
Gas								ktoe																	
Electricity								ktoe																	
Heat								ktoe																	
Renewable energy								ktoe																	
Other								ktoe																	
Agriculture/ Forestry								ktoe																	
Transport								ktoe																	
Solids								ktoe																	
Oil								ktoe																	
Gas								ktoe																	
Electricity								ktoe																	
Heat								ktoe																	
Renewable energy								ktoe																	
Other								ktoe																	
thereof passenger transport (when available)								ktoe																	
thereof freight transport (when available)								ktoe																	
thereof international aviation								ktoe																	
Other								ktoe																	
Final non-energy consumption								ktoe																	

2.5 Prices																													
Electricity prices by type of using sector																													
Residential									EUR(MWh)																				
Industry									EUR(MWh)																				
Tertiary									EUR(MWh)																				
National retail fuel prices (including taxes, per source and sector)																													
Coal, industry									EUR/ktoe																				EUR (2016)
Coal, house holds									EUR/ktoe																				EUR (2016)
Diesel oil, industry									EUR/ktoe																				EUR (2016)
Diesel oil, households									EUR/ktoe																				EUR (2016)
Diesel oil, transport									EUR/ktoe																				EUR (2016)
Diesel oil, transport private (when available)									EUR/ktoe																				EUR (2016)
Diesel oil, transport public (when available)									EUR/ktoe																				EUR (2016)
Gasoline, transport									EUR/ktoe																				EUR (2016)
Gasoline, transport private (when available)									EUR/ktoe																				EUR (2016)
Gasoline, transport public (when available)									EUR/ktoe																				EUR (2016)
Natural gas, industry									EUR/ktoe																				EUR (2016)
Natural gas, households									EUR/ktoe																				EUR (2016)
3. Non-CO_2 emission related parameters																													
3.1 Agriculture																													

Livestock																										
Dairy cattle								1 000 heads																		
Non-dairy cattle								1 000 heads																		
Sheep								1 000 heads																		
Pig								1 000 heads																		
Poultry								1 000 heads																		
Nitrogen input from application of synthetic fertilizers								kt nitrogen																		
Nitrogen input from application of manure								kt nitrogen																		
Nitrogen fixed by N-fixing crops								kt nitrogen																		
Nitrogen in crop residues returned to soils								kt nitrogen																		
Area of cultivated organic soils								1 000 hectares																		
3.2 Waste																										
Municipal solid waste (MSW) generation								t																		
Municipal solid waste (MSW) going to landfills								t																		
Share of CH4 recovery in total CH4 generation from landfills								%																		
4. LULUCF																										
4.1 Managed forest land																										

Forest harvest removals for energy use								1 000 cubic meters																
Forest harvest removals for non-energy use								1 000 cubic meters																
Forest increment								1 000 cubic meters																
Forest disturbances included in modelling								Yes / No																
Forest land remaining forest land								1 000 hectares																
4.2 Afforested land																								
Forest harvest removals for energy use								1 000 cubic meters																
Forest harvest removals for non-energy use								1 000 cubic meters																
Forest increment								1 000 cubic meters																
Cropland converted to forest land								1 000 hectares																
Grassland converted to forest land								1 000 hectares																
Wetlands converted to forest land								1 000 hectares																
Settlements converted to forest land								1 000 hectares																
Other land converted to forest land								1 000 hectares																
4.3 Deforested land																								
Forest land converted to cropland								1 000 hectares																
Forest land converted to grassland								1 000 hectares																

Forest land converted to wetlands								1 000 hectares																
Forest land converted to settlements								1 000 hectares																
Forest land converted to other land								1 000 hectares																
4.4 Managed cropland																								
Cropland, remaining cropland								1 000 hectares																
Grassland, wetland, settlement or other land converted to cropland								1 000 hectares																
Cropland converted to wetland, settlement or other land (excl. forest land)								1 000 hectares																
4.5 Managed grassland																								
Grassland remaining grassland								1 000 hectares																
Cropland, wetland, settlement or other land, converted to grassland								1 000 hectares																
Grassland converted to wetland, settlement or other land								1 000 hectares																
4.6 Managed wetland																								
Wetland remaining wetland								1 000 hectares																
Settlement or other land, converted to wetland								1 000 hectares																
Wetland converted to settlement or other land								1 000 hectares																

4.7 Harvested wood products																										
Gains of Harvested wood products (4)									kt C																	
Losses of Harvested wood products (4)									kt C																	
Half-life of Harvested wood products (5)									years																	
5. Other parameters and variables																										
Technology cost assumptions used for main relevant technologies: *Add row for each relevant technology*																										
Add row for each other relevant parameter																										

Notes:

(1) Please add a row per country-specific parameter used in the projections at the end of the Table. Note that this includes the term 'variables' because some of the parameters listed can be variables for certain projection tools used, depending on the models used.

(2) Only those parameters / variables need to be reported that are part of the projections, either input or output.

(3) Use of notation keys: the notation keys of IE (included elsewhere), NO (not occurring), C (confidential), NA (not applicable), and NE (Not estimated/Not used) may be used, as appropriate. The use of the notation key NE (Not estimated) is for cases where the suggested parameter is neither used as a driver nor reported along with the Member States Projections. Notation: t signifies the first future year ending with 0 or 5 immediately following the reporting year.

(4) May include harvested wood products from managed forest land and afforested land.

(5) Please specify the types of harvested wood products in the rows below (under 'Add row for each other relevant parameter').

(6) To be filled with Yes/No.

(7) Please specify additional different values for parameters used in different sector models.

(8) Any update of this base year for expressing monetary values shall be part of the recommendations by the Commission on harmonised values for key supra-nationally determined parameters under Article 38(3) of this Regulation.

Table 5a

<...>

Table 5b

<...>

Table 6

<...>

Table 7: Key parameters that were varied in the sensitivity analysis

(Submit for each sensitivity scenario calculated). Only those parameters are to be filled in that were varied in a specific scenario.

Parameter values in sensitivity scenario			**Year**	**Values**						**Default unit**	
		Parameter varied (1)	Base = Reference year	Base = Reference year	t- 5	t	t + 5	t + 10	t + 15		Comment for Guidance
General parameters and variables											
Population										Count	
Gross domestic product (GDP)	Real growth rate									%	
	Constant prices									EUR million	EUR (2016) (2)
Gross value added (GVA) – total										EUR million	EUR (2016)
Gross value added (GVA) – agriculture										EUR million	EUR (2016)
Gross value added (GVA) – construction										EUR million	EUR (2016)
Gross value added (GVA) – services										EUR million	EUR (2016)
Gross value added (GVA) – energy sector										EUR million	EUR (2016)
Gross value added (GVA) – industry										EUR million	EUR (2016)
International (wholesale) fuel import prices	Coal									EUR/GJ	EUR (2016)
										EUR/toe	EUR (2016)
	Crude Oil									EUR/GJ	EUR (2016)
										EUR/toe	EUR (2016)
	Natural gas									EUR/GJ	EUR (2016)
										EUR/toe	EUR (2016)
EU ETS carbon price										EUR/ EUA	EUR (2016)
Number of heating degree days (HDD)										Count	
Number of cooling degree days (CDD)										Count	
Number of passenger-kilometres (all modes)										million pkm	

Freight transport tonnes-kilometres (all modes)									million tkm	
(Add rows for further parameters that were varied)										

Note: add rows at the end of the Table for other parameters varied. Leave those lines empty for which parameters were not varied.

(1) Indicate with Yes / No.

(2) Any update of this base year for expressing monetary values shall be part of the recommendations by the Commission on harmonised values for key supra-nationally determined parameters under Article 38(3) of this Regulation.

COMMISSION IMPLEMENTING REGULATION (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC

Incorporated and adapted by the Ministerial Council Decision 2022/05/MC-EnC of 15 December 2022 amending Annex I to the Treaty establishing the Energy Community and incorporating Implementing Regulation (EU) 2018/2066, Implementing Regulation (EU) 2018/2067 and Directive 2003/87/EC in the Energy Community *acquis communautaire*

The adaptations made by Ministerial Council Decision 2022/05/MC-EnC are highlighted in ***bold and blue.***

CHAPTER I
GENERAL PROVISIONS

SECTION 1
Subject matter and definitions

Article 1
Subject matter

This Regulation lays down rules for the monitoring and reporting of greenhouse gas emissions and activity data **<…>**.

Article 2
Scope

This Regulation shall apply to the monitoring and reporting of greenhouse gas emissions specified in relation to the activities listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and activity data from stationary installations, from aviation activities and to the monitoring and reporting of tonne-kilometre data from aviation activities.

Without prejudice to Article 78, it shall apply to emissions and activity data occurring from 1 January **2024**.

Article 3

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) 'activity data' means data on the amount of fuels or materials consumed or produced by a process relevant for the calculation based monitoring methodology, expressed in terajoules, mass in tonnes or (for gases) volume in normal cubic metres, as appropriate;

(2) 'trading period' means a period **of ten years starting from 1 January 2024**;

(3) 'tonne-kilometre' means a tonne of payload carried a distance of one kilometre;

(4) 'source stream' means any of the following:

(a) a specific fuel type, raw material or product giving rise to emissions of relevant greenhouse gases at one or more emission sources as a result of its consumption or production;

(b) a specific fuel type, raw material or product containing carbon and included in the calculation of greenhouse gas emissions using a mass-balance methodology;

(5) 'emission source' means a separately identifiable part of an installation or a process within an installation, from which relevant greenhouse gases are emitted or, for aviation activities, an individual aircraft;

(6) 'uncertainty' means a parameter, associated with the result of the determination of a quantity, that characterises the dispersion of the values that could reasonably be attributed to the particular quantity, including the effects of systematic as well as of random factors, expressed in per cent, and describes a confidence interval around the mean value comprising 95 % of inferred values taking into account any asymmetry of the distribution of values;

(7) 'calculation factors' means net calorific value, emission factor, preliminary emission factor, oxidation factor, conversion factor, carbon content or biomass fraction;

(8) 'tier' means a set requirement used for determining activity data, calculation factors, annual emission and annual average hourly emission, and payload;

(9) 'inherent risk' means the susceptibility of a parameter in the annual emissions report or tonne-kilometre report to misstatements that could be material, individually or when aggregated with other misstatements, before taking into consideration the effect of any related control activities;

(10) 'control risk' means the susceptibility of a parameter in the annual emissions report or tonne-kilometre report to misstatements that could be material, individually or when aggregated with other misstatements, and not prevented or detected and corrected on a timely basis by the control system;

(11) 'combustion emissions' means greenhouse gas emissions occurring during the exothermic reaction of a fuel with oxygen;

(12) 'reporting period' means a calendar year during which emissions have to be monitored and reported **<...>**;

(13) 'emission factor' means the average emission rate of a greenhouse gas relative to the activity data of a source stream assuming complete oxidation for combustion and complete conversion for all other chemical reactions;

(14) 'oxidation factor' means the ratio of carbon oxidised to CO_2 as a consequence of combustion to the

total carbon contained in the fuel, expressed as a fraction, considering carbon monoxide (CO) emitted to the atmosphere as the molar equivalent amount of CO_2;

(15) 'conversion factor' means the ratio of carbon emitted as CO_2 to the total carbon contained in the source stream before the emitting process takes place, expressed as a fraction, considering CO emitted to the atmosphere as the molar equivalent amount of CO_2;

(16) 'accuracy' means the closeness of the agreement between the result of a measurement and the true value of the particular quantity or a reference value determined empirically using internationally accepted and traceable calibration materials and standard methods, taking into account both random and systematic factors;

(17) 'calibration' means the set of operations, which establishes, under specified conditions, the relations between values indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material and the corresponding values of a quantity realised by a reference standard;

(18) 'flight' means flight as defined in point 1(1) of the Annex to Decision 2009/450/EC;

(19) 'passengers' means the persons onboard the aircraft during a flight excluding its on duty crew members;

(20) 'conservative' means that a set of assumptions is defined in order to ensure that no under-estimation of annual emissions or over estimation of tonne-kilometres occurs;

(21) 'biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin:

(21a) 'biomass fuels' means gaseous and solid fuels produced from biomass;

(21b) 'biogas' means gaseous fuels produced from biomass;

(21c) 'waste' means waste as defined in point (1) of Article 3 of Directive 2008/98/EC, excluding substances that have been intentionally modified or contaminated in order to meet this definition;

(21d) 'residue' means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it;

(21e) 'agricultural, aquaculture, fisheries and forestry residues' means residues that are directly generated by agriculture, aquaculture, fisheries and forestry and that do not include residues from related industries or processing;

(22) 'bioliquids' means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass;

(23) 'biofuels' means liquid fuels for transport produced from biomass;

(24) 'legal metrological control' means the control of the measurement tasks intended for the field of application of a measuring instrument, for reasons of public interest, public health, public safety, public order, protection of the environment, the levying of taxes and duties, the protection of consumers and fair trading;

(25) 'maximum permissible error' means the error of measurement allowed as specified in Annex I and instrument-specific annexes to Directive 2014/32/EU of the European Parliament and of the Council, or

national rules on legal metrological control, as appropriate;

(26) 'data-flow activities' mean activities related to the acquisition, processing and handling of data that are needed to draft an emissions report from primary source data;

(27) 'tonnes of $CO_{2(e)}$' means metric tonnes of CO_2 or $CO_{2(e)}$;

(28) '$CO_{2(e)}$' means any greenhouse gas, other than CO_2, listed in Annex II to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** with an equivalent global warming potential as CO_2;

(29) 'measurement system' means a complete set of measuring instruments and other equipment, such as sampling and data processing equipment, used to determine variables such as the activity data, the carbon content, the calorific value or the emission factor of the greenhouse gas emissions;

(30) 'net calorific value' (NCV) means the specific amount of energy released as heat when a fuel or material undergoes complete combustion with oxygen under standard conditions, less the heat of vaporisation of any water formed;

(31) 'process emissions' means greenhouse gas emissions other than combustion emissions occurring as a result of intentional and unintentional reactions between substances or their transformation, including the chemical or electrolytic reduction of metal ores, the thermal decomposition of substances and the formation of substances for use as product or feedstock;

(32) 'commercial standard fuel' means the internationally standardised commercial fuels that exhibit a 95 % confidence interval of not more than 1 % for their specified calorific value, including gas oil, light fuel oil, gasoline, lamp oil, kerosene, ethane, propane, butane, jet kerosene (jet A1 or jet A), jet gasoline (jet B) and aviation gasoline (AvGas);

(33) 'batch' means an amount of fuel or material representatively sampled and characterised, and transferred as one shipment or continuously over a specific period of time;

(34) 'mixed fuel' means a fuel which contains both biomass and fossil carbon;

(35) 'mixed material' means a material which contains both biomass and fossil carbon;

(36) 'preliminary emission factor' means the assumed total emission factor of a fuel or material based on the carbon content of its biomass fraction and its fossil fraction before multiplying it by the fossil fraction to produce the emission factor;

(37) 'fossil fraction' means the ratio of fossil carbon to the total carbon content of a fuel or material, expressed as a fraction;

(38) 'biomass fraction' means the ratio of carbon stemming from biomass to the total carbon content of a fuel or material, expressed as a fraction;

(39) 'energy balance method' means a method to estimate the amount of energy used as fuel in a boiler, calculated as the sum of utilisable heat and all relevant losses of energy by radiation, transmission and via the flue gas;

(40) 'continuous emission measurement' means a set of operations having the objective of determining the value of a quantity by means of periodic measurements, applying either measurements in the stack or extractive procedures with a measuring instrument located close to the stack, whilst excluding measurement method ologies based on the collection of individual samples from the stack;

(41) 'inherent CO_2' means CO_2 which is part of a source stream;

(42) 'fossil carbon' means inorganic and organic carbon that is not biomass;

(43) 'measurement point' means the emission source for which continuous emission measurement systems (CEMS) are used for emission measurement, or the cross-section of a pipeline system for which the CO_2 flow is determined using continuous measurement systems;

(44) 'mass and balance documentation' means the documentation specified in international or national implementation of the standards and recommended practices (SARPs) laid down in Annex 6 to the Convention on International Civil Aviation, signed in Chicago on 7 December 1944 and specified in Section 3 of Subpart C of Annex IV to Commission Regulation (EU) No 965/2012, or equivalent applicable international rules;

(45) 'distance' means the great-circle distance between the aerodrome of departure and the aerodrome of arrival, in addition to a fixed factor of 95 km;

(46) 'aerodrome of departure' means the aerodrome at which a flight constituting an aviation activity listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** begins;

(47) 'aerodrome of arrival' means the aerodrome at which a flight constituting an aviation activity listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** ends;

(48) 'payload' means the total mass of freight, mail, passengers and baggage carried onboard an aircraft during a flight;

(49) 'fugitive emissions' means irregular or unintended emissions from sources that are not localised, or too diverse or too small to be monitored individually;

(50) 'aerodrome' means aerodrome as defined in point 1(2) of the Annex to Decision 2009/450/EC;

(51) 'aerodrome pair' means a pair constituted by the aerodrome of departure and the aerodrome of arrival;

(52) 'standard conditions' means temperature of 273,15 K and pressure conditions of 101 325 Pa defining normal cubic metres (Nm^3);

(53) 'storage site' means storage site as defined in Article 3(3) of Directive 2009/31/EC;

(54) 'CO_2 capture' means the activity of capturing from gas streams CO_2 that would otherwise be emitted, for the purposes of transport and geological storage in a storage site **<…>**;

(55) 'CO_2 transport' means the transport of CO_2 by pipelines for geological storage in a storage site **<…>**;

(56) 'geological storage of CO_2' means geological storage of CO_2 **<…>**;

(57) 'vented emissions' means emissions deliberately released from an installation by provision of a defined point of emission;

(58) 'enhanced hydrocarbon recovery' means the recovery of hydrocarbons in addition to those extracted by water injection or other means;

(59) 'proxy data' means annual values which are empirically substantiated or derived from accepted sources and which an operator uses to substitute the activity data or the calculation factors for the purpose of ensuring complete reporting when it is not possible to generate all the required activity data or calculation factors in the applicable monitoring methodology;

(60) 'water column' means water column as defined in Article 3(2) of Directive 2009/31/EC;

(61) 'leakage' means leakage as defined in Article 3(5) of Directive 2009/31/EC;

(62) 'storage complex' means storage complex as defined in Article 3(6) of Directive 2009/31/EC;

(63) 'transport network' means transport network as defined in Article 3(22) of Directive 2009/31/EC;

(64) 'tentative period' means the period stemming from 1 January 2024 until 1 January 2026, during which the public authorities of Contracting Parties, operators, aircraft operators and other legal and natural persons falling under the scope of this Regulation shall continuously work on complying with and implementing the provisions of this Regulation being subject to penalties for non-compliance not earlier than 2 January 2026.

SECTION 2
General principles

Article 4
General obligation

Operators and aircraft operators shall carry out their obligations related to the monitoring and reporting of greenhouse gas emissions under Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** in accordance with the principles laid down in Articles 5 to **8**.

Article 5
Completeness

Monitoring and reporting shall be complete and cover all process and combustion emissions from all emission sources and source streams belonging to activities listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC <…>**, and of all greenhouse gases specified in relation to those activities, while avoiding double-counting. Operators and aircraft operators shall take appropriate measures to prevent any data gaps within the reporting period.

Article 6
Consistency, comparability and transparency

1. Monitoring and reporting shall be consistent and comparable over time. To that end, operators and aircraft operators shall use the same monitoring methodologies and data sets, subject to changes and derogations approved by the competent authority.

2. Operators and aircraft operators shall obtain, record, compile, analyse and document monitoring data, including assumptions, references, activity data and calculation factors, in a transparent manner that enables the reproduction of the determination of emissions by the verifier and the competent authority.

3. Competent Authorities shall endeavour to design the monitoring and reporting templates in line with the latest templates published by the European Commission in order to ensure

compatibility and comparability with the European Union reporting.

Article 7

Accuracy

Operators and aircraft operators shall ensure that emission determination is neither systematically nor knowingly inaccurate.

They shall identify and reduce any source of inaccuracies as far as possible.

They shall exercise due diligence to ensure that the calculation and measurement of emissions exhibit the highest achievable accuracy.

Article 8

Integrity of the methodology and of the emissions report

Operators and aircraft operators shall enable reasonable assurance of the integrity of emission data to be reported. They shall determine emissions using the appropriate monitoring methodologies set out in this Regulation.

Reported emission data and related disclosures shall be free from material misstatement as defined in Article 3(6) of Commission Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, avoid bias in the selection and presentation of information, and provide a credible and balanced account of an installation's or aircraft operator's emissions.

In selecting a monitoring methodology, the improvements from greater accuracy shall be balanced against additional costs. Monitoring and reporting of emissions shall aim for the highest achievable accuracy, unless this is technically not feasible or incurs unreasonable costs.

Article 9

Continuous improvement

Operators and aircraft operators shall take account of the recommendations included in the verification reports issued pursuant to Article 15 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** in their consequent monitoring and reporting.

Article 10

Coordination

Where a **Contracting Party** designates more than one competent authority pursuant to Article 18 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, it shall coordinate the work carried out by those authorities pursuant to this Regulation.

CHAPTER II
MONITORING PLAN

SECTION 1
General rules

Article 11
General obligation

1. Each operator or aircraft operator shall monitor greenhouse gas emissions on the basis of a monitoring plan approved by the competent authority in accordance with Article 12, taking into account the nature and functioning of the installation or aviation activity to which it applies.

The monitoring plan shall be supplemented by written procedures which the operator or aircraft operator establishes, documents, implements, and maintains for activities under the monitoring plan, as appropriate.

2. The monitoring plan referred to in paragraph 1 shall describe the instructions to the operator or aircraft operator in a logical and simple manner, avoiding duplication of effort and taking into account existing systems in place at the installation or used by the operator or aircraft operator.

Article 12
Content and submission of the monitoring plan

1. Each operator or aircraft operator shall submit a monitoring plan to the competent authority for approval.

The monitoring plan shall consist of a detailed, complete and transparent documentation of the monitoring methodology of a specific installation or aircraft operator and shall contain at least the elements laid down in Annex I.

Together with the monitoring plan, the operator or aircraft operator shall submit the following supporting documents:

(a) for installations, evidence for each major and minor source stream demonstrating compliance with the uncertainty thresholds for activity data and calculation factors, where applicable, for the applied tiers as defined in Annexes II and IV, and for each emission source demonstrating compliance with the uncertainty thresholds for the applied tiers as defined in Annex VIII, where applicable;

(b) the results of a risk assessment providing evidence that the proposed control activities and procedures for control activities are commensurate with the inherent risks and control risks identified.

2. Where Annex I refers to a procedure, an operator or aircraft operator shall establish, document, implement and maintain such a procedure separately from the monitoring plan.

The operator or aircraft operator shall summarise the procedures in the monitoring plan providing the following information:

(a) the title of the procedure;

(b) a traceable and verifiable reference for identification of the procedure;

(c) identification of the post or department responsible for implementing the procedure and for the data generated from or managed by the procedure;

(d) a brief description of the procedure, allowing the operator or aircraft operator, the competent authority and the verifier to understand the essential parameters and operations performed;

(e) the location of relevant records and information;

(f) the name of the computerised system used, where applicable;

(g) a list of EN standards or other standards applied, where relevant.

The operator or aircraft operator shall make any written documentation of the procedures available to the competent authority upon request. The operator or aircraft operator shall also make them available for the purposes of verification pursuant to Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Article 13

Standardised and simplified monitoring plans

1. **Contracting Parties** may allow operators and aircraft operators to use standardised or simplified monitoring plans **<…>**. For that purpose, **Contracting Parties** may publish templates for those monitoring plans **in line with Article 6(3)**, including the description of data flow and control procedures referred to in Articles 58 and 59, based on the templates and guidelines published by the **European** Commission.

2. Before the approval of any simplified monitoring plan, as referred to in paragraph 1, the competent authority shall carry out a simplified risk assessment as to whether the proposed control activities and procedures for control activities are commensurate with the inherent risks and control risks identified, and justify the use of such a simplified monitoring plan.

Contracting Parties may require the operator or aircraft operator to carry out the risk assessment pursuant to the previous subparagraph itself, where appropriate.

Article 14

Modifications of the monitoring plan

1. Each operator or aircraft operator shall regularly check whether the monitoring plan reflects the nature and functioning of the installation or aviation activity in accordance with Article 7 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, and whether the monitoring methodology can be improved.

2. The operator or aircraft operator shall modify the monitoring plan, at least, in any of the following situations:

(a) new emissions occur due to new activities being carried out or due to the use of new fuels or materials not yet contained in the monitoring plan;

(b) a change in the availability of data, due to the use of new types of measuring instrument, sampling meth-

ods or analysis methods, or for other reasons, leads to higher accuracy in the determination of emissions;

(c) data resulting from the monitoring methodology applied previously has been found to be incorrect;

(d) changing the monitoring plan improves the accuracy of the reported data, unless this is technically not feasible or incurs unreasonable costs;

(e) the monitoring plan is not in conformity with the requirements of this Regulation and the competent authority requests the operator or aircraft operator to modify it;

(f) it is necessary to respond to the suggestions for improvement of the monitoring plan contained in a verification report.

Article 15

Approval of modifications of the monitoring plan

1. The operator or aircraft operator shall notify the competent authority of any proposals for modification of the monitoring plan without undue delay.

However, the competent authority may allow the operator or aircraft operator to notify modifications of the monitoring plan that are not significant within the meaning of paragraphs 3 and 4 by 31 December of the same year.

2. Any significant modification of the monitoring plan within the meaning of paragraphs 3 and 4 shall be subject to approval by the competent authority. Where the competent authority considers a modification not to be significant, it shall inform the operator or aircraft operator thereof without undue delay.

3. Significant modifications to the monitoring plan of an installation include:

(a) changes to the category of the installation where such changes require a change to the monitoring methodology or lead to a change of the applicable materiality level pursuant to Article 23 of Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(b) notwithstanding Article 47(8), changes regarding whether the installation is considered an 'installation with low emissions';

(c) changes to emission sources;

(d) a change from calculation-based to measurement-based methodologies, or *vice versa*, or from a fall-back methodology to a tier-based methodology for determining emissions or *vice versa*;

(e) a change in the tier applied;

(f) the introduction of new source streams;

(g) a change in the categorisation of source streams – between major, minor or *de-minimis* source streams where such a change requires a change to the monitoring methodology;

(h) a change to the default value for a calculation factor, where the value is to be laid down in the monitoring plan;

(i) the introduction of new methods or changes to existing methods related to sampling, analysis or calibration, where this has a direct impact on the accuracy of emissions data;

(j) the implementation or adaption of a quantification methodology for emissions from leakage at storage sites.

4. Significant changes to the monitoring plans of an aircraft operator include:

(a) with regard to the emission monitoring plan:

(i) a change of emission factor values laid down in the monitoring plan;

(ii) a change between calculation methods as laid down in Annex III, or a change from the use of a calculation method to the use of estimation methodology in accordance `with Article 55(2) or *vice versa*;

(iii) the introduction of new source streams;

(iv) changes in the status of the aircraft operator as a small emitter within the meaning of Article 55(1) **<...>**;

(b) with regard to the tonne-kilometre data monitoring plan:

(i) a change between a non-commercial and commercial status of the air transport service provided;

(ii) a change in the object of the air transport service, the object being passengers, freight or mail.

Article 16

Implementation and record-keeping of modifications

1. Before receiving approval or information in accordance with Article 15(2), the operator or aircraft operator may carry out monitoring and reporting using the modified monitoring plan where it can reasonably assume that the proposed modifications are not significant, or where monitoring in accordance with the original monitoring plan would lead to incomplete emission data.

In case of doubt, the operator or aircraft operator shall use in parallel both the modified and the original monitoring plan to carry out all monitoring and reporting in accordance with both plans, and it shall keep records of both monitoring results.

2. Upon receipt of approval or information in accordance with Article 15(2), the operator or aircraft operator shall only use the data relating to the modified monitoring plan and carry out all monitoring and reporting using only the modified monitoring plan from the date from which that version of the monitoring plan is applicable.

3. The operator or aircraft operator shall keep records of all modifications of the monitoring plan. Each record shall contain:

(a) a transparent description of the modification;

(b) a justification for the modification;

(c) the date of notification of the modification to the competent authority pursuant to Article 15(1);

(d) the date on which the competent authority acknowledged receipt of the notification referred to in Article 15(1), where available, and the date of the approval or information referred to in Article 15(2);

(e) the starting date of implementation of the modified monitoring plan in accordance with paragraph 2 of this Article.

SECTION 2

Technical feasibility and unreasonable costs

Article 17

Technical feasibility

1. Where an operator or aircraft operator claims that applying a specific monitoring methodology is technically not feasible, the competent authority shall assess the technical feasibility taking the operator's or aircraft operator's justification into account. That justification shall be based on the operator or aircraft operator having technical resources capable of meeting the needs of a proposed system or requirement that can be implemented in the required time for the purposes of this Regulation. Those technical resources shall include the availability of the requisite techniques and technology.

Article 18

Unreasonable costs

1. Where an operator or aircraft operator claims that applying a specific monitoring methodology would incur unreasonable costs, the competent authority shall assess whether the costs are unreasonable, taking into account the operator's justification.

The competent authority shall consider costs unreasonable where the cost estimate exceeds the benefit. To that end, the benefit shall be calculated by multiplying an improvement factor by a reference price of EUR 20 per allowance and costs shall include an appropriate depreciation period based on the economic lifetime of the equipment.

2. When assessing the unreasonable nature of the costs with regard to the operator's choice of tier levels for activity data, the competent authority shall use as the improvement factor referred to in paragraph 1 the difference between the uncertainty currently achieved and the uncertainty threshold of the tier that would be achieved by the improvement multiplied by the average annual emissions caused by that source stream over the three most recent years.

In the absence of such data on the average annual emissions caused by that source stream over the three most recent years, the operator or aircraft operator shall provide a conservative estimate of the annual average emissions, with the exclusion of CO2 stemming from biomass and before subtraction of transferred CO2. For measuring instruments under national legal metrological control, the uncertainty currently achieved may be substituted by the maximum permissible error in service allowed by the relevant national legislation.

For the purpose of this paragraph, Article 38(5) shall apply, provided that the relevant information on the sustainability and the greenhouse gas emissions saving criteria of biofuels, bioliquids and biomass fuels used for combustion is available to the operator.

3. When assessing the unreasonable nature of the costs with regard to measures increasing the quality of reported emissions but without direct impact on the accuracy of activity data, the competent authority shall use an improvement factor of 1 % of the average annual emissions of the respective source streams

in the three most recent reporting periods. Those measures may include:

(a) switching from default values to analyses to determine calculation factors;

(b) an increase of the number of analyses per source stream;

(c) where the specific measuring task does not fall under national legal metrological control, the substitution of measuring instruments with instruments complying with relevant requirements of legal metrological control of the **Contracting Party** in similar applications, or to measuring instruments meeting national rules adopted pursuant to Directive 2014/31/EU of the European Parliament and of the Council or Directive 2014/32/EU;

(d) shortening calibration and maintenance intervals of measuring instruments;

(e) improvements to data-flow activities and control activities that significantly reduce the inherent or control risk.

4. Measures relating to the improvement of an installation's monitoring methodology shall not be deemed to incur unreasonable costs up to an accumulated amount of EUR 2 000 per reporting period. For installations with low emissions that threshold shall be EUR 500 per reporting period.

CHAPTER III
MONITORING OF EMISSIONS FROM STATIONARY INSTAL LATIONS

SECTION 1
General provisions

Article 19

Categorisation of installations, source streams and emission sources

1. For the purpose of monitoring emissions and determining the minimum requirements for tiers, each operator shall determine the category of its installation pursuant to paragraph 2, and, where relevant, of each source stream pursuant to paragraph 3 and of each emission source pursuant to paragraph 4.

2. The operator shall classify each installation in one of the following categories:

(a) a category A installation, where the average verified annual emissions in the trading period immediately preceding the current trading period, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, are equal to or less than 50 000 tonnes of $CO_{2(e)}$;

(b) a category B installation, where the average verified annual emissions of the trading period immediately preceding the current trading period, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, are more than 50 000 tonnes of $CO_{2(e)}$ and equal to or less than 500 000 tonnes of $CO_{2(e)}$;

(c) a category C installation, where the average verified annual emissions of the trading period immediately preceding the current trading period, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, are more than 500 000 tonnes of $CO_{2(e)}$.

By way of derogation from Article 14(2), the competent authority may allow the operator not to modify the monitoring plan where, on the basis of verified emissions, the threshold for the classification of the installation referred to in the first subparagraph is exceeded, but the operator demonstrates to the satisfaction of the competent authority that this threshold has not already been exceeded within the past five reporting periods and will not be exceeded again in subsequent reporting periods.

3. The operator shall classify each source stream in one of the following categories, comparing it against the sum of all absolute values of fossil CO_2 and $CO_{2(e)}$ corresponding to all source streams included in calculation-based methodologies and of all emissions of emission sources monitored using measurement-based methodologies, before subtraction of transferred CO_2:

(a) minor source streams, where the source streams selected by the operator jointly account for less than 5 000 tonnes of fossil CO_2 per year or less than 10 %, up to a total maximum of 100 000 tonnes of fossil CO_2 per year, whichever is greater in terms of absolute value;

(b) *de minimis* source streams, where the source streams selected by the operator jointly account for less than 1 000 tonnes of fossil CO_2 per year or less than 2 %, up to a total maximum of 20 000 tonnes of fossil CO_2 per year, whichever is greater in terms of absolute value;

(c) major source streams, where the source streams do not fall within the categories referred to in points (a) and (b).

By way of derogation from Article 14(2), the competent authority may allow the operator not to modify the monitoring plan where, on the basis of verified emissions, the threshold for the classification of a source stream as a minor source stream or a *de minimis* source stream referred to in the first subparagraph is exceeded, but the operator demonstrates to the satisfaction of the competent authority that this threshold has not already been exceeded within the past five reporting periods and will not be exceeded again in subsequent reporting periods.

4. The operator shall classify each emission source for which a measurement-based methodology is applied in one of the following categories:

(a) minor emission sources, where the emission source emits less than 5 000 tonnes of fossil $CO_{2(e)}$ per year or less than 10 % of the installation's total fossil emissions, up to a maximum of 100 000 tonnes of fossil $CO_{2(e)}$ per year, whichever is greater in terms of absolute value;

(b) major emission sources, where the emission source does not classify as a minor emission source.

By way of derogation from Article 14(2), the competent authority may allow the operator not to modify the monitoring plan where, on the basis of verified emissions, the threshold for the classification of an emission source as a minor emission source referred to in the first subparagraph is exceeded, but the operator demonstrates to the satisfaction of the competent authority that this threshold has not already been exceeded within the past five reporting periods and will not be exceeded again in subsequent reporting periods.

5. Where the average annual verified emissions in the trading period immediately preceding the current trading period for the installation are not available or no longer representative for the purpose of paragraph 2, the operator shall use a conservative estimate of annual average emissions, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, to determine the category of the installation.

6. For the purpose of this Article, Article 38(5) shall apply.

Article 20

Monitoring boundaries

1. Operators shall define the monitoring boundaries for each installation.

Within those boundaries, the operator shall include all relevant greenhouse gas emissions from all emission sources and source streams belonging to activities carried out at the installation and listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC <…>**.

The operator shall also include emissions from regular operations and abnormal events, including start-up, shut-down and emergency situations, over the reporting period, with the exception of emissions from mobile machinery for transportation purposes.

2. When determining the monitoring and reporting process, the operator shall include the sector-specific requirements laid down in Annex IV.

3. Where leakages from a storage complex within the meaning of Directive 2009/31/EC are identified and lead to emissions or release of CO_2 to the water column, they shall be considered as emission sources for the installation in question and shall be monitored in accordance with section 23 of Annex IV to this Regulation.

The competent authority may allow the exclusion of a leakage emission source from the monitoring and reporting process, once corrective measures pursuant to Article 16 of Directive 2009/31/EC have been taken and emissions or release into the water column from that leakage can no longer be detected.

Article 21

Choice of the monitoring methodology

1. For the monitoring of the emissions of an installation, the operator shall choose to apply either a calculation-based methodology or a measurement-based methodology, subject to specific provisions of this Regulation.

A calculation-based methodology shall consist in determining emissions from source streams on the basis of activity data obtained by means of measurement systems and additional parameters from laboratory analyses or default values. The calculation-based methodology may be implemented according to the standard methodology set out in Article 24 or the mass-balance methodology set out in Article 25.

A measurement-based methodology shall consist in determining emissions from emission sources by means of continuous measurement of the concentration of the relevant greenhouse gas in the flue gas and of the flue-gas flow, including the monitoring of CO_2 transfers between installations where the CO_2 concentration and the flow of the transferred gas are measured.

Where the calculation-based methodology is applied, the operator shall determine for each source stream, in the monitoring plan, whether the standard methodology or the mass-balance methodology is used, including the relevant tiers in accordance with Annex II.

2. Subject to approval by the competent authority, the operator may combine standard methodology, mass-balance and measurement-based methodologies for different emission sources and source streams belonging to one installation, provided that neither gaps nor double counting concerning emissions occur.

3. Where sector-specific requirements laid down in Annex IV require the use of a specific monitoring methodology, the operator shall use that methodology or a measurement-based methodology. The operator may choose a different methodology only if it provides the competent authority with evidence that the use of the required methodology is technically not feasible or incurs unreasonable costs, or that the alternative methodology leads to a higher overall accuracy of emissions data.

Article 22

Monitoring methodology not based on tiers

By way of derogation from Article 21(1), the operator may use a monitoring methodology that is not based on tiers (hereinafter 'the fall-back methodology') for selected source streams or emission sources, provided that all of the following conditions are met:

(a) applying at least tier 1 under the calculation-based methodology for one or more major source streams or minor source streams and a measurement-based methodology for at least one emission source related to the same source streams is technically not feasible or would incur unreasonable costs;

(b) the operator assesses and quantifies each year the uncertainties of all parameters used for the determination of the annual emissions in accordance with the *ISO guide to the expression of uncertainty in measurement* (JCGM 100:2008) or another equivalent internationally accepted standard, and includes the results in the annual emissions report;

(c) the operator demonstrates to the satisfaction of the competent authority that by applying such a fall-back monitoring methodology, the overall uncertainty thresholds for the annual level of greenhouse gas emissions for the whole installation do not exceed 7,5 % for category A installations, 5,0 % for category B installations and 2,5 % for category C installations.

Article 23

Temporary changes to the monitoring methodology

1. Where it is for technical reasons temporarily not feasible to apply the monitoring plan as approved by the competent authority, the operator concerned shall apply the highest achievable tier, or a conservative no-tier approach if application of a tier is not achievable, until the conditions for application of the tier approved in the monitoring plan have been restored. The operator shall take all necessary measures to allow the prompt resumption of the application of the monitoring plan as approved by the competent authority.

2. The operator concerned shall notify the competent authority of the temporary change referred to in paragraph 1 to the monitoring methodology without undue delay to the competent authority, specifying:

(a) the reasons for deviating from the monitoring plan as approved by the competent authority;

(b) the details of the interim monitoring methodology that the operator is using to determine the emissions until the conditions for the application of the monitoring plan as approved by the competent authority have been restored;

(c) the measures the operator is taking to restore the conditions for the application of the monitoring plan as approved by the competent authority;

(d) the anticipated point in time when application of the monitoring plan as approved by the competent authority will be resumed.

SECTION 2
Calculation-based methodology

Subsection 1
General

Article 24
Calculation of emissions under the standard methodology

1. Under the standard methodology, the operator shall calculate combustion emissions source stream by multiplying the activity data related to the amount of fuel combusted, expressed as terajoules based on net calorific value (NCV), by the corresponding emission factor, expressed as tonnes of CO_2 per terajoule (t CO_2/TJ) consistent with the use of NCV, and the corresponding oxidation factor.

The competent authority may allow the use of emission factors for fuels expressed as t CO_2/t or t CO_2/Nm^3. In such cases, the operator shall determine combustion emissions by multiplying the activity data related to the amount of fuel combusted, expressed as tonnes or normal cubic metres, by the corresponding emission factor and the corresponding oxidation factor.

2. The operator shall determine process emissions per source stream by multiplying the activity data related to the material consumption, throughput or production output, expressed in tonnes or normal cubic metres, by the corresponding emission factor, expressed in t CO_2/t or t CO_2/Nm^3, and the corresponding conversion factor. 3. Where a tier 1 or tier 2 emission factor already includes the effect of incomplete chemical reactions, the oxidation factor or conversion factor shall be set to 1.

Article 25
Calculation of emissions under the mass balance methodology

1. Under the mass balance methodology, the operator shall calculate the quantity of CO_2 corresponding to each source stream included in the mass balance by multiplying the activity data related to the amount of fuel or material entering or leaving the boundaries of the mass balance, with the fuel's or material's carbon content multiplied by 3,664 t CO_2/t C, applying section 3 of Annex II.

2. Notwithstanding Article 49, the emissions of the total process covered by the mass balance shall be the sum of the CO_2 quantities corresponding to all source streams covered by the mass balance. CO emitted to the atmosphere shall be calculated in the mass balance as emission of the molar equivalent amount of CO_2.

Article 26

Applicable tiers

1. When defining the relevant tiers for major and minor source streams in accordance with Article 21(1), to determine the activity data and each calculation factor, each operator shall apply the following:

(a) at least the tiers listed in Annex V, in the case of a category A installation, or where a calculation factor is required for a source stream that is a commercial standard fuel;

(b) in other cases than those referred to in point (a), the highest tier as defined in Annex II. However, for major source streams the operator may apply a tier one level lower than required in accordance with the first subparagraph for category C installations and up to two levels lower for category A and B installations, with a minimum of tier 1, where it shows to the satisfaction of the competent authority that the tier required in accordance with the first subparagraph is technically not feasible or incurs unreasonable costs.

The competent authority may, for a transitional period agreed with the operator, allow an operator to apply tiers for major source streams that are lower than those referred to in the second subparagraph, with a minimum of tier 1, provided that:

(a) the operator shows to the satisfaction of the competent authority that the tier required pursuant to the second subparagraph is technically not feasible or incurs unreasonable costs; and

(b) the operator provides an improvement plan indicating how and by when at least the tier required pursuant to the second subparagraph will be reached.

2. For minor source streams, the operator may apply a lower tier than required in accordance with the first subparagraph of paragraph 1, with a minimum of tier 1, where it shows to the satisfaction of the competent authority that the tier required in accordance with the first subparagraph of paragraph 1 is technically not feasible or incurs unreasonable costs.

3. For *de minimis* source streams, the operator may determine activity data and each calculation factor by using conservative estimates instead of using tiers, unless a defined tier is achievable without additional effort.

4. For the oxidation factor and conversion factor, the operator shall, as a minimum, apply the lowest tiers listed in Annex II. 5. Where the competent authority has allowed the use of emission factors expressed as t CO_2/t or t CO_2/Nm^3 for fuels, and for fuels used as process input or in mass balances in accordance with Article 25, the net calorific value may be monitored using a conservative estimate instead of using tiers, unless a defined tier is achievable without additional effort.

Subsection 2
Activity data

Article 27

Determination of activity data

1. The operator shall determine the activity data of a source stream in one of the following ways:

(a) on the basis of continual metering at the process which causes the emissions;

(b) on the basis of aggregation of metering of quantities delivered separately, taking into account relevant stock changes.

2. For the purposes of point (b) of paragraph 1, the quantity of fuel or material processed during the reporting period shall be calculated as the quantity of fuel or material received during the reporting period, minus the quantity of fuel or material moved out of the installation, plus the quantity of fuel or material in stock at the beginning of the reporting period, minus the quantity of fuel or material in stock at the end of the reporting period.

Where it is technically not feasible or would incur unreasonable costs to determine quantities in stock by direct measurement, the operator may estimate those quantities on the basis of one of the following:

(a) data from previous years correlated with output for the reporting period;

(b) documented procedures and respective data in audited financial statements for the reporting period.

Where it is technically not feasible or would incur unreasonable costs to determine activity data for the entire calendar year, the operator may choose the next most appropriate day to separate one reporting year from the subsequent year, and reconcile accordingly to the calendar year required.

The deviations involved for one or more source streams shall be clearly recorded, form the basis of a value representative for the calendar year, and be considered consistently in relation to the next year.

Article 28

Measurement systems under the operator's control

1. To determine activity data in accordance with Article 27, the operator shall use metering results based on measurement systems under its own control at the installation, provided that all of the following conditions are complied with:

(a) the operator must carry out an uncertainty assessment and ensures that the uncertainty threshold of the relevant tier level is met;

(b) the operator must ensure at least once a year and after each calibration of a measuring instrument that the calibration results multiplied by a conservative adjustment factor are compared with the relevant uncertainty thresholds.

The conservative adjustment factor shall be based on an appropriate time series of previous calibrations of that or similar measuring instruments for taking into account the effect of uncertainty in service.

Where tier thresholds approved in accordance with Article 12 are exceeded or equipment found not to conform with other requirements, the operator shall take corrective action without undue delay and notify the competent authority thereof.

2. When notifying a new monitoring plan or when it is relevant for a change to the approved monitoring plan, the operator shall provide the competent authority with the uncertainty assessment referred to in point (a) of paragraph 1.

The assessment shall cover the specified uncertainty of the applied measuring instruments, uncertainty associated with the calibration, and any additional uncertainty connected to how the measuring instru-

ments are used in practice.

The uncertainty assessment shall cover uncertainty related to stock changes where the storage facilities are capable of containing at least 5 % of the annual used quantity of the fuel or material considered. When carrying out the assessment, the operator shall take into account the fact that the stated values used to define tier uncertainty thresholds in Annex II refer to the uncertainty over the full reporting period.

The operator may simplify the uncertainty assessment by assuming that the maximum permissible errors specified for the measuring instrument in service or, where lower, the uncertainty obtained by calibration, multiplied by a conservative adjustment factor for taking into account the effect of uncertainty in service, are to be regarded as the uncertainty over the whole reporting period as required by the tier definitions in Annex II, provided that measuring instruments are installed in an environment appropriate for their use specifications.

3. Notwithstanding paragraph 2, the competent authority may allow the operator to use metering results based on measurement systems under its own control at the installation, where the operator provides evidence that the measuring instruments applied are subject to relevant national legal metrological control.

For that purpose, the maximum permissible error in service allowed by the relevant national legislation on legal metrological control for the relevant measuring task may be used as the uncertainty value without providing further evidence.

Article 29

Measurement systems outside the operator's own control

1. Where, based on a simplified uncertainty assessment, the use of measurement systems outside the operator's own control, as compared with the use of those within the operator's own control pursuant to Article 28, allows the operator to comply with at least as high a tier, gives more reliable results and is less prone to control risks, the operator shall determine the activity data from measurement systems outside its own control.

To that end, the operator may revert to one of the following data sources:

(a) amounts from invoices issued by a trade partner, provided that a commercial transaction between two independent trade partners takes place;

(b) direct readings from the measurement systems.

2. The operator shall ensure compliance with the applicable tier pursuant to Article 26. To that end, the maximum permissible error in service allowed by relevant legislation for national legal metrological control for the relevant commercial transaction may be used as uncertainty without providing further evidence.

Where the applicable requirements under national legal metrological control are less stringent than the applicable tier pursuant to Article 26, the operator shall obtain evidence on the applicable uncertainty from the trade partner responsible for the measurement system.

Subsection 3
Calculation factors

Article 30
Determination of calculation factors

1. The operator shall determine calculation factors either as default values or values based on analysis, depending on the applicable tier.

2. The operator shall determine and report calculation factors consistently with the state used for related activity data, referring to the fuel's or material's state in which the fuel or material is purchased or used in the emission-causing process, before it is dried or otherwise treated for laboratory analysis.

Where such an approach incurs unreasonable costs or where higher accuracy can be achieved, the operator may consistently report activity data and calculation factors referring to the state in which laboratory analyses are carried out.

The operator shall be required to determine the biomass fraction only for mixed fuels or materials. For other fuels or materials the default value of 0 % for the biomass fraction of fossil fuels or materials shall be used, and a default value of 100 % biomass fraction for biomass fuels or materials consisting exclusively of biomass.

Article 31
Default values for calculation factors

1. Where the operator determines calculation factors as default values, it shall use one of the following values, in accordance with the requirement of the applicable tier as set out in Annexes II and VI:

(a) standard factors and stoichiometric factors listed in Annex VI;

(b) standard factors used by the **Contracting Party** for its national inventory submission to the Secretariat of the United Nations Framework Convention on Climate Change **if applicable, and for the submission to the Energy Community Secretariat in the framework of Regulation (EU) 2018/1999 as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(c) literature values agreed with the competent authority, including standard factors published by the competent authority, which are compatible with factors referred to in point (b), but representative of more disaggregated sources of fuel streams;

(d) values specified and guaranteed by the supplier of a fuel or material where the operator can demonstrate to the satisfaction of the competent authority that the carbon content exhibits a 95 % confidence interval of not more than 1 %;

(e) values based on analyses carried out in the past, where the operator can demonstrate to the satisfaction of the competent authority that those values are representative for future batches of the same fuel or material.

2. The operator shall specify all default values used in the monitoring plan. Where the default values

change on an annual basis, the operator shall specify the authoritative applicable source of that value in the monitoring plan.

3. The competent authority may approve a change of default values for a calculation factor in the monitoring plan pursuant to Article 15(2) only where the operator provides evidence that the new default value leads to a more accurate determination of emissions.

4. Upon application by the operator, the competent authority may allow that the net calorific value and emission factors of fuels are determined using the same tiers as required for commercial standard fuels provided that the operator submits, at least every three years, evidence that the 1 % interval for the specified calorific value has been met during the last three years.

5. Upon application by the operator, the competent authority may accept that the stoichiometric carbon content of a pure chemical substance be considered as meeting a tier that would otherwise require analyses carried out in accordance with Articles 32 to 35, if the operator can demonstrate to the satisfaction of the competent authority that using analyses would lead to unreasonable costs and that using the stoichiometric value will not lead to under-estimation of the emissions.

Article 32

Calculation factors based on analyses

1. The operator shall ensure that any analyses, sampling, calibrations and validations for the determination of calculation factors are carried out by applying methods based on corresponding EN standards.

Where such standards are not available, the methods shall be based on suitable ISO standards or national standards.

Where no applicable published standards exist, **<…>** industry best practice guidelines **<…>** shall be used, limiting sampling and measurement bias.

2. Where online gas chromatographs or extractive or non-extractive gas analysers are used to determine emissions, the operator shall obtain the competent authority's approval for the use of such equipment. The equipment shall be used only with regard to composition data of gaseous fuels and materials. As minimum quality assurance measures, the operator shall ensure that an initial validation and annually repeated validations of the instrument are performed.

3. The result of any analysis shall be used only for the delivery period or batch of fuel or material for which the samples have been taken, and for which the samples were intended to be representative. When determining a specific parameter, the operator shall use the results of all analyses made with regard to that parameter.

Article 33

Sampling plan

1. Where calculation factors are determined by analyses, the operator shall submit to the competent authority for approval, for each fuel or material a sampling plan in the form of a written procedure, which contains information on methodologies for the preparation of samples, including information on responsi-

bilities, locations, frequencies and quantities, and methodologies for the storage and transport of samples.

The operator shall ensure that the derived samples are representative for the relevant batch or delivery period and free of bias. Relevant elements of the sampling plan shall be agreed with the laboratory carrying out the analysis for the respective fuel or material, and evidence of that agreement shall be included in the plan.

The operator shall make the plan available for the purposes of verification pursuant to Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

2. The operator shall, in agreement with the laboratory carrying out the analysis for the respective fuel or material and subject to the approval of the competent authority, adapt the elements of the sampling plan where analytical results indicate that the heterogeneity of the fuel or material significantly differs from the information on heterogeneity on which the original sampling plan for that specific fuel or material was based.

Article 34

Use of laboratories

1. The operator shall ensure that laboratories used to carry out analyses for the determination of calculation factors are accredited in accordance with EN ISO/IEC 17025, for the relevant analytical methods.

2. Laboratories not accredited in accordance with EN ISO/IEC 17025 may be used for the determination of calculation factors only where the operator can demonstrate to the satisfaction of the competent authority that access to laboratories referred to in paragraph 1 is technically not feasible or would incur unreasonable costs, and that the non-accredited laboratory meets requirements equivalent to EN ISO/IEC 17025.

3. The competent authority shall deem a laboratory to meet requirements equivalent to EN ISO/IEC 17025 within the meaning of paragraph 2 where the operator provides, to the extent feasible, in the form and to a similar level of detail required for procedures pursuant to Article 12(2), evidence in accordance with the second and the third sub paragraph of this paragraph. With respect to quality management, the operator shall produce an accredited certification of the laboratory in conformity with EN ISO/IEC 9001, or other certified quality management systems that cover the laboratory. In the absence of such certified quality management systems, the operator shall provide other appropriate evidence that the laboratory is capable of managing its personnel, procedures, documents and tasks in a reliable manner.

With respect to technical competence, the operator shall provide evidence that the laboratory is competent and able to generate technically valid results using the relevant analytical procedures. Such evidence shall cover at least the following elements:

(a) management of the personnel's competence for the specific tasks assigned;

(b) suitability of accommodation and environmental conditions;

(c) selection of analytical methods and relevant standards;

(d) where applicable, management of sampling and sample preparation, including control of sample integrity;

(e) where applicable, development and validation of new analytical methods or application of methods not covered by international or national standards;

(f) uncertainty estimation;

(g) management of equipment, including procedures for calibration, adjustment, maintenance and repair of equipment, and record keeping thereof;

(h) management and control of data, documents and software;

(i) management of calibration items and reference materials;

(j) quality assurance for calibration and test results, including regular participation in proficiency testing schemes, applying analytical methods to certified reference materials, or inter-comparison with an accredited laboratory;

(k) management of outsourced processes;

(l) management of assignments, customer complaints, and ensuring timely corrective action.

Article 35

Frequencies for analyses

1. The operator shall apply the minimum frequencies for analyses for relevant fuels and materials listed in Annex VII.

2. The competent authority may allow the operator to use a frequency that differs from those referred to in paragraph 1, where minimum frequencies are not available or where the operator demonstrates one of the following:

(a) based on historical data, including analytical values for the respective fuels or materials in the reporting period immediately preceding the current reporting period, any variation in the analytical values for the respective fuel or material does not exceed 1/3 of the uncertainty value to which the operator has to adhere with regard to the activity data determination of the relevant fuel or material;

(b) using the required frequency would incur unreasonable costs. Where an installation operates for part of the year only, or where fuels or materials are delivered in batches that are consumed over more than one calendar year, the competent authority may agree with the operator a more appropriate schedule for analyses, provided that it results in a comparable uncertainty as under point (a) of the first subparagraph.

Subsection 4
Specific calculation factors

Article 36

Emission factors for CO_2

1. The operator shall determine activity-specific emission factors for CO_2 emissions.

2. Emission factors of fuels, including those used as process input, shall be expressed as t CO_2/TJ. The competent authority may allow the operator to use an emission factor for a fuel expressed as t CO_2/t or t CO_2/Nm^3 for combustion emissions, where the use of an emission factor expressed as t CO_2/TJ incurs

unreasonable costs or where at least equivalent accuracy of the calculated emissions can be achieved by using such an emission factor.

3. For the conversion of the carbon content into the respective value of a CO_2 related emission factor or *vice versa*, the operator shall use the factor 3,664 t CO_2/t C.

Article 37

Oxidation and conversion factors

1. The operator shall use tier 1 as a minimum to determine oxidation or conversion factors. The operator shall use a value of 1 for oxidation or for a conversion factor where the emission factor includes the effect of incomplete oxidation or conversion. However, the competent authority may require operators to always use tier 1.

2. Where several fuels are used within an installation and tier 3 is to be used for the specific oxidation factor, the operator may ask for the approval of the competent authority for one or both of the following:

(a) the determination of one aggregate oxidation factor for the whole combustion process and to apply it to all fuels;

(b) the attribution of the incomplete oxidation to one major source stream and use of a value of 1 for the oxidation factor of the other source streams. Where biomass or mixed fuels are used, the operator shall provide evidence that application of points (a) or (b) of the first subparagraph does not lead to an underestimation of emissions.

Subsection 5
Treatment of biomass

Article 38

Biomass source streams

1. The operator may determine the activity data of a biomass source stream without using tiers and providing analytical evidence regarding the biomass content, where that source stream consists exclusively of biomass and the operator can ensure that it is not contaminated with other materials or fuels. For the purpose of this paragraph, Article 38(5) shall apply.

2. The emission factor of biomass shall be zero. For the purpose of this subparagraph, Article 38(5) shall apply. The emission factor of each fuel or material shall be calculated and reported as the preliminary emission factor, determined in accordance with Article 30, multiplied by the fossil fraction of the fuel or material.

3. Peat, xylite and fossil fractions of mixed fuels or materials shall not be considered biomass.

4. Where the biomass fraction of mixed fuels or materials is equal or higher than 97 %, or where, due to the amount of the emissions associated with the fossil fraction of the fuel or material, it qualifies as a *de minimis* source stream, the competent authority may allow the operator to apply no-tier methodologies, including the energy balance method, for determining activity data and relevant calculation factors.

For the purpose of this paragraph, Article 38(5) shall apply.

5. Where reference is made to this paragraph, biofuels, bioliquids and biomass fuels used for combustion shall fulfil the sustainability and the greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

However, biofuels, bioliquids and biomass fuels produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues are required to fulfil only the criteria laid down in Article 29(10) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

This subparagraph shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, bioliquids and biomass fuels. Electricity, heating and cooling produced from municipal solid waste shall not be subject to the criteria laid down in Article 29(10) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

The criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall apply irrespective of the geographical origin of the biomass. **<...>**.

The compliance with the criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** shall be assessed in accordance with Articles 30 and 31(1) of that Directive.

Where the biomass used for combustion does not comply with this paragraph, its carbon content shall be considered as fossil carbon.

6. By way of derogation from paragraph 5, first subparagraph, **Contracting Parties**, or competent authorities as appropriate, may consider as fulfilled the sustainability and greenhouse gas emissions saving criteria referred to in that paragraph for biofuels, bioliquids and biomass fuels used for combustion from 1 January **2024** to 31 December **2024**.

Article 39

Determination of biomass and fossil fraction

1. For mixed fuels or materials, the operator may either assume the absence of biomass and apply a default fossil fraction of 100 %, or determine a biomass fraction in accordance with paragraph 2, applying tiers as defined in section 2.4 of Annex II.

2. Where, subject to the tier level required, the operator has to carry out analyses to determine the biomass fraction, it shall do so on the basis of a relevant standard and the analytical methods therein, provided that the use of that standard and analytical method are approved by the competent authority.

Where, subject to the tier level required, the operator has to carry out analyses to determine the biomass fraction, but the application of the first subparagraph is technically not feasible or would incur unreasonable costs, the operator shall submit an alternative estimation method to determine the biomass fraction to the competent authority for approval.

For fuels or materials originating from a production process with defined and traceable input streams, the operator may base the estimation on a mass balance of fossil and biomass carbon entering and leaving

the process. **<…> The Contracting Parties shall take into account guidelines provided by the European Commission on further applicable estimation methods.**

3. By way of derogation from paragraphs 1 and 2 and Article 30, the operator shall not use analyses or estimation methods in accordance with paragraph 2 to determine the biomass fraction of natural gas received from a gas grid to which biogas is added.

The operator may determine that a certain quantity of natural gas from the gas grid is biogas by using the methodology set out in paragraph 4.

4. The operator may determine the biomass fraction using purchase records of biogas of equivalent energy content, provided that the operator provides evidence to the satisfaction of the competent authority that:

(a) there is no double counting of the same biogas quantity, in particular that the biogas purchased is not claimed to be used by anyone else, including through a disclosure of a guarantee of origin as defined in Article 2(12) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**;

(b) the operator and the producer of the biogas are connected to the same gas grid. For the purpose of demonstrating compliance with this paragraph, the operator may use the data recorded in a database set up by one or more **Contracting Parties** which enables tracing of transfers of biogas.

SECTION 3
Measurement-based methodology

Article 40
Use of the measurement-based monitoring methodology

The operator shall use measurement-based methodologies for all emissions of nitrous oxide (N_2O) as laid down in Annex IV, and to quantify CO_2 transferred pursuant to Article 49.

In addition, the operator may use measurement-based methodologies for CO_2 emission sources where it can provide evidence that for each emission source the tiers required in accordance with Article 41 are complied with.

Article 41
Tier requirements

1. For each major emission source, the operator shall apply the following:

(a) in the case of a category A installation, at least the tiers listed in section 2 of Annex VIII;

(b) in other cases, the highest tier listed in section 1 of Annex VIII.

However, the operator may apply a tier one level lower than required in accordance with the first sub-paragraph for category C installations and up to two levels lower for category A and B installations, with a minimum of tier 1, where it shows to the satisfaction of the competent authority that the tier required in

accordance with the first subparagraph is technically not feasible or incurs unreasonable costs.

2. For emissions from minor emission sources, the operator may apply a lower tier than required in accordance with the first subparagraph of paragraph 1, with a minimum of tier 1, where it shows to the satisfaction of the competent authority that the tier required in accordance with the first subparagraph of paragraph 1 is technically not feasible or incurs unreasonable costs.

Article 42

Measurement standards and laboratories

1. All measurements shall be carried out applying methods based on:

(a) EN 14181 (Stationary source emissions — Quality assurance of automated measuring systems);

(b) EN 15259 (Air quality — Measurement of stationary source emissions — Requirements for measurement sections and sites and for the measurement objective, plan and report);

(c) other relevant EN standards, in particular EN ISO 16911-2 (Stationary source emissions — Manual and automatic determination of velocity and volume flow rate in ducts).

Where such standards are not available, the methods shall be based on suitable ISO standards, standards published by the **European** Commission or national standards.

Where no applicable published standards exist, suitable draft standards, industry best practice guidelines or other scientifically proven methodologies shall be used, limiting sampling and measurement bias.

The operator shall consider all relevant aspects of the continuous measurement system, including the location of the equipment, calibration, measurement, quality assurance and quality control.

2. The operator shall ensure that laboratories carrying out measurements, calibrations and relevant equipment assessments for CEMS are accredited in accordance with EN ISO/IEC 17025 for the relevant analytical methods or calibration activities.

Where the laboratory does not have such accreditation, the operator shall ensure that equivalent requirements of Article 34(2) and (3) are met.

Article 43

Determination of emissions

1. The operator shall determine the annual emissions from an emission source over the reporting period by summing up over the reporting period all hourly values of the measured greenhouse gas concentration multiplied by the hourly values of the flue gas flow, where the hourly values shall be averages over all individual measurement results of the respective operating hour.

In the case of CO_2 emissions, the operator shall determine annual emissions on the basis of equation 1 in Annex VIII. CO emitted to the atmosphere shall be treated as the molar equivalent amount of CO_2. In the case of nitrous oxide (N_2O), the operator shall determine annual emissions on the basis of the equation in subsection B.1 of section 16 of Annex IV.

2. Where several emission sources exist in one installation and cannot be measured as one emission source,

the operator shall measure emissions from those sources separately and add the results to obtain the total emissions of the gas in question over the reporting period.

3. The operator shall determine the greenhouse gas concentration in the flue gas by continuous measurement at a representative point through one of the following:

(a) direct measurement;

(b) in the case of high concentration in the flue gas, calculation of the concentration using an indirect concentration measurement applying equation 3 in Annex VIII and taking into account the measured concentration values of all other components of the gas stream as laid down in the operator's monitoring plan.

4. Where relevant, the operator shall determine separately any CO_2 amount stemming from biomass and subtract it from the total measured CO_2 emissions. For this purpose the operator may use:

(a) a calculation based approach, including approaches using analyses and sampling based on EN ISO 13833 (Stationary source emissions — Determination of the ratio of biomass (biogenic) and fossil derived carbon dioxide — Radiocarbon sampling and determination);

(b) another method based on a relevant standard, including ISO 18466 (Stationary source emissions — Determination of the biogenic fraction in CO_2 in stack gas using the balance method);

(c) an estimation method published by the **European** Commission. Where the method proposed by the operator involves continuous sampling from the flue gas stream, EN 15259 (Air quality — Measurement of stationary source emissions — Requirements for measurement sections and sites and for the measurement objective, plan and report) shall be applied. For the purpose of this paragraph, Article 38(5) shall apply.

5. The operator shall determine the flue gas flow for the calculation in accordance with paragraph 1 by one of the following methods:

(a) calculation by means of a suitable mass balance, taking into account all significant parameters on the input side, including for CO_2 emissions at least input material loads, input airflow and process efficiency, and on the output side, including at least the product output and the concentration of oxygen (O_2), sulphur dioxide (SO_2) and nitrogen oxides (NO_x);

(b) determination by continuous flow measurement at a representative point.

Article 44

Data aggregation

1. The operator shall calculate hourly averages for each parameter, including concentrations and flue gas flow, relevant for determining emissions using a measurement-based methodology by using all data points available for that specific hour.

Where an operator can generate data for shorter reference periods without additional cost, the operator shall use those periods for the determination of the annual emissions in accordance with Article 43(1).

2. Where the continuous measurement equipment for a parameter is out of control, out of range or out of operation for part of the hour or reference period referred to in paragraph 1, the operator shall calculate the related hourly average *pro rata* to the remaining data points for that specific hour or shorter reference period, provided that at least 80 % of the maximum number of data points for a parameter are available.

Article 45(2) to (4) shall apply where fewer than 80 % of the maximum number of data points for a parameter are available.

Article 45

Missing data

1. Where a piece of measurement equipment within a CEMS is out of operation for more than five consecutive days in any calendar year, the operator shall inform the competent authority without undue delay and propose adequate measures to improve the quality of the CEMS in question.

2. Where a valid hour or shorter reference period in accordance with Article 44(1) of data cannot be provided for one or more parameters of the measurement-based methodology due to the equipment being out of control, out of range or out of operation, the operator shall determine values for substituting each missing hour of data.

3. Where a valid hour or shorter reference period of data cannot be provided for a parameter directly measured as concentration, the operator shall calculate a substitution value as the sum of an average concentration and twice the standard deviation associated with that average, using equation 4 in Annex VIII. Where the reporting period is not applicable for determining such substitution values due to significant technical changes at the installation, the operator shall agree with the competent authority a representative timeframe for determining the average and standard deviation, where possible with a duration of one year.

4. Where a valid hour of data cannot be provided for a parameter other than concentration, the operator shall obtain substitute values of that parameter through a suitable mass balance model or an energy balance of the process. The operator shall validate the results by using the remaining measured parameters of the measurement-based methodology and data at regular working conditions, considering a time period of the same duration as the data gap.

Article 46

Corroborating with calculation of emissions

The operator shall corroborate emissions determined by a measurement based methodology, with the exception of N_2O emissions from nitric acid production and greenhouse gases transferred to a transport network or a storage site, by calculating the annual emissions of each greenhouse gas in question for the same emission sources and source streams. The use of tier methodologies shall not be required.

SECTION 4

Special provisions

Article 47

Installations with low emissions

1. The competent authority may allow the operator to submit a simplified monitoring plan in accordance with Article 13, provided that it operates an installation with low emissions. The first subparagraph shall not apply to installations carrying out activities for which N_2O is included pursuant to Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

2. For the purposes of the first subparagraph of paragraph 1, an installation shall be considered an installation with low emissions where at least one of the following conditions is met:

(a) the average annual emissions of that installation reported in the verified emissions reports during the **<…> tentative** period **<…>**, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, were less than 25 000 tonnes of $CO_{2(e)}$ per year;

(b) the average annual emissions referred to in point (a) are not available or are no longer applicable because of changes to the installation's boundaries or changes to the operating conditions of the installation, but the annual emissions of that installation for the next five years, with the exclusion of CO_2 stemming from biomass and before subtraction of transferred CO_2, will be, based on a conservative estimation method, less than 25 000 tonnes of $CO_{2(e)}$ per year.

For the purpose of this paragraph, Article 38(5) shall apply.

3. The operator of an installation with low emissions shall not be required to submit the supporting documents referred to in the third subparagraph of Article 12(1), and shall be exempt from the requirement of submitting an improvement report as referred to in Article 69(4) in response to recommendations for improvement reported by the verifier in the verification report.

4. By way of derogation from Article 27, the operator of an installation with low emissions may determine the amount of fuel or material by using available and documented purchasing records and estimated stock changes. The operator shall also be exempt from the requirement to provide the uncertainty assessment referred to in Article 28(2) to the competent authority.

5. The operator of an installation with low emissions shall be exempt from the requirement in Article 28(2) to include uncertainty related to stock changes in an uncertainty assessment.

6. By way of derogation from Articles 26(1) and 41(1), the operator of an installation with low emissions may apply as a minimum tier 1 for the purposes of determining activity data and calculation factors for all source streams and for determining emissions by measurement-based methodologies, unless higher accuracy is achievable without additional effort for the operator, without providing evidence that applying higher tiers is technically not feasible or would incur unreasonable costs.

7. For the purpose of determining calculation factors on the basis of analyses in accordance with Article 32, the operator of an installation with low emissions may use any laboratory that is technically competent and able to generate technically valid results using the relevant analytical procedures, and provides evidence for quality assurance measures as referred to in Article 34(3).

8. Where an installation with low emissions subject to simplified monitoring exceeds the threshold referred to in paragraph 2 in any calendar year, its operator shall notify the competent authority thereof without undue delay.

The operator shall, without undue delay, submit a significant modification of the monitoring plan within the meaning of point (b) of Article 15(3), to the competent authority for approval.

However, the competent authority shall allow that the operator continues simplified monitoring provided that that operator demonstrates to the satisfaction of the competent authority that the threshold referred to in paragraph 2 has not already been exceeded within the past five reporting periods and will not be exceeded again from the following reporting period onwards.

Article 48

Inherent CO_2

1. Inherent CO_2 that is transferred into an installation, including that contained in natural gas, a waste gas (including blast furnace or coke oven gas) or in process inputs (including synthesis gas), shall be included in the emission factor for that source stream.

2. Where inherent CO_2 originates from activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC <…>** and is subsequently transferred out of the installation as part of a source stream to another installation and activity covered by that Directive, it shall not be counted as emissions of the installation where it originates.

However, where inherent CO_2 is emitted, or transferred out of the installation to entities not covered by **Annex I of** that Directive **or this Regulation**, it shall be counted as emissions of the installation where it originates.

3. The operators may determine quantities of inherent CO_2 transferred out of the installation both at the transferring and at the receiving installation. In that case, the quantities of respectively transferred and received inherent CO_2 shall be identical.

Where the quantities of transferred and received inherent CO_2 are not identical, the arithmetical average of both determined values shall be used in both the transferring and receiving installations' emissions reports, where the deviation between the values can be explained by the uncertainty of the measurement systems or the determination method. In such cases, the emissions report shall refer to the alignment of that value.

Where the deviation between the values cannot be explained by the approved uncertainty range of the measurement systems or the determination method, the operators of the transferring and receiving installations shall align the values by applying conservative adjustments approved by the competent authority.

Article 49

Transferred CO_2

1. The operator shall subtract from the emissions of the installation any amount of CO_2 originating from fossil carbon in activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** that is not emitted from the installation, but:

(a) transferred out of the installation to any of the following:

(i) a capture installation for the purpose of transport and long-term geological storage in a storage site

permitted under Directive 2009/31/EC;

(ii) a transport network with the purpose of long-term geological storage in a storage site permitted under Directive 2009/31/EC;

(iii) a storage site permitted under Directive 2009/31/EC for the purpose of long-term geological storage;

(b) transferred out of the installation and used to produce precipitated calcium carbonate, in which the used CO_2 is chemically bound.

2. In its annual emissions report, **<…>** the operator of the transferring installation shall provide the name, address and contact information of a contact person for the receiving installation. The first subparagraph shall also apply to the receiving installation with respect to the transferring installation's installation identification code.

3. For the determination of the quantity of CO_2 transferred from one installation to another, the operator shall apply a measurement-based methodology, including in accordance with Articles 43, 44 and 45. The emission source shall correspond to the measurement point and the emissions shall be expressed as the quantity of CO_2 transferred.

For the purpose of point (b) of paragraph 1, the operator shall apply a calculation-based methodology.

4. For determining the quantity of CO_2 transferred from one installation to another, the operator shall apply the highest tier as defined in section 1 of Annex VIII.

However, the operator may apply the next lower tier provided that it establishes that applying the highest tier as defined in section 1 of Annex VIII is technically not feasible or incurs unreasonable costs.

For determining the quantity of CO_2 chemically bound in precipitated calcium carbonate, the operator shall use data sources representing highest achievable accuracy.

5. The operators may determine quantities of CO_2 transferred out of the installation both at the transferring and at the receiving installation. In such cases, Article 48(3) shall apply.

Article 50

Use or transfer of N_2O

1. Where N_2O originates from activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** for which that Annex specifies N_2O as relevant and an installation does not emit the N_2O but transfers it to another installation that monitors and reports emissions in accordance with this Regulation, it shall not be counted as emissions of the installation where it originates.

An installation that receives N_2O from an installation and activity in accordance with the first subparagraph shall monitor the relevant gas streams using the same methodologies, as required by this Regulation, as if the N_2O were generated within the receiving installation itself.

However, where N_2O is bottled or used as a gas in products so that it is emitted outside the installation, or where it is transferred out of the installation to entities not covered by Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, it shall be counted as emissions of the installation where it originates, except for quantities of N_2O in respect of which the operator of the installation where the N_2O originates can demonstrate to the competent authority that the N_2O is destroyed

using suitable emissions abatement equipment.

2. **<...>**

3. To determine the quantity of N_2O transferred from one installation to another, the operator shall apply a measurement-based methodology, including in accordance with Articles 43, 44 and 45. The emission source shall correspond to the measurement point and the emissions shall be expressed as the quantity of N_2O transferred.

4. To determine the quantity of N_2O transferred from one installation to another, the operator shall apply the highest tier as defined in section 1 of Annex VIII for emissions of N_2O. However, the operator may apply the next lower tier provided that it establishes that applying the highest tier as defined in section 1 of Annex VIII is technically not feasible or incurs unreasonable costs.

5. The operators may determine quantities of N_2O transferred out of the installation both at the transferring and at the receiving installation. In such cases, Article 48(3) shall apply *mutatis mutandis*.

CHAPTER IV

MONITORING OF EMISSIONS AND TONNE-KILOMETRE DATA FROM AVIATION

Article 51

General provisions

1. Each aircraft operator shall monitor and report emissions from aviation activities for all flights included in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** that are performed by that aircraft operator during the reporting period and for which the aircraft operator is responsible. To that end, the aircraft operator shall attribute all flights to the calendar year according to the time of departure measured in Coordinated Universal Time.

2. The aircraft operator **<...>** shall also monitor tonne-kilometre data for the same flights during the respective monitoring years.

3. For the purpose of identifying the unique aircraft operator referred to in point (o) of Article 3 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** that is responsible for a flight, the call sign used for air traffic control purposes, shall be used. The call sign shall be one of the following:

(a) the ICAO designator laid down in box 7 of the flight plan;

(b) where the ICAO designator of the aircraft operator is not available, the registration markings of the aircraft.

4. Where the identity of the aircraft operator is not known, the competent authority shall consider the owner of the aircraft as aircraft operator unless it proves the identity the aircraft operator responsible.

Article 52

Submission of monitoring plans

1. At the latest four months before an aircraft operator commences aviation activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, it shall submit to the competent authority a monitoring plan for the monitoring and reporting of emissions in accordance with Article 12.

By way of derogation from the first subparagraph, an aircraft operator that performs an aviation activity covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** for the first time that could not be foreseen four months in advance of the activity shall submit a monitoring plan to the competent authority without undue delay, but no later than six weeks after performance of that activity.

The aircraft operator shall provide adequate justification to the competent authority why a monitoring plan could not be submitted four months in advance of the activity. Where the administering **Contracting Party <…>** is not known in advance, the aircraft operator shall without undue delay submit the monitoring plan when information on the competent authority of the administering **Contracting Party** becomes available.

2. **<…>**

Article 53

Monitoring methodology for emissions from aviation activities

1. Each aircraft operator shall determine the annual CO_2 emissions from aviation activities by multiplying the annual consumption of each fuel (expressed in tonnes) by the respective emission factor.

2. Each aircraft operator shall determine the fuel consumption for each flight and for each fuel, including fuel consumed by the auxiliary power unit. For that purpose, the aircraft operator shall use one of the methods laid down in section 1 of Annex III. The aircraft operator shall choose the method that provides for the most complete and timely data combined with the lowest uncertainty without incurring unreasonable costs.

3. Each aircraft operator shall determine the fuel uplift referred to in section 1 of Annex III based on one of the following:

(a) the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight;

(b) data from aircraft onboard measurement systems recorded in the mass and balance documentation, in the aircraft technical log or transmitted electronically from the aircraft to the aircraft operator.

4. The aircraft operator shall determine fuel contained in the tank using data from aircraft onboard measurement systems and recorded in the mass and balance documentation, in the aircraft technical log or transmitted electronically from the aircraft to the aircraft operator.

5. Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in litres, the aircraft operator shall convert that amount from volume to mass by using density values. The aircraft operator shall use the fuel density (which may be an actual or a standard value of 0,8 kg per litre) that is used for operational and safety reasons. The procedure for informing the use of actual or standard density shall be described in the monitoring plan along with a reference to the relevant

aircraft operator documentation.

6. For the purposes of the calculation referred to in paragraph 1, the aircraft operator shall use the default emission factors set out in table 1 in Annex III. For fuels not listed in that table, the aircraft operator shall determine the emission factor in accordance with Article 32. For such fuels, the net calorific value shall be determined and reported as a memo-item.

7. By way of derogation from paragraph 6, the aircraft operator may, upon approval by the competent authority, derive the emission factor or the carbon content, on which it is based, or the net calorific value for commercially traded fuels from the purchasing records for the fuel in question, as provided by the fuel supplier, provided that those have been derived on the basis of internationally accepted standards and the emission factors listed in table 1 of Annex III cannot be applied.

Article 54

Specific provisions for biofuels

1. For mixed fuels, the aircraft operator may either assume the absence of biofuel and apply a default fossil fraction of 100 %, or determine a biofuel fraction in accordance with paragraphs 2 or 3.

2. Where biofuels are physically mixed with fossil fuels and delivered to the aircraft in physically identifiable batches, the aircraft operator may carry out analyses in accordance with Articles 32 to 35 to determine the biomass fraction, on the basis of a relevant standard and the analytical methods set out in those Articles, provided that the use of that standard and those analytical methods is approved by the competent authority.

Where the aircraft operator provides evidence to the competent authority that such analyses would incur unreasonable costs or are technically not feasible, the aircraft operator may base the estimation of the biofuel content on a mass balance of fossil fuels and biofuels purchased.

3. Where purchased biofuel batches are not physically delivered to a specific aircraft, the aircraft operator shall not use analyses to determine the biomass fraction of the fuels used.

The aircraft operator may determine the biomass fraction using purchase records of biofuel of equivalent energy content, provided that the aircraft operator provides evidence to the satisfaction of the competent authority that there is no double counting of the same biofuel quantity, in particular that the biofuel purchased is not claimed to be used by anyone else.

For the purpose of demonstrating compliance with the requirements referred to in the second subparagraph, the operator may use the data recorded in the **Energy Community** database set up in accordance with Article 28(2) of Directive (EU) 2018/2001 **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC**.

4. The emission factor of biofuel shall be zero. For the purpose of this paragraph, Article 38(5) shall apply to combustion of biofuel by aircraft operators.

Article 55

Small emitters

1. Aircraft operators operating fewer than 243 flights per period for three consecutive four-month periods and aircraft operators operating flights with total annual emissions lower than 25 000 tonnes CO_2 per year shall be considered small emitters.

2. By way of derogation from Article 53, small emitters may estimate the fuel consumption using tools implemented by Eurocontrol or another relevant organisation, which can process all relevant air traffic information and avoid any underestimations of emissions. The applicable tools may only be used if they are approved by the **Energy Community Secretariat upon consultation of the European** Commission including the application of correction factors to compensate for any inaccuracies in the modelling methods.

3. By way of derogation from Article 12, a small emitter that intends to make use of any of the tools referred to in paragraph 2 of this Article may submit only the following information in the monitoring plan for emissions:

(a) information required pursuant to point 1 of section 2 of Annex I;

(b) evidence that the thresholds for small emitters set out in paragraph 1 of this Article are met;

(c) the name of or reference to the tool as referred to in paragraph 2 of this Article that will be used for estimating the fuel consumption.

A small emitter shall be exempted from the requirement to submit the supporting documents referred to in the third subparagraph of Article 12(1).

4. Where an aircraft operator uses any of the tools referred to in paragraph 2 and exceeds the thresholds referred to in paragraph 1 during a reporting year, the aircraft operator shall notify the competent authority thereof without undue delay.

The aircraft operator shall, without undue delay, submit a significant modification of the monitoring plan within the meaning of point (iv) of Article 15(4)(a) to the competent authority for approval.

However, the competent authority shall allow that the aircraft operator continues to use a tool referred to in paragraph 2 provided that that aircraft operator demonstrates to the satisfaction of the competent authority that the thresholds referred to in paragraph 1 have not already been exceeded within the past five reporting periods and will not be exceeded again from the following reporting period onwards.

Article 56

Sources of uncertainty

1. The aircraft operator shall consider sources of uncertainty and their associated levels of uncertainty when selecting the monitoring methodology pursuant to Article 53(2).

2. The aircraft operator shall regularly perform suitable control activities, including cross-checks between the fuel uplift quantity as provided by invoices and the fuel uplift quantity indicated by on-board measurement, and take corrective action if notable deviations are observed.

Article 57

Determination of tonne-kilometre data

1. Aircraft operators **<…>** shall monitor tonne-kilometre data for all flights covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** in the monitoring years relevant for such applications.

2. The aircraft operator shall calculate tonne-kilometre data by multi plying the distance, calculated in accordance with section 3 of Annex III and expressed in kilometres (km), by the payload, calculated as the sum of the mass of freight, mail, passengers and checked baggage expressed in tonnes (t).

3. The aircraft operator shall determine the mass of freight and mail on the basis of the actual or standard mass contained in the mass and balance documentation for the relevant flights. Aircraft operators not required to have a mass and balance documentation shall propose in the monitoring plan a suitable methodology for determining the mass of freight and mail, while excluding the tare weight of all pallets and containers that are not payload and the service weight.

4. The aircraft operator shall determine the mass of passengers using one of the following tiers:

(a) tier 1: consisting in a default value of 100 kg for each passenger including their checked baggage;

(b) tier 2: consisting in the mass for passengers and checked baggage contained in the mass and balance documentation for each flight. **<…>**

CHAPTER V
DATA MANAGEMENT AND CONTROL

Article 58

Data flow activities

1. The operator or aircraft operator shall establish, document, implement and maintain written procedures for data flow activities for the monitoring and reporting of greenhouse gas emissions and ensure that the annual emissions report resulting from data flow activities does not contain misstatements and is in conformance with the monitoring plan, those written procedures and this Regulation. **<…>**

2. Descriptions of written procedures for data flow activities in the monitoring plan shall at least cover the following elements:

(a) the items of information listed in Article 12(2);

(b) identification of the primary data sources;

(c) each step in the data flow from primary data to annual emissions or tonne-kilometre data which shall reflect the sequence and interaction between the data flow activities, including relevant formulas and data aggregation steps applied;

(d) the relevant processing steps related to each specific data flow activity, including the formulas and data used to determine the emissions or tonne-kilometre data;

(e) relevant electronic data processing and storage systems used and the interaction between such systems and other inputs, including manual input;

(f) the way outputs of data flow activities are recorded.

Article 59

Control system

1. The operator or aircraft operator shall establish, document, implement and maintain an effective control system to ensure that the annual emissions report and, where applicable, the tonne-kilometre report resulting from data flow activities does not contain misstatements and is in conformity with the monitoring plan and this Regulation.

2. The control system referred to in paragraph 1 shall consist of the following:

(a) an operator's or aircraft operator's assessment of inherent risks and control risks based on a written procedure for carrying out the assessment;

(b) written procedures related to control activities that are to mitigate the risks identified.

3. Written procedures related to control activities as referred to in point (b) of paragraph 2 shall at least include:

(a) quality assurance of the measurement equipment;

(b) quality assurance of the information technology system used for data flow activities, including process control computer technology;

(c) segregation of duties in the data flow activities and control activities, and management of necessary competencies;

(d) internal reviews and validation of data;

(e) corrections and corrective action;

(f) control of out-sourced processes;

(g) keeping records and documentation including the management of document versions.

4. The operator or aircraft operator shall monitor the effectiveness of the control system, including by carrying out internal reviews and taking into account the findings of the verifier during the verification of annual emissions reports and, where applicable, tonne-kilometre reports, carried out pursuant to Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Whenever the control system is found to be ineffective or not commensurate with the risks identified, the operator or aircraft operator shall seek to improve the control system and update the monitoring plan or the underlying written procedures for data flow activities, risk assessments and control activities as appropriate.

Article 60

Quality assurance

1. For the purposes of point (a) of Article 59(3), the operator shall ensure that all relevant measuring equipment is calibrated, adjusted and checked at regular intervals, including prior to use, and checked against measurement standards traceable to international measurement standards, where available, in accordance with the requirements of this Regulation and proportionate to the risks identified.

Where components of the measuring systems cannot be calibrated, the operator shall identify those in the monitoring plan and propose alternative control activities.

When the equipment is found not to comply with required performance, the operator shall promptly take necessary corrective action.

2. With regard to continuous emission measurement systems, the operator shall apply quality assurance based on the standard Quality assurance of automated measuring systems (EN 14181), including parallel measurements with standard reference methods at least once per year, performed by competent staff.

Where such quality assurance requires emission limit values (ELVs) as necessary parameters for the basis of calibration and performance checks, the annual average hourly concentration of the greenhouse gas shall be used as a substitute for such ELVs.

Where the operator finds a non-compliance with the quality assurance requirements, including that recalibration has to be performed, it shall report that circumstance to the competent authority and take corrective action without undue delay.

Article 61

Quality assurance of information technology

For the purposes of point (b) of Article 59(3), the operator or aircraft operator shall ensure that the information technology system is designed, documented, tested, implemented, controlled and maintained in a way to process reliable, accurate and timely data in accordance with the risks identified in accordance with point (a) of Article 59(2).

The control of the information technology system shall include access control, control of back up, recovery, continuity planning and security.

Article 62

Segregation of duties

For the purposes of point (c) of Article 59(3), the operator or aircraft operator shall assign responsible persons for all data flow activities and for all control activities in a way to segregate conflicting duties. In the absence of other control activities, it shall ensure for all data flow activities commensurate with the identified inherent risks that all relevant information and data shall be confirmed by at least one person who has not been involved in the determination and recording of that information or data.

The operator or aircraft operator shall manage the necessary competencies for the responsibilities involved, including the appropriate assignment of responsibilities, training, and performance reviews.

Article 63

Internal reviews and validation of data

1. For the purposes of point (d) of Article 59(3) and on the basis of the inherent risks and control risks identified in the risk assessment referred to in point (a) of Article 59(2), the operator or aircraft operator shall review and validate data resulting from the data flow activities referred to in Article 58. Such review and validation of the data shall at least include:

(a) a check as to whether the data are complete;

(b) a comparison of the data that the operator or aircraft operator has obtained, monitored and reported over several years;

(c) a comparison of data and values resulting from different operational data collection systems, including the following comparisons, where applicable:

(i) a comparison of fuel or material purchasing data with data on stock changes and data on consumption for the applicable source streams;

(ii) a comparison of calculation factors that have been determined by analysis, calculated or obtained from the supplier of the fuel or material, with national or international reference factors of comparable fuels or materials;

(iii) a comparison of emissions obtained from measurement-based methodologies and the results of the corroborating calculation pursuant to Article 46;

(iv) a comparison of aggregated data and raw data.

2. The operator or aircraft operator shall, to the extent possible, ensure the criteria for rejecting data as part of the review and validation are known in advance. For that purpose the criteria for rejecting data shall be laid down in the documentation of the relevant written procedures.

Article 64

Corrections and corrective action

1. Where any part of the data flow activities referred to in Article 58 or control activities referred to in Article 59 is found not to function effectively, or to function outside boundaries that are set in documentation of procedures for those data flow activities and control activities, the operator or aircraft operator shall make appropriate corrections and correct rejected data while avoiding underestimation of emissions.

2. For the purpose of paragraph 1, the operator or aircraft operator shall at least proceed to all of the following:

(a) assessment of the validity of the outputs of the applicable steps in the data flow activities referred to in Article 58 or control activities referred to in Article 59;

(b) determination of the cause of the malfunctioning or error concerned;

(c) implementation of appropriate corrective action, including correcting any affected data in the emission report or tonne kilometre report, as appropriate.

3. The operator or aircraft operator shall carry out the corrections and corrective actions pursuant to paragraph 1 of this Article such that they are responsive to the inherent risks and control risks identified in the risk assessment referred to in Article 59.

Article 65

Out-sourced processes

Where the operator or aircraft operator outsources one or more data flow activities referred to in Article 58 or control activities referred to in Article 59, the operator or aircraft operator shall proceed to all of the following:

(a) check the quality of the outsourced data flow activities and control activities in accordance with this Regulation;

(b) define appropriate requirements for the outputs of the outsourced processes and the methods used in those processes;

(c) check the quality of the outputs and methods referred to in point (b) of this Article;

(d) ensure that outsourced activities are carried out such that those are responsive to the inherent risks and control risks identified in the risk assessment referred to in Article 59.

Article 66

Treatment of data gaps

1. Where data relevant for the determination of the emissions of an installation are missing, the operator shall use an appropriate estimation method to determine conservative surrogate data for the respective time period and missing parameter.

Where the operator has not laid down the estimation method in a written procedure, it shall establish such a written procedure and submit to the competent authority for approval an appropriate modification of the monitoring plan in accordance with Article 15.

2. Where data relevant for the determination of an aircraft operator's emissions for one or more flights are missing, the aircraft operator shall use surrogate data for the respective time period calculated in accordance with the alternative method defined in the monitoring plan.

Where surrogate data cannot be determined in accordance with the first subparagraph of this paragraph, the emissions for that flight or those flights may be estimated by the aircraft operator from the fuel consumption determined by using a tool referred to in Article 55(2).

Where the number of flights with data gaps referred to in the first two sub-paragraphs exceed 5 % of the annual flights that are reported, the operator shall inform the competent authority thereof without undue delay and shall take remedial action for improving the monitoring methodology.

Article 67

Records and documentation

1. The operator or aircraft operator shall keep records of all relevant data and information, including information as listed in Annex IX, for at least 10 years. The documented and archived monitoring data shall allow for the verification of the annual emissions reports or tonne-kilometre reports in accordance with Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Data reported by the operator or aircraft operator contained in an electronic reporting and data management system set up by the competent authority may be considered to be retained by the operator or aircraft operator, if they can access those data.

2. The operator or aircraft operator shall ensure that relevant documents are available when and where they are needed to perform the data flow activities and control activities.

The operator or aircraft operator shall, upon request, make those documents available to the competent authority and to the verifier verifying the emissions report or tonne-kilometre report in accordance with Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

CHAPTER VI
REPORTING REQUIREMENTS

Article 68

Timing and obligations for reporting

1. The operator or aircraft operator shall submit to the competent authority by 31 March of each year an emissions report that covers the annual emissions in the reporting period and that is verified in accordance with Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

However, competent authorities may require operators or aircraft operators to submit the verified annual emission report earlier than by 31 March, but by 28 February at the earliest.

2. **<...>** 3. The annual emissions reports and tonne-kilometre reports shall contain at least the information listed in Annex X.

Article 69

Reporting on improvements to the monitoring methodology

1. Each operator or aircraft operator shall regularly check whether the monitoring methodology applied can be improved. An operator of an installation shall submit to the competent authority for approval a report containing the information referred to in paragraph 2 or 3, where appropriate, by the following deadlines:

(a) for a category A installation, by 30 June every four years;

(b) for a category B installation, by 30 June every two years;

(c) for a category C installation, by 30 June every year.

However, the competent authority may set an alternative date for submission of the report, but no later date than 30 September of the same year.

By way of derogation from the second and third subparagraphs, and without prejudice to the first subparagraph, the competent authority may approve, together with the monitoring plan or the improvement report, an extension of the deadline applicable pursuant to the second subparagraph, if the operator provides evidence to the satisfaction of the competent authority upon submission of a monitoring plan in accordance with Article 12 or upon notification of updates in accordance with Article 15, or upon submission of an improvement report in accordance with this Article, that the reasons for unreasonable costs or for improvement measures being technically not feasible will remain valid for a longer period of time.

That extension shall take into account the number of years for which the operator provides evidence.

The total time period between improvement reports shall not exceed three years for a category C installation, four years for a category B installation or five years for a category A installation.

2. Where the operator does not apply at least the tiers required pursuant to the first subparagraph of Article 26(1) to major source streams and minor source streams and pursuant to Article 41 to emission sources, the operator shall provide a justification as to why it is technically not feasible or would incur unreasonable costs to apply the required tiers.

However, where evidence is found that measures needed for reaching those tiers have become technically feasible and do not any more incur unreasonable costs, the operator shall notify the competent authority of appropriate modifications of the monitoring plan in accordance with Article 15, and submit proposals for implementing the related measures and its timing.

3. Where the operator applies a fall-back monitoring methodology referred to in Article 22, the operator shall provide: a justification as to why it is technically not feasible or would incur unreasonable costs to apply at least tier 1 for one or more major or minor source streams. However, where evidence is found that measures needed for reaching at least tier 1 for those source streams have become technically feasible and do not any more incur unreasonable costs, the operator shall notify the competent authority of appropriate modifications of the monitoring plan in accordance with Article 15 and submit proposals for implementing the related measures and its timing.

4. Where the verification report established in accordance with Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** states outstanding non conformities or recommendations for improvements, in accordance with Articles 27, 29 and 30 of that Implementing Regulation, the operator or aircraft operator shall submit to the competent authority for approval a report by 30 June of the year in which that verification report is issued by the verifier. That report shall describe how and when the operator or aircraft operator has rectified or plans to rectify the nonconformities identified by the verifier and to implement recommended improvements.

The competent authority may set an alternative date for submission of the report as referred to in this paragraph, but no later date than 30 September of the same year.

Where applicable, such report may be combined with the report referred to in paragraph 1 of this Article.

Where recommended improvements would not lead to an improvement of the monitoring methodology,

the operator or aircraft operator shall provide a justification of why that is the case.

Where the recommended improvements would incur unreasonable costs, the operator or aircraft operator shall provide evidence of the unreasonable nature of the costs.

5. Paragraph 4 of this Article shall not apply where the operator or aircraft operator has already resolved all non-conformities and recommendations for improvement and has submitted related modifications of the monitoring plan to the competent authority for approval in accordance with Article 15 of this Regulation before the date set pursuant to paragraph 4.

Article 70

Determination of emissions by the competent authority

1. The competent authority shall make a conservative estimate of the emissions of an installation or aircraft operator in any of the following situations:

(a) no verified annual emission report has been submitted by the operator or aircraft operator by the deadline required pursuant to Article 68(1);

(b) the verified annual emissions report referred to in Article 68(1) is not in compliance with this Regulation;

(c) the annual emissions report of an operator or aircraft operator has not been verified in accordance with Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

2. Where a verifier has stated, in the verification report pursuant to Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the existence of non-material misstatements which have not been corrected by the operator or aircraft operator before issuing the verification report, the competent authority shall assess those misstatements, and make a conservative estimate of the emissions of the installation or aircraft operator where appropriate.

The competent authority shall inform the operator or aircraft operator whether and which corrections are required to the annual emissions report. The operator or aircraft operator shall make that information available to the verifier.

3. **Contracting Parties** shall establish an efficient exchange of information between competent authorities responsible for approval of monitoring plans and competent authorities responsible for acceptance of annual emissions reports.

Article 71

Access to information

Emission reports held by the competent authority shall be made available to the public by that authority subject to national rules adopted **<…>** Operators or aircraft operators may indicate in their reports what information they consider commercially sensitive.

Article 72

Rounding of data

1. Total annual emissions of each of the greenhouse gases CO_2, N_2O and PFCs shall be reported as rounded tonnes of CO_2 or $CO_{2(e)}$. The total annual emissions of the installation shall be calculated as the sum of the rounded values for CO_2, N_2O and PFCs. Tonne-kilometres shall be reported as rounded values of tonne-kilometres.

2. All variables used to calculate the emissions shall be rounded to include all significant digits for the purpose of calculating and reporting emissions.

3. All data per flights shall be rounded to include all significant digits for the purpose of calculating the distance and payload pursuant to Article 57 and reporting the tonne-kilometre data.

Article 73

Ensuring consistency with other reporting

Each activity listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** that is carried out by an operator or aircraft operator shall be labelled using the codes, where applicable, from the following reporting schemes:

(a) the common reporting format for national greenhouse gas inventory systems, as approved by the respective bodies of the United Nations Framework Convention on Climate Change;

(b) the installation's identification number in the European pollutant release and transfer register in accordance with Regulation (EC) No 166/2006 of the European Parliament and of the Council;

(c) the activity of Annex I to Regulation (EC) No 166/2006;

(d) **<...>**

CHAPTER VII
INFORMATION TECHNOLOGY REQUIREMENTS

Article 74

Electronic data exchange formats

1. **Contracting Parties** may require the operator and aircraft operator to use electronic templates or specific file formats for submission of monitoring plans and changes to the monitoring plan, as well as for submission of annual emissions reports, tonne-kilometre reports, verification reports and improvement reports.

Those templates or file format specifications established by the **Contracting Parties** shall, at least, contain the information contained in electronic templates or file format specifications published by the **European** Commission.

2. When establishing the templates or file-format specifications referred to in the second subparagraph of paragraph 1, **Contracting Parties** may choose one or both of the following options:

(a) file-format specifications based on XML, such as the EU ETS reporting language published by the **European** Commission for use in connection with advanced automated systems;

(b) templates published in a form usable by standard office software, including spreadsheets and word processor files.

Article 75

Use of automated systems

1. Where a **Contracting Party** chooses to use automated systems for electronic data exchange based on file-format specifications in accordance with point (a) of Article 74(2), those systems shall ensure in a cost efficient way, through the implementation of technological measures in accordance with the current state of technology:

(a) integrity of data, preventing modification of electronic messages during transmission;

(b) confidentiality of data, through the use of security techniques, including encryption techniques, such that the data is only accessible to the party for which it was intended and that no data can be intercepted by unauthorised parties;

(c) authenticity of data, such that the identity of both the sender and receiver of data is known and verified;

(d) non-repudiation of data, such that one party of a transaction cannot deny having received a transaction nor can the other party deny having sent a transaction, by applying methods such as signing techniques, or independent auditing of system safeguards.

2. Any automated systems used by **Contracting Parties** based on file format specifications in accordance with point (a) of Article 74(2) for communication between the competent authority, operator and aircraft operator, as well as verifier and national accreditation body within the meaning of Implementing Regulation (EU) 2018/2067 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, shall meet the following non-functional requirements, through implementation of technological measures in accordance with the current state of technology:

(a) access control, such that the system is only accessible to authorised parties and no data can be read, written or updated by unauthorised parties, through implementation of technological measures in order to achieve the following:

(i) restriction of physical access to the hardware on which automated systems run through physical barriers;

(ii) restriction of logical access to the automated systems through the use of technology for identification, authentication and authorisation;

(b) availability, such that data accessibility is ensured, even after significant time and the introduction of possible new software;

(c) audit trail, such that it is ensured that changes to data can always be found and analysed in retrospect.

CHAPTER VIII
FINAL PROVISIONS

Article 76

<…>

Article 77

<…>

Article 78

Entry into force and application

This Regulation shall enter into force on the day following that of its **<…> adoption. Contracting Parties shall transpose this Regulation by 31 December 2023.**

Contracting Parties, operators, and aircraft operators shall fully comply with and implement the provisions of this Regulation not later than the end of the tentative period defined in Article 3(64) ending on 1 January 2026. <…>

ANNEX I
Minimum content of the monitoring plan (Article 12(1))

1. MINIMUM CONTENT OF THE MONITORING PAN FOR INSTALLATIONS The monitoring plan for an installation shall contain at least the following information:

(1) general information on the installation:

(a) a description of the installation and activities carried out by the installation to be monitored, containing a list of emissions sources and source streams to be monitored for each activity carried out within the installation and meeting the following criteria:

(i) the description must be sufficient for demonstrating that neither data gaps nor double counting of emissions occur;

(ii) a simple diagram of the emission sources, source streams, sampling points and metering equipment must be added where requested by the competent authority or where such diagram simplifies describing the installation or referencing emission sources, source streams, measuring instruments and any other parts of the installation relevant for the monitoring methodology including data flow activities and control activities;

(b) a description of the procedure for managing the assignment of responsibilities for monitoring and reporting within the installation, and for managing the competences of responsible personnel;

(c) a description of the procedure for regular evaluation of the monitoring plan's appropriateness, covering at least the following:

(i) checking the list of emissions sources and source streams, ensuring completeness of the emission sources and source streams and that all relevant changes in the nature and functioning of the installation will be included in the monitoring plan;

(ii) assessing compliance with the uncertainty thresholds for activity data and other parameters, where applicable, for the applied tiers for each source stream and emission source;

(iii) assessing potential measures for improvement of the monitoring methodology applied;

(d) a description of the written procedures of the data flow activities pursuant to Article 58, including a diagram where appropriate for clarification;

(e) a description of the written procedures for the control activities established pursuant to Article 59;

(f) where applicable, information on relevant links with activities undertaken in the framework of the Community eco-management and audit scheme (EMAS) established pursuant to Regulation (EC) No 1221/2009 of the European Parliament and of the Council, systems covered by harmonised standard ISO 14001:2004 and other environmental management systems including information on procedures and controls with relevance to greenhouse gas emissions monitoring and reporting;

(g) the version number of the monitoring plan and the date from which that version of the monitoring plan is applicable;

(h) the category of the installation;

(2) a detailed description of the calculation-based methodologies where applied, consisting of the following:

(a) a detailed description of the calculation-based methodology applied, including a list of input data and

calculation formulae used, a list of the tiers applied for activity data and all relevant calculation factors for each of the source streams to be monitored;

(b) where applicable and where the operator intends to make use of simplification for minor and de-minimis source streams, a categorisation of the source streams into major, minor and de-minimis source streams;

(c) a description of the measurement systems used, and their measurement range, specified uncertainty and exact location of the measuring instruments to be used for each of the source streams to be monitored;

(d) where applicable, the default values used for calculation factors indicating the source of the factor, or the relevant source, from which the default factor will be retrieved periodically, for each of the source streams;

(e) where applicable, a list of the analysis methods to be used for the determination of all relevant calculation factors for each of the source streams, and a description of the written procedures for those analyses;

(f) where applicable, a description of the procedure underpinning the sampling plan for the sampling of fuel and materials to be analysed, and the procedure used to revise the appropriateness of the sampling plan;

(g) where applicable, a list of laboratories engaged in carrying out relevant analytical procedures and, where the laboratory is not accredited as referred to in Article 34(1) a description of the procedure used for demonstrating the compliance with equivalent requirements in accordance with Article 34(2) and (3);

(3) where a fall-back monitoring methodology is applied in accordance with Article 22, a detailed description of the monitoring methodology applied for all source streams or emission sources, for which no tier methodology is used, and a description of the written procedure used for the associated uncertainty analysis to be carried out;

(4) a detailed description of the measurement-based methodologies, where applied, including the following:

(a) a description of the measurement method including descriptions of all written procedures relevant for the measurement and the following:

(i) any calculation formulae used for data aggregation and used to determine the ` annual emissions of each emission source;

(ii) the method for determining whether valid hours or shorter reference periods for each parameter can be calculated, and for substitution of missing data in accordance with Article 45;

(b) a list of all relevant emission points during typical operation, and during restrictive and transition phases, including breakdown periods or commissioning phases, supplemented by a process diagram where requested by the competent authority;

(c) where flue gas flow is derived by calculation, a description of the written procedure for that calculation for each emission source monitored using a measurement-based methodology;

(d) a list of all relevant equipment, indicating its measurement frequency, operating range and uncertainty;

(e) a list of applied standards and of any deviations from those standards;

(f) a description of the written procedure for carrying out the corroborating calculations in accordance with Article 46, where applicable;

(g) a description of the method, how CO_2 stemming from biomass is to be determined and subtracted from the measured CO_2 emissions, and of the written procedure used for that purpose, where applicable;

(h) where applicable and where the operator intends to make use of simplification for minor emission sources, a categorisation of the emission sources into major and minor emission sources;

(5) in addition to elements listed in point 4, a detailed description of the monitoring methodology where N_2O emissions are monitored, where appropriate in the form of description of the written procedures applied, including a description of the following:

(a) the method and parameters used to determine the quantity of materials used in the production process and the maximum quantity of material used at full capacity;

(b) the method and parameters used to determine the quantity of product produced as an hourly output, expressed as nitric acid (100 %), adipic acid (100 %), caprolactam, glyoxal and glyoxylic acid per hour respectively;

(c) the method and parameters used to determine the N_2O concentration in the flue gas from each emission source, its operating range, and its uncertainty, and details of any alternative methods to be applied where concentrations fall outside the operating range and the situations when this may occur;

(d) the calculation method used to determine N_2O emissions from periodic, unabated sources in nitric acid, adipic acid, caprolactam, glyoxal and glyoxylic acid production;

(e) the way in which or the extent to which the installation operates with variable loads, and the manner in which the operational management is carried out;

(f) the method and any calculation formulae used to determine the annual N_2O emissions and the corresponding $CO_{2(e)}$ values of each emission source;

(g) information on process conditions that deviate from normal operations, an indication of the potential frequency and the duration of such conditions, as well as an indication of the volume of the N_2O emissions during the deviating process conditions such as abatement equipment malfunction;

(6) a detailed description of the monitoring methodology as far as perfluorocarbons from primary aluminium production are monitored, where appropriate in the form of a description of the written procedures applied, including the following:

(a) where applicable, the dates of measurement for the determination of the installation-specific emission factors SEF_{CF4} or OVC, and F_{C2F6}, and a schedule for future repetitions of that determination;

(b) where applicable, the protocol describing the procedure used to determine the installation-specific emission factors for CF_4 and C_2F_6, showing also that the measurements have been and will be carried out for a sufficiently long time for measured values to converge, but at least for 72 hours;

(c) where applicable, the methodology for determining the collection efficiency for fugitive emissions at installations for primary aluminium production;

(d) a description of cell type and type of anode;

(7) a detailed description of the monitoring methodology where transfer of inherent CO_2 as part of a source stream in accordance with Article 48, transfer of CO_2 in accordance with Article 49, or transfer of N_2O in accordance with Article 50 are carried out, where appropriate in the form of a description of the written procedures applied, including the following:

(a) where applicable, the location of equipment for temperature and pressure measurement in a transport network;

(b) where applicable, procedures for preventing, detecting and quantification of leakage events from transport networks;

(c) in the case of transport networks, procedures effectively ensuring that CO_2 is transferred only to in-

stallations which have a valid greenhouse gas emission permit, or where any emitted CO_2 is effectively monitored and accounted for in accordance with Article 49;

(d) identification of the receiving and transferring installations according to the installation identification code recognised in accordance with Regulation (EU) No 1193/2011;

(e) where applicable, a description of continuous measurement systems used at the points of transfer of CO_2 or N_2O between installations transferring CO_2 or N_2O or the determination method in accordance with Articles 48, 49 or 50;

(f) where applicable, a description of the conservative estimation method used for determining the biomass fraction of transferred CO_2 in accordance with Article 48 or 49;

(g) where applicable, quantification methodologies for emissions or CO_2 released to the water column from potential leakages as well as the applied and possibly adapted quantification methodologies for actual emissions or CO_2 released to the water column from leakages, as specified in section 23 of Annex IV;

(8) where applicable, a description of the procedure used to assess if biomass source streams comply with Article 38(5);

(9) where applicable, a description of the procedure used to determine biogas quantities based on purchase records in accordance with Article 39(4).

2. MINIMUM CONTENT OF MONITORING PLANS FOR AVIATION EMISSIONS

1. The monitoring plan shall contain the following information for all aircraft operators:

(a) the identification of the aircraft operator, call sign or other unique designator used for air traffic control purposes, contact details of the aircraft operator and of a responsible person at the aircraft operator, contact address, the administering **Contracting Party**, the administering competent authority;

(b) an initial list of aircraft types in its fleet operated at the time of the submission of the monitoring plan and the number of aircraft per type, and an indicative list of additional aircraft types expected to be used including, where available, an estimated number of aircraft per type as well as the source streams (fuel types) associated with each aircraft type;

(c) a description of procedures, systems and responsibilities used to update the completeness of the list of emission sources over the monitoring year for the purpose of ensuring the completeness of monitoring and reporting of the emissions of owned aircraft as well as leased-in aircraft;

(d) a description of the procedures used to monitor the completeness of the list of flights operated under the unique designator by aerodrome pair, and the procedures used for determining whether flights are covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** for the purpose of ensuring completeness of flights and avoiding double counting;

(e) a description of the procedure for managing and assigning responsibilities for monitoring and reporting, and for managing the competences of responsible personnel;

(f) a description of the procedure for regular evaluation of the monitoring plan's appropriateness, including any potential measures for the improvement of the monitoring methodology and related procedures applied;

(g) a description of the written procedures of the data flow activities as required by Article 58, including a diagram, where appropriate, for clarification;

(h) a description of the written procedures for the control activities established under Article 59;

(i) where applicable, information on relevant links with activities undertaken in the framework of EMAS, systems covered by harmonised standard ISO 14001:2004 and other environmental management systems, including information on procedures and controls with relevance to greenhouse gas emissions monitoring and reporting;

(j) the version number of the monitoring plan and the date from which that version of the monitoring plan is applicable;

(k) confirmation if the aircraft operator intends to make use of the simplification pursuant to Article 28a(6) of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

2. The monitoring plan shall contain the following information for aircraft operators which are not small emitters in accordance with Article 55(1) or which do not intend to use a small emitter tool in accordance with Article 55(2):

(a) a description of the written procedure to be used for defining the monitoring methodology for additional aircraft types which an aircraft operator expects to use;

(b) a description of the written procedures for monitoring fuel consumption in every aircraft, including:

(i) the chosen methodology (Method A or Method B) for calculating the fuel ` consumption; and where the same method is not applied for all aircraft types, a justification for that methodology, as well as a list specifying which method is used under which conditions;

(ii) procedures for the measurement of fuel uplifts and fuel in tanks, a description of the measuring instruments involved and the procedures for recording, retrieving, transmitting and storing information regarding measurements, as applicable;

(iii) the method for the determination of density, where applicable;

(iv) justification of the chosen monitoring methodology, in order to ensure lowest levels of uncertainty, according to Article 56 (1);

(c) a list of deviations for specific aerodromes from the general monitoring methodology as described in point (b) where it is not possible for the aircraft operator due to special circumstances to provide all the required data for the required monitoring methodology;

(d) emission factors used for each fuel type, or in the case of alternative fuels, the methodologies for determining the emission factors, including the methodology for sampling, methods of analysis, a description of the laboratories used and of their accreditation and/or of their quality assurance procedures;

(e) a description of the procedures and systems for identifying, assessing and handling data gaps pursuant to Article 66(2);

(f) where applicable, a description of the procedure used to assess if biofuels comply with Article 38(5);

(g) where applicable, a description of the procedure used to determine biofuel quantities based on purchase records in accordance with Article 54(3).

3. MINIMUM CONTENT OF MONITORING PLANS FOR TONNE KILOMETRE DATA

The monitoring plan for tonne-kilometre data shall contain the following information:

(a) the elements listed in point 1 of section 2 of this Annex;

(b) a description of the written procedures used for determining tonne kilometre data per flight, including:

(i) the procedures, responsibilities, data sources and calculation formulae for determining and recording the distance per aerodrome pair;

(ii) the tier used for determining the mass of passengers including the checked in baggage; in the case of tier 2, a description of the procedure for obtaining the mass of passengers and baggage is to be provided;

(iii) a description of the procedures used to determine the mass of freight and mail, where applicable;

(iv) a description of the measurement devices used for measuring the mass of passengers, freight and mail as applicable.

ANNEX II

Tier definitions for calculation-based methodologies related to installations (Article 12(1)) 1.

DEFINITION OF TIERS FOR ACTIVITY DATA

The uncertainty thresholds in Table 1 shall apply to tiers relevant to activity data requirements in accordance with point (a) of Article 28(1) and the first subparagraph of Article 29(2), and Annex IV, of this Regulation.

The uncertainty thresholds shall be interpreted as maximum permissible uncertainties for the determination of source streams over a reporting period.

Where Table 1 does not include activities listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and the mass balance is not applied, the operator shall use the tiers listed in Table 1 under 'Combustion of fuels and fuels used as process input' for those activities.

Table 1

Tiers for activity data (maximum permissible uncertainty for each tier)

Activity/source stream type	**Parameter to which the uncertainty is applied**	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**
Combustion of fuels and fuels used as process input					
Commercial standard fuels	Amount of fuel [t] or [Nm^3]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Other gaseous and liquid fuels	Amount of fuel [t] or [Nm^3]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Solid fuels	Amount of fuel [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Flaring	Amount of flare gas [Nm^3]	± 17,5 %	± 12,5 %	± 7,5 %	
Scrubbing: carbonate (Method A)	Amount carbonate consumed [t]	± 7,5 %			
Scrubbing: gypsum (Method B)	Amount gypsum produced [t]	± 7,5 %			
Scrubbing: urea	Amount urea consumed	± 7,5 %			
Refining of mineral oil					
Catalytic cracker regeneration (*1)	Uncertainty requirements apply separately for each emission source	± 10 %	± 7,5 %	± 5 %	± 2,5 %
Production of coke					
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Metal ore roasting and sintering					
Carbonate input and process residues	Carbonate input material and process residues [t]	± 5 %	± 2,5 %		

Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Production of iron and steel					
Fuel as process input	Each mass flow into and from the installation [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Production of cement clinker					
Kiln input based (Method A)	Each relevant kiln input [t]	± 7,5 %	± 5 %	± 2,5 %	
Clinker output (Method B)	Clinker produced [t]	± 5 %	± 2,5 %		
CKD	CKD or bypass dust [t]	n.a. (*2)	± 7,5 %		
Non-carbonate carbon	Each raw material [t]	± 15 %	± 7,5 %		
Production of lime and calcination of dolomite and magnesite					
Carbonates and other process materials (Method A)	Each relevant kiln input [t]	± 7,5 %	± 5 %	± 2,5 %	
Alkali earth oxide (Method B)	Lime produced [t]	± 5 %	± 2,5 %		
Kiln dust (Method B)	Kiln dust [t]	n.a. (*2)	± 7,5 %		
Manufacture of glass and mineral wool					
Carbonates and other process materials (input)	Each carbonate raw material or additives associated with CO_2 emissions [t]	± 2,5 %	± 1,5 %		
Manufacture of ceramic products					
Carbon inputs (Method A)	Each carbonate raw material or additive associated with CO_2 emissions [t]	± 7,5 %	± 5 %	± 2,5 %	
Alkali oxide (Method B)	Gross production including rejected products and cullet from the kilns and shipment [t]	± 7,5 %	± 5 %	± 2,5 %	
Scrubbing	Dry $CaCO_3$ consumed [t]	± 7,5 %			
Production of pulp and paper					
Make up chemicals	Amount of $CaCO_3$ and Na_2CO_3 [t]	± 2,5 %	± 1,5 %		
Production of carbon black					
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Production of ammonia					
Fuel as process input	Amount fuel used as process input [t] or [Nm^3]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %

Production of hydrogen and synthesis gas					
Fuel as process input	Amount fuel used as process input for hydrogen production [t] or [Nm^3]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Production of bulk organic chemicals					
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Production or processing of ferrous and non-ferrous metals, including secondary aluminium					
Process emissions	Each input material or process residue used as input material in the process [t]	± 5 %	± 2,5 %		
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Primary aluminium production					
Mass balance methodology	Each input and output material [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
PFC emissions (slope method)	primary aluminium production in [t], anode effect minutes in [number anode effects/cell day] and [anode effect minutes/ occurrence]	± 2,5 %	± 1,5 %		
PFC emissions (overvoltage method)	primary aluminium production in [t], anode effect overvoltage [mV] and current efficiency [-]	± 2,5 %	± 1,5 %		
(*1) For monitoring emissions from catalytic cracker regeneration (other catalyst regeneration and flexicokers) in mineral oil refineries, the required uncertainty is related to the total uncertainty of all emissions from that source. (*2) Amount [t] of CKD or bypass dust (where relevant) leaving the kiln system over a reporting period estimated using industry best practice guidelines.					

2. DEFINITION OF TIERS FOR CALCULATION FACTORS FOR COMBUSTION EMISSIONS

Operators shall monitor CO_2 emissions from all types of combustion processes taking place under all activities as listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or included in the **Energy Community** system under Article 24 of that Directive using the tier definitions laid down in this section.

Where fuels or combustible materials which give rise to CO_2 emissions are used as a process input, section 4 of this Annex shall apply. Where fuels form part of a mass balance in accordance with Article 25(1) of this Regulation, the tier definitions for mass balances in section 3 of this Annex apply.

For process emissions from related exhaust gas scrubbing tier definitions according to sections 4 and 5 of

this Annex shall be used, as applicable.

2.1 Tiers for emission factors

Where a biomass fraction is determined for a mixed fuel or material, the tiers defined shall relate to the preliminary emission factor. For fossil fuels and materials the tiers shall relate to the emission factor.

Tier 1: The operator shall apply one of the following:

(a) the standard factors listed in section 1 of Annex VI;

(b) other constant values in accordance with point (e) of Article 31(1), where no applicable value is contained in section 1 of Annex VI.

Tier 2a: The operator shall apply country specific emission factors for the respective fuel or material in accordance with points (b) and (c) of Article 31(1) or values in accordance with point (d) of Article 31(1).

Tier 2b: The operator shall derive emission factors for the fuel based on one of the following established proxies, in combination with an empirical correlation as determined at least once per year in accordance with Articles 32 to 35 and 39:

(a) density measurement of specific oils or gases, including those common to the refinery or steel industry;

(b) net calorific value for specific coal types. The operator shall ensure that the correlation satisfies the requirements of good engineering practice and that it is applied only to values of the proxy which fall into the range for which it was established.

Tier 3: The operator shall apply one of the following:

(a) determination of the emission factor in accordance with the relevant provisions of Articles 32 to 35;

(b) the empirical correlation as specified for Tier 2b, where the operator demonstrates to the satisfaction of the competent authority that the uncertainty of the empirical correlation does not exceed 1/3 of the uncertainty value to which the operator has to adhere with regard to the activity data determination of the relevant fuel or material.

2.2 Tiers for net calorific value (NCV)

Tier 1: The operator shall apply one of the following:

(a) the standard factors listed in section 1 of Annex VI;

(b) other constant values in accordance with point (e) of Article 31(1), where no applicable value is contained in section 1 of Annex VI.

Tier 2a: The operator shall apply country specific factors for the respective fuel in accordance with point (b) or (c) of Article 31(1) or values in accordance with point (d) of Article 31(1).

Tier 2b: For commercially traded fuels the net calorific value as derived from the purchasing records for the respective fuel provided by the fuel supplier shall be used provided it has been derived based on accepted national or international standards.

Tier 3: The operator shall determine the net calorific value in accordance with Article 32 to 35.

2.3 Tiers for oxidation factors

Tier 1: The operator shall apply an oxidation factor of 1.

Tier 2: The operator shall apply oxidation factors for the respective fuel in accordance with point (b) or (c) of Article 31(1).

Tier 3: For fuels, the operator shall derive activity-specific factors based on the relevant carbon contents of ashes, effluents and other wastes and by products, and other relevant incompletely oxidised gaseous forms of carbon emitted except CO. Composition data shall be determined in accordance with Article 32 to 35.

2.4 Tiers for biomass fraction

Tier 1: The operator shall apply an applicable value published by the competent authority or the **Energy Community Secretariat**, or values in accordance with Article 31(1).

Tier 2: The operator shall apply an estimation method approved in accordance with the second subparagraph of Article 39(2).

Tier 3: The operator shall apply analyses in accordance with the first sub- paragraph of Article 39 (2), and in accordance with Articles 32 to 35. Where an operator assumes a fossil fraction of 100 % in accordance with Article 39(1), no tier shall be assigned for the biomass fraction.

3. DEFINITION OF TIERS FOR CALCULATION FACTORS FOR MASS BALANCES

Where an operator uses a mass balance in accordance with Article 25, it shall use the tier definitions of this section.

3.1 Tiers for carbon content

The operator shall apply one of the tiers listed in this point. For deriving the carbon content from an emission factor, the operator shall use the following equations:

(a) for emission factors expressed as t CO_2/TJ : C = (EF × NCV) / f

(b) for emission factors expressed as t CO_2/t : C = EF / f In those formulae, C is the carbon content expressed as fraction (tonne carbon per tonne product), EF is the emission factor, NCV is the net calorific value, and f is the factor laid down in Article 36(3).

Where a biomass fraction is determined for a mixed fuel or material, the tiers defined shall relate to the total carbon content. The biomass fraction of the carbon shall be determined using the tiers defined in section 2.4 of this Annex.

Tier 1: The operator shall apply one of the following:

(a) the carbon content derived from standard factors listed in Annex VI sections 1 and 2;

(b) other constant values in accordance with point (e) of Article 31(1), where no applicable value is contained in Annex VI sections 1 and 2.

Tier 2a: The operator shall derive the carbon content from country specific emission factors for the respective fuel or material in accordance with point (b) or (c) of Article 31(1) or values in accordance with point (d) of Article 31(1).

Tier 2b: The operator shall derive the carbon content from emission factors for the fuel based on one of the following established proxies in combination with an empirical correlation as determined at least once per year in accordance with Articles 32 to 35:

(a) density measurement of specific oils or gases common, for example, to the refinery or steel industry;

(b) net calorific value for specific coals types. The operator shall ensure that the correlation satisfies the requirements of good engineering practice and that it is applied only to values of the proxy which fall into the range for which it was established.

Tier 3: The operator shall apply one of the following: (a) determination of the carbon content in accordance with the relevant provisions of Articles 32 to 35;

(b) the empirical correlation as specified for Tier 2b, where the operator demonstrates to the satisfaction of the competent authority that the uncertainty of the empirical correlation does not exceed 1/3 of the uncertainty value to which the operator has to adhere with regard to the activity data determination of the relevant fuel or material.

3.2 Tiers for net calorific values

The tiers defined in section 2.2 of this Annex shall be used.

3.3 Tiers for biomass fraction

The tiers defined in section 2.4 of this Annex shall be used.

4. DEFINITION OF TIERS FOR THE CALCULATION FACTORS FOR CO_2 PROCESS EMISSIONS

For all CO_2 process emissions, in particular for emissions from the decomposition of carbonates and from process materials containing carbon other than in form of carbonates, including urea, coke and graphite, where they are monitored using the standard methodology in accordance with Article 24(2), the tiers defined in this section for the applicable calculation factors shall be applied.

In case of mixed materials which contain inorganic as well as organic forms of carbon, the operator may choose: — to determine a total preliminary emission factor for the mixed material by analysing the total carbon content, and using a conversion factor and – if applicable – biomass fraction and net calorific value related to that total carbon content; or — to determine the organic and inorganic contents separately and treat them as two separate source streams.

For emissions from the decomposition of carbonates, the operator may choose for each source stream one of the following methods:

(a) **Method A** (Input based): The emission factor, conversion factor and activity data are related to the amount of material input into the process.

(b) **Method B** (Output based): The emission factor, conversion factor and activity data are related to the amount of output from the process. For other CO_2 process emissions, the operator shall apply only method A.

4.1. Tiers for the emission factor using Method A

Tier 1: The operator shall apply one of the following:

(a) the standard factors listed in Annex VI section 2 Table 2 in case of carbonate decomposition, or in Tables 1, 4 or 5 for other process materials;

(b) other constant values in accordance with point (e) of Article 31(1), where no applicable value is contained in Annex VI.

Tier 2: The operator shall apply a country specific emission factor in accordance with point (b) or (c) of Article 31(1), or values in accordance with point (d) of Article 31(1).

Tier 3: The operator shall determine the emission factor in accordance with Articles 32 to 35. Stoichiometric ratios as listed in section 2 of Annex VI shall be used to convert composition data into emission factors, where relevant.

4.2. Tiers for the conversion factor using Method A

Tier 1: A conversion factor of 1 shall be used.

Tier 2: Carbonates and other carbon leaving the process shall be considered by means of a conversion factor with a value between 0 and 1.

The operator may assume complete conversion for one or several inputs and attribute unconverted materials or other carbon to the remaining inputs. The additional determination of relevant chemical parameters of the products shall be carried out in accordance with Articles 32 to 35.

4.3. Tiers for the emission factor using Method B

Tier 1: The operator shall apply one of the following:

(a) the standard factors listed in Annex VI section 2 Table 3.

(b) other constant values in accordance with point (e) of Article 31(1), where no applicable value is contained in Annex VI.

Tier 2: The operator shall apply a country specific emission factor in accordance with point (b) or (c) of Article 31(1), or values in accordance with point (d) of Article 31(1).

Tier 3: The operator shall determine the emission factor in accordance with Articles 32 to 35. Stoichiometric ratios referred to in Annex VI section 2 Table 3 shall be used to convert composition data into emission factors assuming that all of the relevant metal oxides have been derived from respective carbonates.

For this purpose the operator shall take into account at least CaO and MgO, and shall provide evidence to the competent authority as to which further metal oxides relate to carbonates in the raw materials.

4.4. Tiers for the conversion factor using Method B

Tier 1: A conversion factor of 1 shall be used.

Tier 2: The amount of non-carbonate compounds of the relevant metals in the raw materials, including return dust or fly ash or other already calcined materials, shall be reflected by means of conversion factors with a value between 0 and 1 with a value of 1 corresponding to a full conversion of raw material carbonates into oxides. The additional determination of relevant chemical parameters of the process inputs shall be carried out in accordance with Articles 32 to 35.

4.5. Tiers for the net calorific value (NCV)

If relevant, the operator shall determine the net calorific value of the process material using the tiers defined in section 2.2 of this Annex. NCV is considered not relevant for *de minimis* source streams or where the material is not itself combustible without other fuels being added. If in doubt, the operator shall seek confirmation by the competent authority on whether NCV has to be monitored and reported.

4.6. Tiers for the biomass fraction

If relevant, the operator shall determine the biomass fraction of the carbon contained in the process material, using the tiers defined in section 2.4 of this Annex.

ANNEX III

Monitoring methodologies for aviation (Article 53 and Article 57)

1. CALCULATION METHODOLOGIES FOR THE DETERMINATION OF GHGS IN THE AVIATION SECTOR

Method A: The operator shall use the following formula:

Actual fuel consumption for each flight [t] = Amount of fuel contained in aircraft tanks once fuel uplift for the flight is complete [t] – Amount of fuel contained in aircraft tanks once fuel uplift for subsequent flight is complete [t] + Fuel uplift for that subsequent flight [t]

Where there is no fuel uplift for the flight or subsequent flight, the amount of fuel contained in aircraft tanks shall be determined at block-off for the flight or subsequent flight. In the exceptional case that an aircraft performs activities other than a flight, including undergoing major maintenance involving the emptying of the tanks, after the flight for which fuel consumption is being monitored, the aircraft operator may substitute the quantity 'Amount of fuel contained in aircraft tanks once fuel uplift for subsequent flight is complete + Fuel uplift for that subsequent flight' with the 'Amount of fuel remaining in tanks at the start of the subsequent activity of the aircraft', as recorded by technical logs.

Method B: The operator shall use the following formula:

Actual fuel consumption for each flight [t] = Amount of fuel remaining in aircraft tanks at block-on at the end of the previous flight [t] + Fuel uplift for the flight [t] - Amount of fuel contained in tanks at block-on at the end of the flight [t] The moment of block-on may be considered equivalent to the moment of engine shut down.

Where an aircraft does not perform a flight previous to the flight for which fuel consumption is being monitored, the aircraft operator may substitute the quantity 'Amount of fuel remaining in aircraft tanks at block-on at the end of the previous flight' with the 'Amount of fuel remaining in aircraft tanks at the end of the previous activity of the aircraft', as recorded by technical logs.

2. EMISSION FACTORS FOR STANDARD FUELS

Table 1

Aviation fuel CO_2 emission factors

Fuel Emission factor (t CO_2/t fuel)

Fuel	**Emission factor (t CO_2/t fuel)**
Aviation gasoline (AvGas)	3,10
Jet gasoline (Jet B)	3,10
Jet kerosene (Jet A1 or Jet A)	3,15

3. CALCULATION OF GREAT CIRCLE DISTANCE

Distance [km] = Great Circle Distance [km] + 95 km

The Great Circle Distance shall be the shortest distance between any two points on the surface of the Earth, which shall be approximated using the system referred to in Article 3.7.1.1 of Annex 15 to the Chicago Convention (WGS 84).

The latitude and longitude of aerodromes shall be taken either from aerodrome location data published in Aeronautical Information Publications (AIP) in compliance with Annex 15 to the Chicago Convention or from a source using AIP data.

Distances calculated by software or by a third party may also be used, provided that the calculation methodology is based on the formula set out in this section, AIP data and WGS 84 requirements.

ANNEX IV

Activity-specific monitoring methodologies related to installations (Article 20(2))

1. SPECIFIC MONITORING RULES FOR EMISSIONS FROM COMBUSTION PROCESSES

A. Scope

Operators shall monitor CO_2 emissions from all types of combustion processes taking place under all activities as listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or included in the **Energy Community** system under Article 24 of that Directive including the related scrubbing processes using the rules laid down in this Annex. Any emissions from fuels used as process input shall be treated like combustion emissions with regard to monitoring and reporting methodologies, without prejudice to other classifications applied to emissions.

The operator shall not monitor and report emissions from internal combustion engines for transportation purposes. The operator shall assign all emissions from the combustion of fuels at the installation to the installation, regardless of exports of heat or electricity to other installations. The operator shall not assign emissions associated with the production of heat or electricity that is imported from other installations to the importing installation.

The operator shall include at least the following emission sources: boilers, burners, turbines, heaters, furnaces, incinerators, calciners, kilns, ovens, dryers, engines, fuel cells, chemical looping combustion units, flares, thermal or catalytic post-combustion units, and scrubbers (process emissions) and any other equipment or machinery that uses fuel, excluding equipment or machinery with combustion engines that are used for transportation purposes.

B. Specific monitoring rules

The emissions from combustion processes shall be calculated in accordance with Article 24(1), unless the fuels are included in a mass balance in accordance with Article 25. The tiers defined in section 2 of Annex II shall apply. In addition, process emissions from flue gas scrubbing shall be monitored using the provisions laid down in subsection C.

For emissions from flares special requirements shall apply, as laid down in subsection D of this section.

Combustion processes taking place in gas processing terminals may be monitored using a mass balance in accordance with Article 25.

C. Flue gas scrubbing

C.1 *Desulphurisation*

Process CO_2 emissions from the use of carbonate for acid gas scrubbing from the flue gas stream shall be calculated in accordance with Article 24(2) on the basis of carbonate consumed, Method A as follows, or gypsum produced, Method B as follows. The following applies by way of derogation from section 4 of Annex II.

Method A: Emission factor

Tier 1: The emission factor shall be determined from stoichiometric ratios as laid down in section 2 of Annex VI. The determination of the amount of $CaCO_3$ and $MgCO_3$ or other carbonates in the relevant input material shall be carried out using industry best practice guidelines.

Method B: Emission factor

Tier 1: The emission factor shall be the stoichiometric ratio of dry gypsum ($CaSO_4 \times 2H_2O$) to CO_2 emitted: 0,2558t CO_2/t gypsum.

Conversion Factor:

Tier 1: A conversion factor of 1 shall be used.

C.2 *De-NO_x*

By way of derogation from section 4 of Annex II, process CO_2 emissions from the use of urea for scrubbing of the flue gas stream shall be calculated in accordance with Article 24(2) applying the following tiers.

Emission factor:

Tier 1: The determination of the amount of urea in the relevant input material shall be carried out using industry best practice guidelines. The emission factor shall be determined using a stoichiometric ratio of 0,7328t CO_2/t urea.

Conversion Factor:

Only tier 1 shall be applicable.

D. Flares

When calculating emissions from flares the operator shall include routine flaring and operational flaring (trips, start-up and shutdown as well as emergency relieves). The operator shall also include inherent CO_2 in accordance with Article 48.

By way of derogation from section 2.1 of Annex II, tiers 1 and 2b for the emission factor shall be defined as follows:

Tier 1: The operator shall use a reference emission factor of 0,00393t CO_2/Nm^3 derived from the combustion of pure ethane used as a conservative proxy for flare gases.

Tier 2b: Installation-specific emission factors shall be derived from an estimate of the molecular weight of the flare stream, using process modelling based on industry standard models. By considering the relative proportions and the molecular weights of each of the contributing streams, a weighted annual average figure shall be derived for the molecular weight of the flare gas.

By way of derogation from section 2.3 of Annex II, only tiers 1 and 2 shall be applied for the oxidation factor in the case of flares.

2. REFINING OF MINERAL OIL AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall monitor and report all CO_2 emissions from combustion and production processes as occurring in refineries.

The operator shall include at least the following potential sources of CO_2 emissions: boilers, process heaters/treaters, internal combustion engines/turbines, catalytic and thermal oxidisers, coke calcining kilns, firewater pumps, emergency/standby generators, flares, incinerators, crackers, hydrogen production units, Claus process units, catalyst regeneration (from catalytic cracking and other catalytic processes) and cokers (flexi-coking, delayed coking).

B. Specific monitoring rules

The monitoring of mineral oil refining activities shall be carried out in accordance with section 1 of this Annex for combustion emissions including flue gas scrubbing. The operator may choose to use the mass balance methodology in accordance with Article 25 for the whole refinery or individual process units such as heavy oil gasification or calcinations plants. Where combinations of standard methodology and mass balance are used, the operator shall provide evidence to the competent authority demonstrating the completeness of emissions covered, and that no double counting of emissions occurs.

Emissions from dedicated hydrogen production units shall be monitored in accordance with section 19 of this Annex.

By way of derogation from Article 24 and 25, emissions from catalytic cracker regeneration, other catalyst regeneration and flexi-cokers shall be monitored using a mass balance, taking into account the state of the input air and the flue gas. All CO in the flue gas shall be accounted for as CO_2, applying the mass relation: t CO_2 = t CO * 1,571. The analysis of input air and flue gases and the choice of tiers shall be in accordance with the provisions of Articles 32 to 35. The specific calculation methodology shall be approved by the competent authority.

3. PRODUCTION OF COKE AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: raw materials (including coal or petroleum coke), conventional fuels (including natural gas), process gases (including blast furnace gas – BFG), other fuels and waste gas scrubbing.

B. Specific monitoring rules

For the monitoring of emissions from the production of coke, the operator may choose to use a mass balance in accordance with Article 25 and section 3 of Annex II, or the standard methodology in accordance with Article 24 and sections 2 and 4 of Annex II.

4. METAL ORE ROASTING AND SINTERING AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: raw materials (calcination of limestone, dolomite and carbonatic iron ores, including $FeCO_3$), conventional fuels (including natural gas and coke/coke breeze), process gases (including coke oven gas – COG, and blast furnace gas – BFG), process residues used as input material including filtered dust from the sintering plant, the converter and the blast furnace, other fuels and flue gas scrubbing.

B. Specific monitoring rules

For the monitoring of emissions from metal ore roasting, sintering or pelletisation, the operator may choose to use a mass balance in accordance with Article 25 and section 3 of Annex II or the standard methodology in accordance with Article 24 and sections 2 and 4 of Annex II.

5. PRODUCTION OF PIG IRON AND STEEL AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: raw materials (calcination of limestone, dolomite and carbonatic iron ores, including $FeCO_3$), conventional fuels (natural gas, coal and coke), reducing agents (including coke, coal and plastics), process gases (coke oven gas – COG, blast furnace gas – BFG and basic oxygen furnace gas – BOFG), consumption of graphite electrodes, other fuels and waste gas scrubbing.

B. Specific monitoring rules

For the monitoring of emissions from production of pig iron and steel, the operator may choose to use a mass balance in accordance with Article 25 and section 3 of Annex II, or the standard methodology in accordance with Article 24 and sections 2 and 4 of Annex II, at least for a part of the source streams, avoiding any gaps or double counting of emissions.

By way of derogation from section 3.1 of Annex II, tier 3 for the carbon content is defined as follows:

Tier 3: The operator shall derive the carbon content of input or output stream following Articles 32 to 35 in respect to the representative sampling of fuels, products and by-products, the determination of their carbon contents and biomass fraction. The operator shall base the carbon content of products or semi-finished products on annual analyses following Articles 32 to 35 or derive the carbon content from mid-range composition values as specified by relevant international or national standards.

6. PRODUCTION OR PROCESSING OF FERROUS AND NON-FERROUS METALS AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall not apply the provisions in this section for the monitoring and reporting of CO_2 emissions from the production of pig iron and steel and primary aluminium.

The operator shall consider at least the following potential emission sources for CO_2 emissions: conventional fuels; alternative fuels including plastics granulated material from post shredder plants; reducing agents including coke, graphite electrodes; raw materials including limestone and dolomite; carbon containing metal ores and concentrates; and secondary feed materials.

B. Specific monitoring rules

Where carbon stemming from fuels or input materials used at this installation remains in the products or other outputs of the production, the operator shall use a mass balance in accordance with Article 25 and section 3 of Annex II. Where this is not the case the operator shall calculate combustion and process emission separately using the standard methodology in accordance with Article 24 and sections 2 and 4 of Annex II.

Where a mass balance is used, the operator may choose to include emissions from combustion processes in the mass balance or to use the standard methodology in accordance with Article 24 and section 1 of this Annex for a part of the source streams, avoiding any gaps or double counting of emissions.

7. CO_2 EMISSIONS FROM PRODUCTION OR PROCESSING OF PRIMARY ALUMINIUM AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall apply the provisions of this section to the monitoring and reporting of CO_2 emissions from the production of electrodes for primary aluminium smelting, including stand-alone plants for the production of such electrodes, and the consumption of electrodes during electrolysis.

The operator shall consider at least the following potential sources for CO_2 emissions: fuels for the production of heat or steam, electrode production, reduction of Al_2O_3 during electrolysis which is related to electrode consumption, and use of soda ash or other carbonates for waste gas scrubbing.

The associated emissions of perfluorocarbons – PFCs, resulting from anode effects, including fugitive emissions, shall be monitored in accordance with section 8 of this Annex.

B. Specific monitoring rules

The operator shall determine CO_2 emissions from the production or processing of primary aluminium using the mass balance methodology in accordance with Article 25. The mass balance methodology shall consider all carbon in inputs, stocks, products and other exports from the mixing, forming, baking and recycling of electrodes as well as from electrode consumption in electrolysis. Where pre-baked anodes are used, either separate mass balances for production and consumption may be applied, or one common mass balance taking into account both production and consumption of electrodes. In the case of Søderberg cells, the operator shall use one common mass balance.

For emissions from combustion processes the operator may choose to include them in the mass balance or to use the standard methodology in accordance with Article 24 and section 1 of this Annex at least for a part of the source streams, avoiding any gaps or double counting of emissions.

8. PFC EMISSIONS FROM PRODUCTION OR PROCESSING OF PRIMARY ALUMINIUM AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall apply the following for emissions of perfluorocarbons (PFCs) resulting from anode effects including fugitive emissions of PFCs. For associated CO_2 emissions, including emissions from electrode production, the operator shall apply section 7 of this Annex. The operator shall furthermore calculate PFC emissions not related to anode effects based on estimation methods in accordance with industry best practice, and any guidelines published by the **Energy Community Secretariat** for this purpose.

B. Determination of PFC emissions

PFC emissions shall be calculated from the emissions measurable in a duct or stack ('point source emissions') as well as fugitive emissions using the collection efficiency of the duct:

PFC emissions (total) = PFC emissions (duct) / collection efficiency

The collection efficiency shall be measured when the installation-specific emission factors are determined. For its determination the most recent version of the guidance mentioned under Tier 3 of section 4.4.2.4 of the 2006 IPCC Guidelines shall be used.

The operator shall calculate emissions of CF_4 and C_2F_6 emitted through a duct or stack using one of the following methods:

(a) Method A where the anode effect minutes per cell-day are recorded;

(b) Method B where the anode effect overvoltage is recorded.

Calculation Method A – Slope Method:

The operator shall use the following equations for determining PFC emissions:

CF_4 emissions [t] = AEM × (SEF_{CF4}/1 000) × Pr_{Al}

C_2F_6 emissions [t] = CF_4 emissions × F_{C2F6}

Where:

AEM = Anode effect minutes / cell-day;

SEF_{CF4} = Slope emission factor [(kg CF_4 / t Al produced) / (anode effect minutes / cell-day)]. Where different cell-types are used, different SEF may be applied as appropriate;

Pr_{Al} = Annual production of primary Aluminium [t];

F_{C2F6} = Weight fraction of C_2F_6 (t C_2F_6 / t CF_4).

The anode effect minutes per cell-day shall express the frequency of anode effects (number anode effects / cell-day) multiplied by the average duration of anode effects (anode effect minutes / occurrence):

AEM = frequency × average duration

Emission factor: The emission factor for CF_4 (slope emission factor, SEF_{CF4}) expresses the amount [kg] of CF_4 emitted per tonne of aluminium produced per anode effect minute / cell-day. The emission factor (weight fraction F_{C2F6}) of C_2F_6 expresses the amount [t] of C_2F_6 emitted proportionate to the amount [t] of CF_4 emitted.

Tier 1: The operator shall use technology-specific emission factors from Table 1 of this section of Annex IV.

Tier 2: The operator shall use installation-specific emission factors for CF_4 and C_2F_6 established through continuous or intermittent field measurements. For the determination of those emission factors the operator shall use the most recent version of the guidance mentioned under Tier 3 of section 4.4.2.4 of the 2006 IPCC Guidelines ([9]). The emission factor shall also take into account emissions related to non-anode effects. The operator shall determine each emission factor with a maximum uncertainty of ± 15 %.

The operator shall determine the emission factors at least every three years or earlier where necessary due to relevant changes at the installation. Relevant changes shall include a change in the distribution of anode effect duration, or a change in the control algorithm affecting the mix of the types of anode effects or the nature of the anode effect termination routine.

Table 1

Technology-specific emission factors related to activity data for the slope method.

Technology	**Emission factor for CF_4 (SEF_{CF4}) [(kg CF_4/t Al) / (AE-Mins/cell-day)]**	**Emission factor for C_2F_6 (F_{C2F6}) [t C_2F_6/ t CF_4]**
Centre Worked Prebake (CWPB)	0,143	0,121
Vertical Stud Søderberg (VSS)	0,092	0,053

Calculation Method B – Overvoltage Method:

Where the anode effect overvoltage is measured, the operator shall use the following equations for the determination of PFC emissions:

CF_4 emissions [t] = OVC × (AEO/CE) × Pr_{Al} × 0,001

C_2F_6 emissions [t] = CF_4 emissions × F_{C2F6}

Where:

OVC = Overvoltage coefficient ('emission factor') expressed as kg CF_4 per tonne of aluminium produced per mV overvoltage;

AEO = Anode effect overvoltage per cell [mV] determined as the integral of (time × voltage above the target voltage) divided by the time (duration) of data collection;

CE = Average current efficiency of aluminium production [%];

Pr_{Al} = Annual production of primary Aluminium [t];

F_{C2F6} = Weight fraction of C_2F_6 (t C_2F_6/t CF_4);

The term AEO/CE (Anode effect overvoltage / current efficiency) expresses the time-integrated average anode effect overvoltage [mV overvoltage] per average current efficiency [%].

Emission factor: The emission factor for CF_4 ('overvoltage coefficient' OVC) shall express the amount [kg] of CF_4 emitted per tonne of aluminium produced per millivolt overvoltage [mV]. The emission factor of C_2F_6 (weight fraction F_{C2F6}) shall express the amount [t] of C_2F_6 emitted proportionate to the amount [t] of CF_4 emitted.

Tier 1:: The operator shall apply technology-specific emission factors from Table 2 of this section of Annex IV.

Tier 2: The operator shall use installation-specific emission factors for CF_4 [(kg CF_4 / t Al) / (mV)] and C_2F_6 [t C_2F_6/ t CF_4] established through continuous or intermittent field measurements. For the determination of those emission factors, the operator shall use the most recent version of the guidance mentioned under Tier 3 of section 4.4.2.4 of the 2006 IPCC Guidelines. The operator shall determine the emission factors with a maximum uncertainty of ± 15 % each.

The operator shall determine the emission factors at least every three years or earlier where necessary due to relevant changes at the installation. Relevant changes shall include a change in the distribution of anode effect duration or a change in the control algorithm affecting the mix of the types of anode effects or the nature of the anode effect termination routine.

Table 2

Technology-specific emission factors related to overvoltage activity data.

Technology	Emission factor for CF_4 [(kg CF_4/t Al) / mV]	Emission factor fo [t C_2F_6/ t CF_4]
Centre Worked Prebake (CWPB)	1,16	0,121
Vertical Stud Søderberg (VSS)	N.A.	0,053

C. Determination of $CO_{2(e)}$ emissions

The operator shall calculate $CO_{2(e)}$ emissions from CF_4 and C_2F_6 emissions as follows, using the global warming potentials listed in Annex VI section 3 Table 6:

PFC emissions [t $CO_{2(e)}$] = CF_4 emissions [t] × GWP_{CF4} + C_2F_6 emissions [t] × GWP_{C2F6}

9. PRODUCTION OF CEMENT CLINKER AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: calcination of limestone in the raw materials, conventional fossil kiln fuels, alternative fossil-based kiln fuels and raw materials, biomass kiln fuels (biomass wastes), non-kiln fuels, non-carbonate carbon content of limestone and shales and raw materials used for waste gas scrubbing.

B. Specific monitoring rules

Emissions from combustion shall be monitored in accordance with section 1 of this Annex. Process emissions from raw meal components shall be monitored in accordance with section 4 of Annex II based on the carbonate content of the process input (calculation Method A) or on the amount of clinker produced (calculation Method B). In case of Method A, carbonates to be taken into account shall at least include $CaCO_3$, $MgCO_3$ and $FeCO_3$. In case of Method B, the operator shall take into account at least CaO and MgO, and shall provide evidence to the competent authority as to which extent further carbon sources have to be taken into account.

CO_2 emissions related to dust removed from the process and non-carbonate carbon in the raw materials shall be added in accordance with subsections C and D of this section.

Calculation Method A: Kiln Input Based

Where cement kiln dust (CKD) and bypass dust leave the kiln system the operator shall not consider the related raw material as process input, but calculate emissions from CKD in accordance with subsection C.

Unless the raw meal is characterised, the operator shall apply the uncertainty requirements for activity data separately to each of the relevant carbon-bearing kiln inputs, avoiding double counting or omissions from returned or by-passed materials. Where activity data is determined based on the clinker produced, the net amount of raw meal may be determined by means of a site-specific empirical raw meal/clinker ratio. That ratio shall be updated at least once per year applying industry best practice guidelines.

Calculation Method B: Clinker Output Based

The operator shall determine activity data as the clinker production [t] over the reporting period in one of the following ways:

(a) by direct weighing of clinker;

(b) based on cement deliveries, by material balance taking into account dispatch of clinker, clinker supplies as well as clinker stock variation, using the following formula:

clinker produced [t] = ((cement deliveries [t] – cement stock variation [t]) × clinker / cement ratio [t clinker / t cement]) – (clinker supplied [t]) + (clinker dispatched [t]) – (clinker stock variation [t]).

The operator shall either derive the clinker / cement ratio for each of the different cement products based on the provisions of Articles 32 to 35 or calculate the ratio from the difference of cement deliveries and stock changes and all materials used as additives to the cement including by-pass dust and cement kiln dust.

By way of derogation from section 4 of Annex II, tier 1 for the emission factor shall be defined as follows:

Tier 1: The operator shall apply an emission factor of 0,525 t CO_2/t clinker.

C. Emissions Related to Discarded Dust

The operator shall add CO_2 emissions, from bypass dust or cement kiln dust (CKD) leaving the kiln system, corrected for a partial calcination ratio of CKD calculated as process emissions in accordance with Article 24(2). By way of derogation from section 4 of Annex II, tiers 1 and 2 for the emission factor shall be defined as follows:

$$\mathrm{EF_{CKD}} = \left(\frac{\mathrm{EF_{Cli}}}{1+\mathrm{EF_{Cli}}} \cdot \mathrm{d}\right) / \left(1 - \frac{\mathrm{EF_{Cli}}}{1+\mathrm{EF_{Cli}}} \cdot \mathrm{d}\right)$$

Tier 1: The operator shall apply an emission factor of 0,525 t CO_2/t dust.

Tier 2: The operator shall determine the emission factor (EF) at least once annually following Articles 32 to 35 and using the following formula:

Where:

EF_{CKD} = Emission factor of partially calcined cement kiln dust [t CO_2/t CKD];

EF_{Cli} = Installation-specific emission factor of clinker [t CO_2/t clinker];

d = Degree of CKD calcination (released CO_2 as % of total carbonate CO_2 in the raw mix).

Tier 3 for the emission factor is not applicable.

D. Emissions from non-carbonate carbon in raw meal

The operator shall determine the emissions from non-carbonate carbon at least from limestone, shale or alternative raw materials (for example, fly ash) used in the raw meal in the kiln in accordance with Article 24(2).

By way of derogation from section 4 of Annex II, the following tier definitions for the emission factor shall apply:

Tier 1: The content of non-carbonate carbon in the relevant raw material shall be estimated using industry best practice guidelines.

Tier 2: The content of non-carbonate carbon in the relevant raw material shall be determined at least annually following the provisions of Article 32 to 35.

By way of derogation from section 4 of Annex II, the following tier definitions for the conversion factor

shall apply:

Tier 1: A conversion factor of 1 shall be applied.

Tier 2: The conversion factor shall be calculated applying industry best practice.

10. PRODUCTION OF LIME OR CALCINATION OF DOLOMITE OR MAGNESITE AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: calcination of limestone, dolomite or magnesite in the raw materials, conventional fossil kiln fuels, alternative fossil-based kiln fuels and raw materials, biomass kiln fuels (biomass wastes) and other fuels.

Where the burnt lime and the CO_2 stemming from the limestone are used for purification processes, such that approximately the same amount of CO_2 is bound again, the decomposition of carbonates as well as the purification process shall not be required to be included separately in the monitoring plan of the installation.

B. Specific monitoring rules

Emissions from combustion shall be monitored in accordance with section 1 of this Annex. Process emissions from raw materials shall be monitored in accordance with section 4 of Annex II. Carbonates of calcium and magnesium shall be always taken into account. Other carbonates and non-carbonate carbon in the raw material shall be taken into account, whenever they are relevant for emission calculation.

For the input based methodology, carbonate content values shall be adjusted for the respective moisture and gangue content of the material. In the case of magnesia production, other magnesium bearing minerals than carbonates must be taken into account, as appropriate.

Double counting or omissions resulting from returned or by-pass material must be avoided. When applying Method B, lime kiln dust shall be considered a separate source stream where relevant.

C. Emissions from non-carbonate carbon in raw materials

The operator shall determine the emissions from non-carbonate carbon at least from limestone, shale or alternative raw materials in the kiln in accordance with Article 24(2).

By way of derogation from section 4 of Annex II, the following tier definitions for the emission factor shall apply:

Tier 1: The content of non-carbonate carbon in the relevant raw material shall be estimated using industry best practice guidelines.

Tier 2: The content of non-carbonate carbon in the relevant raw material shall be determined at least annually following the provisions of Article 32 to 35.

By way of derogation from section 4 of Annex II, the following tier definitions for the conversion factor shall apply:

Tier 1: A conversion factor of 1 shall be applied.

Tier 2: The conversion factor shall be calculated applying industry best practice.

11. MANUFACTURE OF GLASS, GLASS FIBRE OR MINERAL WOOL INSULATION MATERIAL AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall apply the provisions in this section also to installations for the production of water glass and stone/rock wool.

The operator shall include at least the following potential sources of CO_2 emissions: decomposition of alkali- and alkali earth carbonates as the result of melting the raw material, conventional fossil fuels, alternative fossil-based fuels and raw materials, biomass fuels (biomass wastes), other fuels, carbon containing additives including coke, coal dust and graphite, post-combustion of flue gases and flue gas scrubbing.

B. Specific monitoring rules

Emissions from combustion, including flue gas scrubbing, shall be monitored in accordance with section 1 of this Annex. Process emissions from raw materials shall be monitored in accordance with section 4 of Annex II. Carbonates to be taken into account include at least $CaCO_3$, $MgCO_3$, Na_2CO_3, $NaHCO_3$, $BaCO_3$, Li_2CO_3, K_2CO_3, and $SrCO_3$. Only Method A shall be used. Emissions from other process materials including coke, graphite and coal dust shall be monitored in accordance with section 4 of Annex II.

By way of derogation from section 4 of Annex II, the following tier definitions for the emission factor shall apply:

Tier 1: Stoichiometric ratios as listed in section 2 of Annex VI shall be used. The purity of relevant input materials shall be determined by means of industry best practice.

Tier 2: The determination of the amount of relevant carbonates in each relevant input material shall be carried out in accordance with Articles 32 to 35.

For the conversion factor, only tier 1 shall be applicable.

12. MANUFACTURE OF CERAMIC PRODUCTS AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: kiln fuels, calcination of limestone/dolomite and other carbonates in the raw material, limestone and other carbonates for reducing air pollutants and other flue gas cleaning, fossil/biomass additives used to induce porosity including polystyrol, residues from paper production or sawdust, non-carbonate carbon content in the clay and other raw materials.

B. Specific monitoring rules

Emissions from combustion including flue gas scrubbing shall be monitored in accordance with section 1 of this Annex. Process emissions from raw meal components and additives shall be monitored in accordance with section 4 of Annex II. For ceramics based on purified or synthetic clays the operator may use either Method A or Method B. For ceramic products based on unprocessed clays and whenever clays or additives with significant non-carbonate carbon content are used, the operator shall use Method A. Carbonates of calcium shall be always taken into account. Other carbonates and non-carbonate carbon in the raw material shall be taken into account, where they are relevant for emission calculation.

Activity data for input materials for Method A may be determined by a suitable back-calculation based on industry best practice and approved by the competent authority. Such back-calculation shall take into account what metering is available for dried green products or fired products, and appropriate data sources for moisture of clay and additives and annealing loss (loss on ignition) of the materials involved.

By way of derogation from section 4 of Annex II, the following tier definitions for emission factors for process emissions of raw materials containing carbonates shall apply:

Method A (Input based):

Tier 1: A conservative value of 0,2 tonnes $CaCO_3$ (corresponding to 0,08794 tonnes of CO_2) per tonne of dry clay shall be applied for the calculation of the emission factor instead of results of analyses. All inorganic and organic carbon in the clay material shall be considered as included in this value. Additives shall be considered as not included in this value.

Tier 2: An emission factor for each source stream shall be derived and updated at least once per year using industry best practice reflecting site-specific conditions and the product mix of the installation.

Tier 3: The determination of the composition of the relevant raw materials shall be carried out in accordance with Articles 32 to 35. Stoichiometric ratios as listed in section 2 of Annex VI shall be used to convert composition data into emission factors, where relevant.

Method B (Output based):

Tier 1: A conservative value of 0,123 tonnes of CaO (corresponding to 0,09642 tonnes of CO_2) per tonne of product shall be applied for the calculation of the emission factor instead of the results of analyses. All inorganic and organic carbon in the clay material shall be considered as included in this value. Additives shall be considered as not included in this value.

Tier 2: An emission factor shall be derived and updated at least once per year using industry best practice reflecting site-specific conditions and the product mix of the installation.

Tier 3: The determination of the composition of the products shall be carried out in accordance with Articles 32 to 35. Stoichiometric ratios referred to in Annex VI section 2 Table 3 shall be used to convert composition data into emission factors assuming that all of the relevant metal oxides have been derived from respective carbonates, where relevant.

By way of derogation from section 1 of this Annex, for the scrubbing of flue gases the following tier for the emission factor shall apply:

Tier 1: The operator shall apply the stoichiometric ratio of $CaCO_3$ as shown in section 2 of Annex VI.

For scrubbing, no other tier and no conversion factor shall be used. Double counting from used limestone recycled as raw material in the same installation shall be avoided.

13. PRODUCTION OF GYPSUM PRODUCTS AND PLASTER BOARDS AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least CO_2 emissions from all types of combustion activities.

B. Specific monitoring rules

Emissions from combustion shall be monitored in accordance with section 1 of this Annex.

14. PULP AND PAPER PRODUCTION AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential sources of CO_2 emissions: boilers, gas turbines, and other combustion devices producing steam or power, recovery boilers and other devices burning spent pulping liquors, incinerators, lime kilns and calciners, waste gas scrubbing and fuel-fired dryers (such as infrared dryers).

B. Specific monitoring rules

The monitoring of emissions from combustion including flue gas scrubbing shall be carried out in accordance with section 1 of this Annex.

Process emissions from raw materials used as make-up chemicals, including at least limestone or soda ash, shall be monitored by Method A in accordance with section 4 of Annex II. CO_2 emissions from the recovery of limestone sludge in pulp production shall be assumed to be recycled biomass CO_2. Only the amount of CO_2 proportional to the input from make-up chemicals shall be assumed to give rise to fossil CO_2 emissions.

For emissions from make-up chemicals, the following tier definitions for the emission factor shall apply:

Tier 1: Stoichiometric ratios as listed in section 2 of Annex VI shall be used. The purity of relevant input materials shall be determined by means of industry best practice. The derived values shall be adjusted in accordance with the moisture and gangue content of the applied carbonate materials.

Tier 2: The determination of the amount of relevant carbonates in each relevant input material shall be carried out in accordance with Articles 32 to 35. Stoichiometric ratios as listed in section 2 of Annex VI shall be used to convert composition data into emission factors, where relevant.

For the conversion factor, only tier 1 shall be applicable.

15. PRODUCTION OF CARBON BLACK AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least all fuels for combustion and all fuels used as process material as sources for CO_2 emissions.

B. Specific monitoring rules

The monitoring of emissions from carbon black production may be monitored either as a combustion process, including flue gas scrubbing, in accordance with section 1 of this Annex or using a mass balance in accordance with Article 25 and section 3 of Annex II.

16. DETERMINATION OF NITROUS OXIDE (N_2O) EMISSIONS FROM NITRIC ACID, ADIPIC ACID, CAPROLACTAM, GLYOXAL AND GLYOXYLIC ACID PRODUCTION AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

Each operator shall consider for each activity from which N_2O emissions result, all sources emitting N_2O from production processes, including where N_2O emissions from production are channelled through any abatement equipment. This includes any of the following:

(a) nitric acid production – N_2O emissions from the catalytic oxidation of ammonia and/or from the NO_x/N_2O abatement units;

(b) adipic acid production – N_2O emissions including from the oxidation reaction, any direct process venting and/or any emissions control equipment;

(c) glyoxal and glyoxylic acid production – N_2O emissions including from the process reactions, any direct process venting and/or any emissions control equipment;

(d) caprolactam production – N_2O emissions including from the process reactions, any direct process venting and/or any emissions control equipment.

These provisions shall not apply to any N_2O emissions from the combustion of fuels.

B. Determination of N_2O emissions

B.1. *Annual N_2O emissions*

The operator shall monitor emissions of N_2O from nitric acid production using continuous emissions measurement. The operator shall monitor emissions of N_2O from adipic acid, caprolactam, glyoxal and glyoxylic acid production using a measurement-based methodology for abated emissions and a calculation-based method (based on a mass balance methodology) for temporary occurrences of unabated emissions.

For each emission source where continuous emissions measurement is applied, the operator shall consider the total annual emissions to be the sum of all hourly emissions using equation 1 given in section 3 of Annex VIII.

B.2. *Hourly N_2O emissions*

The operator shall calculate annual average hourly N_2O emissions for each source where continuous emission measurement is applied using equation 2 given in section 3 of Annex VIII.

The operator shall determine hourly N_2O concentrations in the flue gas from each emission source using a measurement-based methodology at a representative point, after the NO_x/N_2O abatement equipment, where abatement is used. The operator shall apply techniques capable of measuring N_2O concentrations of all emission sources during both abated and unabated conditions. Where uncertainties increase during such periods, the operator shall take them into account in the uncertainty assessment.

The operator shall adjust all measurements to a dry gas basis where required and report them consistently.

B.3. *Determination of flue gas flow*

The operator shall use the methods for monitoring flue gas flow set out in Article 43(5) of this Regulation for measuring the flue gas flow for N_2O emissions monitoring. For nitric acid production, the operator shall apply the method in accordance with point (a) of Article 43(5) unless it is technically not feasible. In that case and upon approval by the competent authority, the operator shall apply an alternative method, including by a mass balance methodology based on significant parameters such as ammonia input load, or determination of flow by continuous emissions flow measurement.

The flue gas flow shall be calculated in accordance with the following formula:

$V_{flue\ gas\ flow}$ [Nm^3/h] = V_{air} * (1 – $O_{2,\ air}$) / (1 – $O_{2,\ flue\ gas}$)

Where:

V_{air} = Total input air flow in Nm^3/h at standard conditions;

$O_{2,\ air}$ = Volume fraction of O_2 in dry air [= 0,2095];

$O_{2,\ flue\ gas}$ = Volume fraction of O_2 in the flue gas.

The V_{air} shall be calculated as the sum of all air flows entering the nitric acid production unit.

The operator shall apply the following formula, unless stated otherwise in its monitoring plan:

$V_{air} = V_{prim} + V_{sec} + V_{seal}$

Where:

V_{prim} = Primary input air flow in Nm^3/h at standard conditions;

V_{sec} = Secondary input air flow in Nm^3/h at standard conditions;

V_{seal} = Seal input air flow in Nm^3/h at standard conditions.

The operator shall determine V_{prim} by continuous flow measurement before the mixing with ammonia takes place. The operator shall determine V_{sec} by continuous flow measurement, including where the measurement is before the heat recovery unit. For V_{seal} the operator shall consider the purged airflow within the nitric acid production process.

For input air streams accounting for cumulatively less than 2,5 % of the total air flow, the competent authority may accept estimation methods for the determination of that air flow rate proposed by the operator based on industry best practices.

The operator shall provide evidence through measurements under normal operating conditions that the flue gas flow measured is sufficiently homogeneous to allow for the proposed measurement method. Where non-homogeneous flow is confirmed through these measurements, the operator shall take that into account when determining appropriate monitoring methods and when calculating the uncertainty in the N_2O emissions.

The operator shall adjust all measurements to a dry gas basis and report them consistently.

B.4. *Oxygen (O_2) concentrations*

The operator shall measure the oxygen concentrations in the flue gas where necessary for calculating the flue gas flow in accordance with subsection B.3 of this section of Annex IV. In doing so, the operator shall comply with the requirements for concentration measurements within Article 41(1) and (2). In determining the uncertainty of N_2O emissions, the operator shall take the uncertainty of O_2 concentration measurements into account.

The operator shall adjust all measurements to a dry gas basis where required and report them consistently.

B.5. *Calculation of N_2O emissions*

For specific periods of unabated emissions of N_2O from adipic acid, caprolactam, glyoxal and glyoxylic acid production, including unabated emissions from venting for safety reasons and when abatement plant fails, and where continuous emissions monitoring of N_2O is technically not feasible, the operator shall subject to the approval of the specific methodology by the competent authority calculate N_2O emissions using a mass balance methodology. For this purpose the overall uncertainty shall be similar to the result of applying the tier requirements of Article 41(1) and (2). The operator shall base the calculation method

on the maximum potential emission rate of N_2O from the chemical reaction taking place at the time and the period of the emission.

The operator shall take the uncertainty in any calculated emissions for a specific emission source into account in determining the annual average hourly uncertainty for the emission source.

B.6. *Determination of activity production rates*

Production rates shall be calculated using daily production reports and hours of operation.

B.7. *Sampling rates*

Valid hourly averages or averages for shorter reference periods shall be calculated in accordance with Article 44 for:

(a) concentration of N_2O in the flue gas;

(b) total flue gas flow where this is measured directly and where required;

(c) all gas flows and oxygen concentrations necessary to determine the total flue gas flow indirectly.

C. Determination of annual CO_2 equivalent – $CO_{2(e)}$

The operator shall convert the total annual N_2O emissions from all emissions sources, measured in tonnes to three decimal places, to annual $CO_{2(e)}$ in rounded tonnes, using the following formula and the GWP values in Annex VI section 3:

$$CO_{2(e)}\ [t] = N_2O_{annual}[t] \times GWP_{N2O}$$

Where:

N_2O_{annual} = total annual N_2O emissions, calculated according to equation 1 given in section 3 of Annex VIII.

The total annual $CO_{2(e)}$ generated by all emission sources and any direct CO_2 emissions from other emission sources included under the greenhouse gas permit shall be added to the total annual CO_2 emissions generated by the installation and shall be used for reporting and surrendering allowances.

Total annual emissions of N_2O shall be reported in tonnes to three decimal places and as $CO_{2(e)}$ in rounded tonnes.

17. PRODUCTION OF AMMONIA AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential emission sources for CO_2 emissions: combustion of fuels supplying the heat for reforming or partial oxidation, fuels used as process input in the ammonia production process (reforming or partial oxidation), fuels used for other combustion processes including for the purpose of producing hot water or steam.

B. Specific monitoring rules

For monitoring of emissions from combustion processes and from fuels used as process inputs, the standard methodology in accordance with Article 24 and section 1 of this Annex shall be applied.

Where CO_2 from ammonia production is used as feedstock for the production of urea or other chemicals, or transferred out of the installation for any use not covered by Article 49(1), the related amount of CO_2 shall be considered as emitted by the installation producing the CO_2.

18. PRODUCTION OF BULK ORGANIC CHEMICALS AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall take into account at least the following sources of CO_2 emissions: cracking (catalytic and non-catalytic), reforming, partial or full oxidation, similar processes which lead to CO_2 emissions from carbon contained in hydrocarbon based feedstock, combustion of waste gases and flaring, and the burning of fuel in other combustion processes.

B. Specific monitoring rules

Where the production of bulk organic chemicals is technically integrated in a mineral oil refinery, the operator of that installation shall apply the relevant provisions of section 2 of this Annex.

Notwithstanding the first subparagraph, the operator shall monitor emissions from combustion processes where the fuels used do not take part in or stem from chemical reactions for the production of bulk organic chemicals using the standard methodology in accordance with Article 24 and section 1 of this Annex. In all other cases, the operator may choose to monitor the emissions from bulk organic chemicals production by mass balance methodology in accordance with Article 25 or the standard methodology in accordance with Article 24. Where using the standard methodology, the operator shall provide evidence to the competent authority that the chosen methodology covers all relevant emissions that would also be covered by a mass-balance methodology.

For the determination of the carbon content under Tier 1, the reference emission factors as listed in Table 5 in Annex VI shall be applied. For substances not listed in Table 5 of Annex VI or other provisions of this Regulation, the operator shall calculate the carbon content from the stoichiometric carbon content in the pure substance and the concentration of the substance in the input or output stream.

19. PRODUCTION OF HYDROGEN AND SYNTHESIS GAS AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The operator shall include at least the following potential emission sources for CO_2 emissions: fuels used in the hydrogen or synthesis gas production process (reforming or partial oxidation), and fuels used for other combustion processes including for the purpose of producing hot water or steam. Synthesis gas produced shall be considered as source stream under the mass balance methodology.

B. Specific monitoring rules

For monitoring of emissions from combustion processes and from fuels used as process inputs in hydrogen production, the standard methodology in accordance with Article 24 and section 1 of this Annex shall be used.

For the monitoring of emissions from the production of synthesis gas, a mass balance in accordance with Article 25 shall be used. For emissions from separate combustion processes, the operator may choose to include them in the mass balance or to use the standard methodology in accordance with Article 24 at least for a part of the source streams, avoiding any gaps or double counting of emissions.

Where hydrogen and synthesis gas are produced at the same installation, the operator shall calculate CO_2 emissions using either separate methodologies for hydrogen and for synthesis gas as outlined in the first

two paragraphs of this subsection, or using one common mass balance.

20. PRODUCTION OF SODA ASH AND SODIUM BICARBONATE AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC

A. Scope

The emission sources and source streams for CO_2 emissions from installations for the production of soda ash and sodium bicarbonate shall include:

(a) fuels used for combustion processes, including fuels used for the purpose of producing hot water or steam;

(b) raw materials, including vent gas from calcination of limestone, to the extent it is not used for carbonation;

(c) waste gases from washing or filtration steps after carbonation, to the extent it is not used for carbonation.

B. Specific monitoring rules

For the monitoring of emissions from the production of soda ash and sodium bicarbonate, the operator shall use a mass balance in accordance with Article 25. For emissions from combustion processes, the operator may choose to include them in the mass balance or to use the standard methodology in accordance with Article 24 at least for a part of the source streams, avoiding any gaps or double counting of emissions.

Where CO_2 from the production of soda ash is used for the production of sodium bicarbonate, the amount of CO_2 used for producing sodium bicarbonate from soda ash shall be considered as emitted by the installation producing the CO_2.

21. DETERMINATION OF GREENHOUSE GAS EMISSIONS FROM CO_2 CAPTURE ACTIVITIES FOR THE PURPOSES OF TRANSPORT AND GEOLOGICAL STORAGE IN A STORAGE SITE PERMITTED UNDER DIRECTIVE 2009/31/EC

A. Scope

CO_2 capture shall be performed either by a dedicated installation receiving CO_2 by transfer from one or more other installations, or by the same installation carrying out the activities producing the captured CO_2 under the same greenhouse gas emissions permit. All parts of the installation related to CO_2 capture, intermediate storage, transfer to a CO_2 transport network or to a site for geological storage of CO_2 greenhouse gas emissions shall be included in the greenhouse gas emissions permit and accounted for in the associated monitoring plan. In the case of the installation carrying out other activities covered by Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the emissions of those activities shall be monitored in accordance with the other relevant sections of this Annex.

The operator of a CO_2 capture activity shall at least include the following potential sources of CO_2 emission:

(a) CO_2 transferred to the capture installation;

(b) combustion and other associated activities at the installation that are related to the capture activity, including fuel and input material use.

B. Quantification of transferred and emitted CO2 amounts

B.1. Installation level quantification

Each operator shall calculate the emissions by taking into account the potential CO_2 emissions from all emission relevant processes at the installation, as well as the amount of CO_2 captured and transferred to the transport network, using the following formula:

$E_{capture\ installation} = T_{input} + E_{without\ capture} - T_{for\ storage}$

Where:

$E_{capture\ installation}$ = Total greenhouse gas emissions of the capture installation;

T_{input} = Amount of CO_2 transferred to the capture installation, determined in accordance with Article 40 to 46 and Article 49.

$E_{without\ capture}$ = Emissions of the installation assuming the CO_2 were not captured, meaning the sum of the emissions from all other activities at the installation, monitored in accordance with relevant sections of Annex IV;

$T_{for\ storage}$ = Amount of CO_2 transferred to a transport network or a storage site, determined in accordance with Article 40 to 46 and Article 49.

In cases where CO_2 capture is carried out by the same installation as the one from which the captured CO_2 originates, the operator shall use zero for T_{input}.

In cases of stand-alone capture installations, the operator shall consider $E_{without\ capture}$ to represent the amount of emissions that occur from other sources than the CO_2 transferred to the installation for capture. The operator shall determine those emissions in accordance with this Regulation.

In the case of stand-alone capture installations, the operator of the installation transferring CO_2 to the capture installation shall deduct the amount T_{input} from the emissions of its installation in accordance with Article 49.

B.2. *Determination of transferred CO_2*

Each operator shall determine the amount of CO_2 transferred from and to the capture installation in accordance with Article 49 by means of measurement methodologies carried out in accordance with Articles 40 to 46.

Only where the operator of the installation transferring CO_2 to the capture installation demonstrates to the satisfaction of the competent authority that CO_2 transferred to the capture installation is transferred in total and to at least equivalent accuracy, may the competent authority allow that operator to use a calculation-based methodology in accordance with Article 24 or 25 to determine the amount T_{input} instead of a measurement-based methodology in accordance with Article 40 to 46 and Article 49.

22. DETERMINATION OF GREENHOUSE GAS EMISSIONS FROM THE TRANSPORT OF CO_2 BY PIPELINES FOR GEOLOGICAL STORAGE IN A STORAGE SITE PERMITTED UNDER DIRECTIVE 2009/31/EC

A. Scope

The boundaries for monitoring and reporting emissions from CO_2 transport by pipeline shall be laid down in the transport network›s greenhouse gas emissions permit, including all ancillary plant functionally connected to the transport network, including booster stations and heaters. Each transport network shall have a minimum of one start point and one end point, each connected to other installations carrying out

one or more of the activities: capture, transport or geological storage of CO_2. Start and end points may include bifurcations of the transport network and cross national borders. Start and end points as well as the installations they are connecting to, shall be laid down in the greenhouse gas emissions permit.

Each operator shall consider at least the following potential emission sources for CO_2 emissions: combustion and other processes at installations functionally connected to the transport network including booster stations; fugitive emissions from the transport network; vented emissions from the transport network; and emissions from leakage incidents in the transport network.

B. Quantification Methodologies for CO_2

The operator of transport networks shall determine emissions using one of the following methods:

(a) Method A (overall mass balance of all input and output streams) set out in subsection B.1;

(b) Method B (monitoring of emission sources individually) set out in subsection B.2.

In choosing either Method A or Method B, each operator shall demonstrate to the competent authority that the chosen methodology will lead to more reliable results with lower uncertainty of the overall emissions, using best available technology and knowledge at the time of the application for the greenhouse gas emissions permit and approval of the monitoring plan, without incurring unreasonable costs. Where Method B is chosen each operator shall demonstrate to the satisfaction of the competent authority that the overall uncertainty for the annual level of greenhouse gas emissions for the operator's transport network does not exceed 7,5 %.

The operator of a transport network using Method B shall not add CO_2 received from another installation permitted in accordance with Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** to its calculated level of emissions, and shall not subtract from its calculated level of emissions any CO_2 transferred to another installation permitted in accordance with Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Each operator of a transport network shall use Method A for the validation of the results of Method B at least once annually. For that validation, the operator may use lower tiers for the application of Method A.

B.1. Method A

Each operator shall determine emissions in accordance with the following formula:

$$\text{Emissions}\,[\text{t CO}_2] = \text{E}_{\text{own activity}} + \sum_{\text{i}} \text{T}_{\text{IN,i}} - \sum_{\text{i}} \text{T}_{\text{OUT,i}}$$

Where:

Emissions = Total CO_2 emissions of the transport network [t CO_2];

$E_{own\ activity}$ = Emissions from the transport network›s own activity, meaning not emissions stemming from the CO_2 transported, but including emissions from fuel used in booster stations, monitored in accordance with the relevant sections of Annex IV;

$T_{IN,i}$ = Amount of CO_2 transferred to the transport network at entry point *i*, determined in accordance with Articles 40 to 46 and Article 49.

$T_{OUT,i}$ = Amount of CO_2 transferred out of the transport network at exit point *i*, determined in accordance with Articles 40 to 46 and Article 49.

B.2. Method B

Each operator shall determine emissions considering all processes relevant to emissions at the installation as well as the amount of CO_2 captured and transferred to the transport facility using the following formula:

Emissions [t CO_2] = $CO_{2\ fugitive}$ + $CO_{2\ vented}$ + $CO_{2\ leakage\ events}$ + $CO_{2\ installations}$

Where:

Emissions = Total CO_2 emissions of the transport network [t CO_2];

$CO_{2\ fugitive}$ = Amount of fugitive emissions [t CO_2] from CO_2 transported in the transport network, including from seals, valves, intermediate compressor stations and intermediate storage facilities;

$CO_{2\ vented}$ = Amount of vented emissions [t CO_2] from CO_2 transported in the transport network;

$CO_{2\ leakage\ events}$ = Amount of CO_2 [t CO_2] transported in the transport network, which is emitted as the result of the failure of one or more components of the transport network;

$CO_{2\ installations}$ = Amount of CO_2 [t CO_2] being emitted from combustion or other processes functionally connected to the pipeline transport in the transport network, monitored in accordance with the relevant sections of Annex IV.

B.2.1. *Fugitive emissions from the transport network*

The operator shall consider fugitive emissions from any of the following types of equipment:

(a) seals;

(b) measurement devices;

(c) valves;

(d) intermediate compressor stations;

(e) intermediate storage facilities.

The operator shall determine average emission factors *EF* (expressed in g CO_2/unit time) per piece of equipment per occurrence where fugitive emissions can be anticipated at the beginning of operation, and by the end of the first reporting year in which the transport network is in operation at the latest. The operator shall review those factors at least every 5 years in the light of the best available techniques and knowledge.

The operator shall calculate fugitive emissions by multiplying the number of pieces of equipment in each category by the emission factor and adding up the results for the single categories as shown in the following equation:

$$\text{Fugitive Em}\,[\text{t CO}_2] = \left(\sum_{\text{Category}} \text{EF}\,[\text{g CO}_2/\text{occurr}] \cdot \text{N}_{\text{occurr}} \right) /10^6$$

The number of occurrences (N_{occurr}) shall be the number of pieces of the given equipment per category, multiplied by the number of time units per year.

B.2.2. *Emissions from leakage events*

The operator of a transport network shall provide evidence of the network integrity by using representative (spatial and time-related) temperature and pressure data. Where the data indicates that a leakage has occurred, the operator shall calculate the amount of CO_2 leaked with a suitable methodology documented in the monitoring plan, based on industry best practice guidelines, including by use of the differences in temperature and pressure data compared to integrity related average pressure and temperature values.

B.2.3. *Vented emissions*

Each operator shall provide in the monitoring plan an analysis regarding potential situations of venting emissions, including for maintenance or emergency reasons, and provide a suitable documented methodology for calculating the amount of CO_2 vented, based on industry best practice guidelines.

23. GEOLOGICAL STORAGE OF CO_2 IN A STORAGE SITE PERMITTED UNDER DIRECTIVE 2009/31/EC

A. Scope

The competent authority shall base the boundaries for monitoring and reporting of emissions from geological storage of CO_2 on the delimitation of the storage site and storage complex as specified in the permit pursuant to Directive 2009/31/EC. Where leakages from the storage complex are identified and lead to emissions or release of CO_2 into the water column, the operator shall immediately carry out all of the following:

(a) notify the competent authority;

(b) include the leakage as an emission source for the respective installation;

(c) monitor and report the emissions.

Only when corrective measures in accordance with Article 16 of Directive 2009/31/EC have been taken and emissions or release into the water column from that leakage can no longer be detected shall the operator delete the respective leakage as emission source from the monitoring plan and no longer monitor and report those emissions.

Each operator of a geological storage activity shall consider at least the following potential emission sources for CO_2 overall: fuel use by associated booster stations and other combustion activities including on-site power plants; venting from injection or enhanced hydrocarbon recovery operations; fugitive emissions from injection; breakthrough CO_2 from enhanced hydrocarbon recovery operations; and leakages.

B. Quantification of CO_2 emissions

The operator of the geological storage activity shall not add CO_2 received from another installation to its calculated level of emissions, and shall not subtract from its calculated level of emissions any CO_2 which is geologically stored in the storage site or which is transferred to another installation.

B.1. *Vented and fugitive emissions from injection*

The operator shall determine emissions from venting and fugitive emissions as follows:

CO_2 emitted [t CO_2] = V CO_2 [t CO_2] + F CO_2 [t CO_2]

Where:

V CO_2 = amount of CO_2 vented;

F CO_2 = amount of CO_2 from fugitive emissions.

Each operator shall determine V CO_2 using measurement-based methodologies in accordance with Articles 41 to 46 of this Regulation. By way of derogation from the first sentence and upon approval by the competent authority, the operator may include in the monitoring plan an appropriate methodology for determining V CO_2 based on industry best practice, where the application of measurement-based methodologies would incur unreasonable costs.

The operator shall consider F CO_2 as one source, meaning that the uncertainty requirements associated with the tiers in accordance with section 1 of Annex VIII are applied to the total value instead of the individual emission points. Each operator shall provide in the monitoring plan an analysis regarding potential sources of fugitive emissions, and provide a suitable documented methodology to calculate or measure the amount of F CO_2, based on industry best practice guidelines. For the determination of F CO_2 the operator may use data collected in accordance with Article 32 to 35 and Annex II(1.1)(e) to (h) of Directive 2009/31/EC for the injection facility, where they comply with the requirements of this Regulation.

B.2. ***Vented and fugitive emissions from enhanced hydrocarbon recovery operations***

Each operator shall consider the following potential additional emission sources from enhanced hydrocarbon recovery (EHR):

(a) the oil-gas separation units and gas recycling plant, where fugitive emissions of CO_2 could occur;

(b) the flare stack, where emissions might occur due to the application of continuous positive purge systems and during depressurisation of the hydrocarbon production installation;

(c) the CO_2 purge system, to avoid high concentrations of CO_2 extinguishing the flare.

Each operator shall determine fugitive emissions or vented CO_2 in accordance with subsection B.1 of this section of Annex IV.

Each operator shall determine emissions from the flare stack in accordance with subsection D of section 1 of this Annex, taking into account potential inherent CO_2 in the flare gas in accordance with Article 48.

B.3. ***Leakage from the storage complex***

Emissions and release to the water column shall be quantified as follows:

$$\mathrm{CO_2 emitted\,[t\,CO_2]} = \sum_{T_{Start}}^{T_{End}} \mathrm{L\,CO_2\,[t\,CO_2/d]}$$

Where:

L CO_2 = the mass of CO_2 emitted or released per calendar day due to the leakage in accordance with all of the following:

(a) for each calendar day for which leakage is monitored, each operator shall calculate L CO_2 as the average of the mass leaked per hour [t CO_2/h] multiplied by 24;

(b) each operator shall determine the mass leaked per hour in accordance with the provisions in the approved monitoring plan for the storage site and the leakage;

(c) for each calendar day prior to commencement of monitoring, the operator shall take the mass leaked per day to equal the mass leaked per day for the first day of monitoring ensuring no under-estimation occurs;

T_{start} = the latest of:

(a) the last date when no emissions or release of CO_2 into the water column from the source under consideration were reported;

(b) the date the CO_2 injection started;

(c) another date such that there is evidence demonstrating to the satisfaction of the competent authority that the emission or release into the water column cannot have started before that date.

T_{end} = the date by which corrective measures in accordance with Article 16 of Directive 2009/31/EC have been taken and emissions or release of CO_2 into the water column can no longer be detected.

The competent authority shall approve and allow the use of other methods for the quantification of emissions or release of CO_2 into the water column from leakages where the operator can show to the satisfaction of the competent authority that such methods lead to a higher accuracy than the methodology set out in this subsection.

The operator shall quantify the amount of emissions leaked from the storage complex for each of the leakage events with a maximum overall uncertainty over the reporting period of 7,5 %. Where the overall uncertainty of the applied quantification methodology exceeds 7,5 %, each operator shall apply an adjustment, as follows:

$$CO_{2,Reported}\ [t\ CO_2] = CO_{2,Quantified}\ [t\ CO_2] \times (1 + (Uncertainty_{System}\ [\%]/100) - 0{,}075)$$

Where:

$CO_{2,Reported}$ = the amount of CO_2 to be included in the annual emission report with regards to the leakage event in question;

$CO_{2,Quantified}$ = the amount of CO_2 determined through the used quantification methodology for the leakage event in question;

$Uncertainty_{System}$ = the level of uncertainty associated with the quantification methodology used for the leakage event in question.

ANNEX V

Minimum tier requirements for calculation-based methodologies involving category A installations and calculation factors for commercial standard fuels used by category B and C installations (Article 26(1))

Table 1

Minimum tiers to be applied for calculation-based methodologies in the case of category A installations and in the case of calculation factors for commercial standard fuels for all installations in accordance with point (a) of Article 26(1)

Activity/Source stream type	Activity data		Emission factor (*1)	Composition data (carbon content) (*1)	Oxidation factor	Conversion factor
	Amount of fuel or material	Net calorific value				
Combustion of fuels						
Commercial standard fuels	2	2a/2b	2a/2b	n.a.	1	n.a.
Other gaseous and liquid fuels	2	2a/2b	2a/2b	n.a.	1	n.a.
Solid fuels	1	2a/2b	2a/2b	n.a.	1	n.a.
Mass balance methodology for Gas Processing Terminals	1	n.a.	n.a.	1	n.a.	n.a.
Flares	1	n.a.	1	n.a.	1	n.a.
Scrubbing (carbonate)	1	n.a.	1	n.a.	n.a.	1
Scrubbing (gypsum)	1	n.a.	1	n.a.	n.a.	1
Scrubbing (urea)	1	1	1	n.a.	1	n.a.
Refining of mineral oil						
Catalytic cracker regeneration	1	n.a.	n.a.	n.a.	n.a.	n.a.
Production of coke						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Fuel as process input	1	2	2	n.a.	n.a.	n.a.
Metal ore roasting and sintering						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Carbonate input	1	n.a.	1	n.a.	n.a.	1
Production of iron and steel						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Fuel as process input	1	2a/2b	2	n.a.	n.a.	n.a.

Production or processing of ferrous and non-ferrous metals, including secondary aluminium						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Process emissions	1	n.a.	1	n.a.	n.a.	1
Primary aluminium production						
Mass balance for CO_2 emissions	1	n.a.	n.a.	2	n.a.	n.a.
PFC emissions (slope method)	1	n.a.	1	n.a.	n.a.	n.a.
PFC emissions (over-voltage method)	1	n.a.	1	n.a.	n.a.	n.a.
Production of cement clinker						
Kiln input based (Method A)	1	n.a.	1	n.a.	n.a.	1
Clinker output (Method B)	1	n.a.	1	n.a.	n.a.	1
CKD	1	n.a.	1	n.a.	n.a.	n.a.
Non-carbonate carbon input	1	n.a.	1	n.a.	n.a.	1
Production of lime and calcination of dolomite and magnesite						
Carbonates (Method A)	1	n.a.	1	n.a.	n.a.	1
Other process inputs	1	n.a.	1	n.a.	n.a.	1
Alkali earth oxide (Method B)	1	n.a.	1	n.a.	n.a.	1
Manufacture of glass and mineral wool						
Carbonate inputs	1	n.a.	1	n.a.	n.a.	n.a.
Other process inputs	1	n.a.	1	n.a.	n.a.	1
Manufacture of ceramic products						
Carbon inputs (Method A)	1	n.a.	1	n.a.	n.a.	1
Other process inputs	1	n.a.	1	n.a.	n.a.	1
Alkali oxide (Method B)	1	n.a.	1	n.a.	n.a.	1
Scrubbing	1	n.a.	1	n.a.	n.a.	n.a.
Production of gypsum and plasterboard: see combustion of fuels						
Production of pulp and paper						
Make up chemicals	1	n.a.	1	n.a.	n.a.	n.a.
Production of carbon black						
Mass balance methodology	1	n.a.	n.a.	1	n.a.	n.a.

Production of ammonia						
Fuel as process input	2	2a/2b	2a/2b	n.a.	n.a.	n.a.
Production of bulk organic chemicals						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Production of hydrogen and synthesis gas						
Fuel as process input	2	2a/2b	2a/2b	n.a.	n.a.	n.a.
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.
Production of soda ash and sodium bicarbonate						
Mass balance	1	n.a.	n.a.	2	n.a.	n.a.

(*1) Tiers for the emission factor relate to the preliminary emission factor, and carbon content relates to the total carbon content. For mixed materials, the biomass fraction must be determined separately. Tier 1 shall be the minimum tier to be applied for the biomass fraction in the case of category A installations and in the case of commercial standard fuels for all installations in accordance with point (a) of Article 26(1).

('n.a.' means 'not applicable')

ANNEX VI

Reference values for calculation factors (Article 31(1)(a))

1. FUEL EMISSION FACTORS RELATED TO NET CALORIFIC VALUES (NCV)

Table 1

Fuel emission factors related to net calorific value (NCV) and net calorific values per mass of fuel.

Fuel type description	Emission factor (t CO_2/TJ)	Net calorific value (TJ/Gg)	Source
Crude oil	73,3	42,3	IPCC 2006 GL
Orimulsion	77,0	27,5	IPCC 2006 GL
Natural gas liquids	64,2	44,2	IPCC 2006 GL
Motor gasoline	69,3	44,3	IPCC 2006 GL
Kerosene (other than jet kerosene)	71,9	43,8	IPCC 2006 GL
Shale oil	73,3	38,1	IPCC 2006 GL
Gas/Diesel oil	74,1	43,0	IPCC 2006 GL
Residual fuel oil	77,4	40,4	IPCC 2006 GL
Liquefied petroleum gases	63,1	47,3	IPCC 2006 GL
Ethane	61,6	46,4	IPCC 2006 GL
Naphtha	73,3	44,5	IPCC 2006 GL
Bitumen	80,7	40,2	IPCC 2006 GL
Lubricants	73,3	40,2	IPCC 2006 GL
Petroleum coke	97,5	32,5	IPCC 2006 GL
Refinery feedstocks	73,3	43,0	IPCC 2006 GL
Refinery gas	57,6	49,5	IPCC 2006 GL
Paraffin waxes	73,3	40,2	IPCC 2006 GL
White spirit and SBP	73,3	40,2	IPCC 2006 GL
Other petroleum products	73,3	40,2	IPCC 2006 GL
Anthracite	98,3	26,7	IPCC 2006 GL
Coking coal	94,6	28,2	IPCC 2006 GL
Other bituminous coal	94,6	25,8	IPCC 2006 GL
Sub-bituminous coal	96,1	18,9	IPCC 2006 GL
Lignite	101,0	11,9	IPCC 2006 GL
Oil shale and tar sands	107,0	8,9	IPCC 2006 GL
Patent fuel	97,5	20,7	IPCC 2006 GL
Coke oven coke and lignite coke	107,0	28,2	IPCC 2006 GL
Gas coke	107,0	28,2	IPCC 2006 GL
Coal tar	80,7	28,0	IPCC 2006 GL

Gas works gas	44,4	38,7	IPCC 2006 GL
Coke oven gas	44,4	38,7	IPCC 2006 GL
Blast furnace gas	260	2,47	IPCC 2006 GL
Oxygen steel furnace gas	182	7,06	IPCC 2006 GL
Natural gas	56,1	48,0	IPCC 2006 GL
Industrial wastes	143	n.a.	IPCC 2006 GL
Waste oils	73,3	40,2	IPCC 2006 GL
Peat	106,0	9,76	IPCC 2006 GL
Wood/wood waste	—	15,6	IPCC 2006 GL
Other primary solid biomass	—	11,6	IPCC 2006 GL (only NCV)
Charcoal	—	29,5	IPCC 2006 GL (only NCV)
Biogasoline	—	27,0	IPCC 2006 GL (only NCV)
Biodiesels	—	27,0	IPCC 2006 GL (only NCV)
Other liquid biofuels	—	27,4	IPCC 2006 GL (only NCV)
Landfill gas	—	50,4	IPCC 2006 GL (only NCV)
Sludge gas	—	50,4	IPCC 2006 GL (only NCV)
Other biogas	—	50,4	IPCC 2006 GL (only NCV)
Waste tyres	85,0 (1)	n.a.	WBCSD CSI
Carbon monoxide	155,2 (2)	10,1	J. Falbe and M. Regitz, Römpp Chemie Lexikon, Stuttgart, 1995
Methane	54,9 (2)	50,0	J. Falbe and M. Regitz, Römpp Chemie Lexikon, Stuttgart, 1995

(1) This value is the preliminary emission factor, i.e. before application of a biomass fraction, if applicable.

(2) Based on NCV of 10,12 TJ/t

(3)Based on NCV of 50,01 TJ/t

2. EMISSION FACTORS RELATED TO PROCESS EMISSIONS

Table 2

Stoichiometric emission factor for process emissions from carbonate decomposition (Method A)

Carbonate	**Emission factor [t CO_2/ t Carbonate]**
$CaCO_3$	0,440
$MgCO_3$	0,522
Na_2CO_3	0,415
$BaCO_3$	0,223
Li_2CO_3	0,596
K_2CO_3	0,318
$SrCO_3$	0,298
$NaHCO_3$	0,524
$FeCO_3$	0,380
General	Emission factor = $[M(CO_2)] / \{Y * [M(x)] + Z * [M(CO_3^{2-})]\}$ X = metal M(x) = molecular weight of X in [g/mol] $M(CO_2)$ = molecular weight of CO_2 in [g/mol] $M(CO_3^{2-})$ = molecular weight of CO_3^{2-} in [g/mol] Y = stoichiometric number of X Z = stoichiometric number of CO_3^{2-}

Table 3

Stoichiometric emission factor for process emissions from carbonate decomposition based on alkali earth oxides (Method B)

Oxide	**Emission factor [t CO_2/ t Oxide]**
CaO	0,785
MgO	1,092
BaO	0,287
General: X_YO_Z	Emission factor = [M(CO_2)] / {Y * [M(x)] + Z * [M(O)]} X = alkali earth or alkali metal M(x) = molecular weight of X in [g/mol] M(CO_2) = molecular weight of CO_2 [g/mol] M(O) = molecular weight of O [g/mol] Y Ystoichiometric number of X= 1 (for alkali earth metals)= 2 (for alkali metals) stoichiometric number of X = 1 (for alkali earth metals) = 2 (for alkali metals) Z = stoichiometric number of O = 1

Table 4

Emission factors for process emissions from other process materials (production of iron and steel, and processing of ferrous metals)

Input or output material	**Carbon content (t C/t)**	**Emission factor (t CO_2/t)**
Direct reduced iron (DRI)	0,0191	0,07
EAF carbon electrodes	0,8188	3,00
EAF charge carbon	0,8297	3,04
Hot briquetted iron	0,0191	0,07
Oxygen steel furnace gas	0,3493	1,28
Petroleum coke	0,8706	3,19
Pig iron	0,0409	0,15
Iron / iron scrap	0,0409	0,15
Steel / steel scrap	0,0109	0,04
([1])IPCC 2006 Guidelines for National Greenhouse Gas Inventories		

Table 5

Stoichiometric emission factors for process emissions from other process materials (Bulk organic chemicals)

Substance	**Carbon content (t C/t)**	**Emission factor (t CO_2 / t)**
Acetonitril	0,5852	2,144
Acrylonitrile	0,6664	2,442
Butadiene	0,888	3,254
Carbon black	0,97	3,554
Ethylene	0,856	3,136
Ethylene dichloride	0,245	0,898
Ethylene glycol	0,387	1,418
Ethylene oxide	0,545	1,997
Hydrogen cyanide	0,4444	1,628
Methanol	0,375	1,374
Methane	0,749	2,744
Propane	0,817	2,993
Propylene	0,8563	3,137
Vinyl chloride monomer	0,384	1,407
([1])IPCC 2006 Guidelines for National Greenhouse Gas Inventories		

3. GLOBAL WARMING POTENTIALS FOR NON-CO_2 GREENHOUSE GASES

Table 6

Global warming potentials

Gas	**Global warming potential**
N_2O	265 t $CO_{2(e)}$/t N_2O
CF_4	6 630 t $CO_{2(e)}$/t CF_4
C_2F_6	11 100 t $CO_{2(e)}$/t C_2F_6

ANNEX VII

Minimum frequency of analyses (Article 35)

Fuel/material	Minimum frequency of analyses
Natural gas	At least weekly
Other gases, in particular synthesis gas and process gases such as refinery mixed gas, coke oven gas, blast-furnace gas, convertor gas, oilfield and gasfield gas	At least daily — using appropriate procedures at different parts of the day
Fuel oils (for example light, medium, heavy fuel oil, bitumen)	Every 20 000 tonnes of fuel and at least six times a year
Coal, coking coal, coke, petroleum coke, peat	Every 20 000 tonnes of fuel/material and at least six times a year
Other fuels	Every 10 000 tonnes of fuel and at least four times a year
Untreated solid waste (pure fossil or mixed biomass/fossil)	Every 5 000 tonnes of waste and at least four times a year
Liquid waste, pre-treated solid waste	Every 10 000 tonnes of waste and at least four times a year
Carbonate minerals (including limestone and dolomite)	Every 50 000 tonnes of material and at least four times a year
Clays and shales	Amounts of material corresponding to 50 000 tonnes of CO_2 and at least four times a year
Other materials (primary, intermediate and final product)	Depending on the type of material and the variation, amounts of material corresponding to 50 000 tonnes of CO_2 and at least four times a year

ANNEX VIII
Measurement-based methodologies (Article 41)

1. TIER DEFINITIONS FOR MEASUREMENT-BASED METHODOLOGIES

Measurement-based methodologies shall be approved in accordance with tiers with the following maximum permissible uncertainties for the annual average hourly emissions calculated in accordance with Equation 2 set out in section 3 of this Annex.

Table 1

Tiers for CEMS (maximum permissible uncertainty for each tier)

	Tier 1	Tier 2	Tier 3	Tier 4
CO_2 emission sources	± 10 %	± 7,5 %	± 5 %	± 2,5 %
N_2O emission sources	± 10 %	± 7,5 %	± 5 %	N.A.
CO_2 transfer	± 10 %	± 7,5 %	± 5 %	± 2,5 %

2. MINIMUM TIER REQUIREMENTS FOR CATEGORY A INSTALLATIONS

Table 2

Minimum tiers to be applied by category A installations for measurement-based methodologies in accordance with point (a) of Article 41(1)

Greenhouse gas	Minimum tier level required
CO_2	2
N_2O	2

3. DETERMINATION OF GHGS USING MEASUREMENT-BASED METHODOLOGIES

Equation 1: Calculation of annual emissions in accordance with Article 43(1):

$$\mathrm{GHG\,Em_{total}\,[t]} = \sum_{i=1}^{\mathrm{HoursOp}} \mathrm{GHG\,conc_{hourly,i}} \cdot \mathrm{V_{hourly,i}} \cdot 10^{-6}\,[\mathrm{t/g}]$$

Equation 2: Determination of average hourly emissions:

$$\mathrm{GHG\,Em_{average}\,[kg/h]} = \frac{\mathrm{GHG\,Em_{total}}}{\mathrm{HoursOp}} \cdot 10^{3}\,[\mathrm{kg/t}]$$

Equation 2a: Determination of average hourly GHG concentration for the purpose of reporting in accordance with point 9(b) of Annex X, section 1:

$$\mathrm{GHG\,conc_{average}}\,[\mathrm{g/Nm^3}] = \frac{\mathrm{GHG\,Em_{total}}}{\sum_{i=1}^{\mathrm{HoursOp}} \mathrm{V_{hourly,i}}} \cdot 10^{6}\,[\mathrm{g/t}]$$

Equation 2b: Determination of average hourly flue gas flow for the purpose of reporting in accordance with point 9(b) of Annex X, section 1:

$$\mathrm{Flow_{average}}\ [\mathrm{Nm^3/h}] = \frac{\sum_{i=1}^{\mathrm{HoursOp}} \mathrm{V_{hourly,i}}}{\mathrm{HoursOp}}$$

Equation 2c: Calculation of annual emissions for the purpose of the annual emission report in accordance with point 9(b) of Annex X, section 1:

$$\mathrm{GHG\ Em_{total}}\ [\mathrm{t}] = \mathrm{GHG\ conc_{average}} \cdot \mathrm{Flow_{average}} \cdot \mathrm{HoursOp} \cdot 10^{-6}\ [\mathrm{t/g}]$$

The following abbreviations are used in Equations 1 to 2c:

The index i refers to the individual operating hour. Where an operator uses shorter reference periods in accordance with Article 44(1), that reference period shall be used instead of hours for these calculations.

GHG Em$_{total}$ = total annual GHG emissions in tonnes

GHG conc$_{hourly,\ i}$ = hourly concentrations of GHG emissions in g/Nm^3 in the flue gas flow measured during operation for hour *i*;

$V_{hourly,\ i}$ = flue gas volume in Nm^3 for hour *i (i.e. integrated flow over the hour or shorter reference period)*;

GHG Em$_{average}$ = annual average hourly emissions in kg/h from the source;

HoursOp = total number of hours for which the measurement-based methodology is applied, including the hours for which data has been substituted in accordance with Article 45(2) to (4);

GHG conc$_{average}$ = annual average hourly concentrations of GHG emissions in g/Nm^3;

Flow$_{average}$ = annual average flue gas flow in Nm^3/h.

4. CALCULATION OF THE CONCENTRATION USING INDIRECT CONCENTRATION MEASUREMENT

Equation 3: Calculation of the concentration

$$\mathrm{GHG\ concentration}\ [\%] = 100\% - \sum_{\mathrm{i}} \mathrm{Concentration\ of\ component\ i}\ [\%]$$

5. SUBSTITUTION FOR MISSING CONCENTRATION DATA FOR MEASUREMENT-BASED METHODOLOGIES

Equation 4: Substitution for missing data for measurement-based methodologies

$$\mathrm{C^*_{subst}} = \overline{\mathrm{C}} + 2\sigma\mathrm{c_}$$

Where:

$$\overline{\mathrm{C}}$$

= the arithmetic mean of the concentration of the specific parameter over the whole reporting period or, where specific circumstances applied when data loss occurred, an appropriate period reflecting the specific circumstances;

$\sigma_{\bar{c}}$ = the best estimate of the standard deviation of the concentration of the specific parameter over the whole reporting or, where specific circumstances applied when data loss occurred, an appropriate period reflecting the specific circumstances.

ANNEX IX

Minimum data and information to be retained in accordance with Article 67(1)

Operators and aircraft operators shall retain at least the following:

1. COMMON ELEMENTS FOR INSTALLATIONS AND AIRCRAFT OPERATORS

(1) The monitoring plan approved by the competent authority;

(2) Documents justifying the selection of the monitoring methodology and the documents justifying temporal or non-temporal changes of monitoring methodologies and, where applicable, tiers approved by the competent authority;

(3) All relevant updates of monitoring plans notified to the competent authority in accordance with Article 15, and the competent authority's replies;

(4) All written procedures referred to in the monitoring plan, including the sampling plan where relevant, the procedures for data flow activities and the procedures for control activities;

(5) A list of all versions used of the monitoring plan and all related procedures;

(6) Documentation of the responsibilities in connection to the monitoring and reporting;

(7) The risk assessment performed by the operator or aircraft operator, where applicable;

(8) The improvement reports in accordance with Article 69;

(9) The verified annual emission report;

(10) The verification report;

(11) Any other information that is identified as required for the verification of the annual emissions report.

2. SPECIFIC ELEMENTS FOR STATIONARY SOURCE INSTALLATIONS:

(1) The greenhouse gas emissions permit, and any updates thereof;

(2) Any uncertainty assessments, where applicable;

(3) For calculation-based methodologies applied in installations:

(a) the activity data used for any calculation of the emissions for each source stream, categorised according to process and fuel or material type;

(b) a list of all default values used as calculation factors, where applicable;

(c) the full set of sampling and analysis results for the determination of calculation factors;

(d) documentation about all ineffective procedures corrected and correction action taken in accordance with Article 64;

(e) any results of calibration and maintenance of measuring instruments.

(4) For measurement-based methodologies in installations, the following additional elements:

(a) documentation justifying the selection of a measurement-based methodology;

(b) the data used for the uncertainty analysis of emissions from each emission source, categorised according to process;

(c) the data used for the corroborating calculations and results of the calculations;

(d) a detailed technical description of the continuous measurement system including the documentation of the approval from the competent authority;

(e) raw and aggregated data from the continuous measurement system, including documentation of changes over time, the log-book on tests, down-times, calibrations, servicing and maintenance;

(f) documentation of any changes to the continuous measurement system;

(g) any results of the calibration and maintenance of measuring instruments;

(h) where applicable, the mass or energy balance model used for the purpose of determining surrogate data in accordance with Article 45(4) and underlying assumptions;

(5) Where a fall-back methodology as referred to in Article 22 is applied, all data necessary for determining the emissions for the emission sources and source streams for which that methodology is applied, as well as proxy data for activity data, calculation factors and other parameters which would be reported under a tier methodology;

(6) For primary aluminium production, the following additional elements:

(a) documentation of results from measurement campaigns for the determination of the installation specific emission factors for CF_4 and C_2F_6;

(b) documentation of the results of the determination of the collection efficiency for fugitive emissions;

(c) all relevant data on primary aluminium production, anode effect frequency and duration or overvoltage data;

(7) For CO2 capture, transport and geological storage activities, where applicable, the following additional elements:

(a) documentation of the amount of CO_2 injected into the storage complex by installations carrying out geological storage of CO_2;

(b) representatively aggregated pressure and temperature data from a transport network;

(c) a copy of the storage permit, including the approved monitoring plan, pursuant to Article 9 of Directive 2009/31/EC;

(d) the reports submitted in accordance with Article 14 of Directive 2009/31/EC;

(e) reports on the results of the inspections carried out in accordance with Article 15 of Directive 2009/31/EC;

(f) documentation on corrective measures taken in accordance with Article 16 of Directive 2009/31/EC.

3. SPECIFIC ELEMENTS FOR AVIATION ACTIVITIES:

(1) A list of aircraft owned, leased-in and leased-out, and necessary evidence for the completeness of that list; for each aircraft the date when it is added to or removed from the aircraft operator's fleet;

(2) A list of flights covered in each reporting period, and necessary evidence for the completeness of that list;

(3) Relevant data used for determining the fuel consumption and emissions;

(4) Data used for determining the payload and distance relevant for the years for which tonne-kilometre data are reported;

(5) Documentation on the methodology for data gaps where applicable, the number of flights where data gaps occurred, the data used for closing the data gaps, where they occurred, and, where the number of flights with data gaps exceeded 5 % of flights that were reported, reasons for the data gaps as well as documentation of remedial actions taken.

ANNEX X

Minimum content of Annual Reports (Article 68(3))

1. ANNUAL EMISSION REPORTS OF STATIONARY SOURCE INSTALLATIONS

The annual emission report of an installation shall at least contain the following information:

(1) Data identifying the installation, as specified in Annex IV to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, and its unique permit number;

(2) Name and address of the verifier of the report;

(3) The reporting year;

(4) Reference to and version number of the latest approved monitoring plan and the date from which it is applicable, as well as reference to and version number of any other monitoring plans relevant for the reporting year;

(5) Relevant changes in the operations of an installation and changes as well as temporary deviations that occurred during the reporting period to the monitoring plan approved by the competent authority; including temporal or permanent changes of tiers, reasons for those changes, starting date for the changes, and starting and ending dates of temporal changes;

(6) Information for all emissions sources and source streams consisting of at least:

(a) the total emissions expressed as t $CO_{2(e)}$, including CO_2 from biomass source streams which do not comply with Article 38(5);

(b) where greenhouse gases other than CO_2 are emitted, the total emissions expressed as t;

(c) whether the measurement or the calculation methodology referred to in Article 21 is applied;

(d) the tiers applied;

(e) activity data:

(i) in the case of fuels the amount of fuel (expressed as tonnes or Nm^3) and the net calorific value (GJ/t or GJ/ Nm^3) reported separately;

(ii) for all other source streams the amount expressed as tonnes or Nm^3;

(f) emission factors, expressed in accordance with the requirements set out in Article 36(2); biomass fraction, oxidation and conversion factors, expressed as dimensionless fractions;

(g) where emission factors for fuels are related to mass or volume instead of energy, values determined pursuant to Article 26(5) for the net calorific value of the respective source stream;

(7) Where a mass balance methodology is applied, the mass flow, and carbon content for each source stream into and out of the installation; biomass fraction and net calorific value, where relevant;

(8) Information to be reported as memo items, consisting of at least:

(a) amounts of biomass combusted, expressed in TJ, or employed in processes, expressed in t or Nm^3;

(b) CO_2 emissions from biomass, expressed in t CO_2, where measurement-based methodology is used to determine emissions;

(c) a proxy for the net calorific value of the biomass source streams used as fuel, where relevant;

(d) emissions, amounts and energy content of biomass fuels and bioliquids combusted, expressed in t and

TJ, and information whether such biomass fuels and bioliquids comply with Article 38(5);

(e) CO_2 or N_2O transferred to an installation or received from an installation, where Article 49 or 50 is applicable, expressed in t $CO_{2(e)}$;

(f) inherent CO_2 transferred to an installation or received from an installation, where Article 48 is applicable, expressed in t CO_2;

(g) where applicable, the name of the installation and its identification code as recognised in accordance with the acts adopted pursuant to Article 19(3) of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**:

(i) of the installation(s) to which CO_2 or N_2O is transferred in accordance with points (e) and (f) of this point (8);

(ii) of the installation(s) from which CO_2 or N_2O is received in accordance with points (e) and (f) of this point (8);

Where that installation does not have such identification code, the name and address of the installation as well as relevant contact information of a contact person shall be provided.

(h) transferred CO_2 from biomass, expressed in t CO_2;

(9) Where a measurement methodology is applied:

(a) where CO_2 is measured as the annual fossil CO_2-emissions and the annual CO_2-emissions from biomass use;

(b) the hours of operation of the continuous emission measurement system (CEMS), the measured greenhouse gas concentrations and the flue gas flow expressed as an annual hourly average, and as an annual total value;

(10) Where a methodology referred to in Article 22 is applied, all data necessary for determining the emissions for the emission sources and source streams for which that methodology is applied, as well as proxy data for activity data, calculation factors and other parameters which would be reported under a tier methodology;

(11) Where data gaps have occurred and have been closed by surrogate data in accordance with Article 66(1):

(a) the source stream or emission source to which each data gap applies;

(b) the reasons for each data gap;

(c) the starting and ending date and time of each data gap;

(d) the emissions calculated based on surrogate data;

(e) where the estimation method for surrogate data has not yet been included in the monitoring plan, a detailed description of the estimation method including evidence that the methodology used does not lead to an underestimation of emissions for the respective time period;

(12) Any other changes in the installation during the reporting period with relevance for that installation's greenhouse gas emissions during the reporting year;

(13) Where applicable, the production level of primary aluminium, the frequency and average duration of anode effects during the reporting period, or the anode effect overvoltage data during the reporting period, as well as the results of the most recent determination of the installation-specific emission factors

for CF_4 and C_2F_6 as outlined in Annex IV, and of the most recent determination of the collection efficiency of the ducts.

Emissions occurring from different emission sources, or source streams of the same type of a single installation belonging to the same type of activity may be reported in an aggregate manner for the type of activity.

Where tiers have been changed within a reporting period, the operator shall calculate and report emission as separate sections of the annual report for the respective parts of the reporting period.

Operators of CO_2 storage sites may use simplified emission reports after closure of the storage site in accordance with Article 17 of Directive 2009/31/EC containing at least the elements listed under points 1 to 5, provided the greenhouse gas emissions permit contains no emission sources.

2. ANNUAL EMISSION REPORTS OF AIRCRAFT OPERATORS

The emission report for an aircraft operator shall at least contain the following information:

(1) Data identifying the aircraft operator as set out by Annex IV to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, and the call sign or other unique designators used for air traffic control purposes, as well as relevant contact details;

(2) Name and address of the verifier of the report;

(3) The reporting year;

(4) Reference to and version number of the latest approved monitoring plan and the date from which it is applicable, reference to and version number of other monitoring plans relevant for the reporting year;

(5) Relevant changes in the operations and deviations from the approved monitoring plan during the reporting period;

(6) The aircraft registration numbers and types of aircraft used in the period covered by the report to perform the aviation activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** carried out by the aircraft operator;

(7) The total number of flights per State pair covered by the report;

(8) Mass of fuel (in tonnes) per fuel type per State pair;

(9) Total CO_2 emissions in tonnes of CO_2 disaggregated by the **Contracting Party** of departure and arrival, including CO_2 from biofuels which do not comply with Article 38(5);

(10) Where emissions are calculated using an emission factor or carbon content related to mass or volume, proxy data for the net calorific value of the fuel;

(11) Where data gaps have occurred and have been closed by surrogate data in accordance with Article 66(2):

(a) the number of flights expressed as percentage of annual flights (rounded to the nearest 0,1 %) for which data gaps occurred; and the circumstances and reasons for data gaps that apply;

(b) the estimation method for surrogate data applied;

(c) the emissions calculated based on surrogate data;

(12) Memo-items:

(a) amount of biofuels used during the reporting year (in tonnes or m^3) listed per fuel type, and whether

the biofuels comply with Article 38(5);

(b) the net calorific value of biofuels and alternative fuels;

(13) As an annex to the annual emission report, the operator shall include annual emissions and annual numbers of flights per aerodrome pair. Upon request of the operator the competent authority shall treat that information as confidential.

3. TONNE-KILOMETRE DATA REPORTS OF AIRCRAFT OPERATORS

The tonne-kilometre data report for an aircraft operator shall at least contain the following information:

(1) Data identifying the aircraft operator as set out by Annex IV to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, and the call sign or other unique designator used for air traffic control purposes, as well as relevant contact details;

(2) Name and address of the verifier of the report;

(3) The reporting year;

(4) Reference to and version number of the latest approved monitoring plan and the date from which it is applicable, reference to and version number of other monitoring plans relevant for the reporting year;

(5) Relevant changes in the operations and deviations from the approved monitoring plan during the reporting period;

(6) The aircraft registration numbers and types of aircraft used in the period covered by the report to perform the aviation activities covered by Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** carried out by the aircraft operator;

(7) Chosen method for calculating the mass of passengers and checked baggage, as well as freight and mail;

(8) Total number of passenger-kilometres and tonne-kilometres for all flights performed during the year to which the report relates falling within the aviation activities listed in Annex I of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(9) For each aerodrome pair, the: ICAO designator of the two aerodromes; distance (great circle distance + 95 km) in km; total number of flights per aerodrome pair in the reporting period; total mass of passengers and checked baggage (tonnes) during the reporting period per aerodrome pair; total number of passengers during the reporting period; total number of passenger multiplied by kilometres per aerodrome pair; total mass of freight and mail (tonnes) during the reporting period per aerodrome pair; total tonne-kilometres per aerodrome pair (t km).

ANNEX XI

<...>

COMMISSION IMPLEMENTING REGULATION (EU) 2018/2067 of 19 December 2018 on the verification of data and on the accreditation of verifiers pursuant to Directive 2003/87/EC

Incorporated and adapted by Ministerial Council Decision 2022/05/MC-EnC of 15 December 2022 amending Annex I to the Treaty establishing the Energy Community and incorporating Implementing Regulation (EU) 2018/2066, Implementing Regulation (EU) 2018/2067 and Directive 2003/87/EC in the Energy Community acquis communautaire.

The adaptations made by Ministerial Council Decision 2022/05/MC-EnC are highlighted in ***bold and blue****.*

CHAPTER I
GENERAL PROVISIONS

Article 1
Subject matter

This Regulation lays down provisions for the verification of reports submitted pursuant to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and for the accreditation and supervision of verifiers.

This Regulation also specifies, **<…>** provisions for the mutual recognition of verifiers and peer evaluation of national accreditation bodies **<…>**.

Article 2
Scope

This Regulation shall apply to the verification of greenhouse gas emissions and tonne-kilometre data occurring from 1 January **2024**, **<…>**, and to the verification of data relevant for the update of *ex ante* benchmarks **<…>**.

Article 3
Definitions

For the purposes of this Regulation, in addition to the definitions laid down in Article 3 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and Article 3 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the following definitions shall apply:

(1) ‘detection risk’ means the risk that the verifier does not detect a material misstatement;

(2) 'accreditation' means attestation by a national accreditation body that a verifier meets the requirements set by harmonised standards, within the meaning of point 9 of Article 2 of Regulation (EC) No 765/2008, and requirements set out in this Regulation to carry out the verification of an operator's or aircraft operator's report pursuant to this Regulation;

(3) 'verifier' means a legal person carrying out verification activities pursuant to this Regulation and accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and this Regulation **<…>**, at the time a verification report is issued;

(4) 'verification' means the activities carried out by a verifier to issue a verification report pursuant to this Regulation;

(5) 'misstatement' means an omission, misrepresentation or error in the operator's or aircraft operator's reported data, not considering the uncertainty permissible under Article 12(1)(a) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

(6) 'material misstatement' means a misstatement that, in the opinion of the verifier, individually or when aggregated with other misstatements, exceeds the materiality level or could affect the treatment of the operator's or aircraft operator's report by the competent authority;

(6a) 'annual activity level report' means a report submitted by an operator pursuant to Article 3(3) of Commission Implementing Regulation (EU) 2019/1842;

(7) 'operator's or aircraft operator's report' means the annual emission report to be submitted by the operator or aircraft operator **and the tonne-kilometre report to be submitted by the aircraft operator <…>**;

(8) 'scope of accreditation' means activities referred to in Annex I for which accreditation is sought or has been granted;

(9) 'competence' means the ability to apply knowledge and skills to carry out an activity;

(10) 'materiality level' means the quantitative threshold or cut-off point above which misstatements, individually or when aggregated with other misstatements, are considered material by the verifier;

(11) 'control system' means the operator's or aircraft operator's risk assessment and entire set of control activities, including the continuous management thereof, that an operator or aircraft operator has established, documented, implemented and maintained pursuant to Article 59 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or pursuant to Article 11 of Delegated Regulation (EU) 2019/331, as appropriate;

(12) 'control activities' means any acts carried out or measures implemented by the operator or aircraft operator to mitigate inherent risks;

(13) 'non-conformity' means one of the following:

(a) for the purposes of verifying an operator's emission report, any act or omission of an act by the operator that is contrary to the greenhouse gas emissions permit and the requirements in the monitoring plan approved by the competent authority;

(b) for the purposes of verifying an aircraft operator's emission or tonne-kilometre report, any act or omission of an act by the aircraft operator that is contrary to the requirements in the monitoring plan approved by the competent authority;

(c) for the purposes of verifying the baseline data report submitted by the operator pursuant to Article

4(2)(a) of Delegated Regulation (EU) 2019/331, the new entrant data report submitted by the operator pursuant to Article 5(2) of that Regulation or the annual activity level report, any act or omission of an act by the operator that is contrary to the requirements in the monitoring methodology plan;

(d) for the purposes of accreditation pursuant to Chapter IV, any act or omission of an act by the verifier that is contrary to the requirements of this Regulation;

(14) 'site' means, for the purposes of verifying the emission or tonne-kilometre report of an aircraft operator, the locations where the monitoring process is defined and managed, including the locations where relevant data and information are controlled and stored;

(15) 'control environment' means the environment in which the internal control system functions and the overall actions of an operator's or aircraft operator's management to ensure awareness of this internal control system;

(16) 'inherent risk' means the susceptibility of a parameter in the operator's or aircraft operator's report to misstatements that could be material, individually or when aggregated with other misstatements, before taking into consideration the effect of any related control activities;

(17) 'control risk' means the susceptibility of a parameter in the operator's or aircraft operator's report to misstatements that could be material, individually or when aggregated with other misstatements, and that will not be prevented or detected and corrected on a timely basis by the control system;

(18) 'verification risk' means the risk, being a function of inherent risk, control risk and detection risk, that the verifier expresses an in appropriate verification opinion when the operator's or aircraft operator's report is not free of material misstatements;

(19) 'reasonable assurance' means a high but not absolute level of assurance, expressed positively in the verification opinion, as to whether the operator's or aircraft operator's report subject to verification is free from material misstatement;

(20) 'analytical procedures' means the analysis of fluctuations and trends in the data including an analysis of the relationships that are inconsistent with other relevant information or that deviate from predicted amounts;

(21) 'internal verification documentation' means all internal documentation that a verifier has compiled to record all documentary evidence and justification of activities that are carried out for the verification of an operator's or aircraft operator's report;

(22) 'EU ETS lead auditor' means an EU ETS auditor in charge of directing and supervising the verification team, who is responsible for performing and reporting on the verification of an operator's or aircraft operator's report;

(23) 'EU ETS auditor' means an individual member of a verification team responsible for conducting a verification of an operator's or aircraft operator's report other than the EU ETS lead auditor;

(24) 'technical expert' means a person who provides detailed knowledge and expertise on a specific subject matter needed for the performance of verification activities for the purposes of Chapter III and for the performance of accreditation activities for the purposes of Chapter V;

(25) 'level of assurance' means the degree of assurance the verifier provides on the verification report based on the objective of reducing the verification risk according to the circumstances of the verification engagement;

(26) 'assessor' means a person assigned by a national accreditation body to perform individually or as part of an assessment team an assessment of a verifier pursuant to this Regulation;

(27) 'lead assessor' means an assessor who is given the overall responsibility for assessing a verifier pursuant to this Regulation;

(28) 'baseline data report' means a report submitted by an operator pursuant to Article 4(2) of Delegated Regulation (EU) 2019/331;

(29) 'new entrant data report' means a report submitted by an operator pursuant to Article 5(2) of Delegated Regulation (EU) 2019/331;

(30) 'activity level reporting period' means the applicable period preceding the submission of the annual activity level report pursuant to Article 3(1) of Implementing Regulation (EU) 2019/1842.

Article 4

Presumption of conformity

Where a verifier demonstrates its conformity with the criteria laid down in the relevant harmonised standards as defined in point (9) of Article 2 of Regulation (EC) No 765/2008, or parts thereof, **<...>** it shall, with the exception of Articles 7(1), 7(4), 22, 27(1), 28, 31 and 32 of this Regulation, be presumed to comply with the requirements set out in Chapters II and III of this Regulation in so far as the applicable harmonised standards cover those requirements.

Article 5

<...>

CHAPTER II
VERIFICATION

Article 6

Reliability of verification

A verified emissions report, tonne-kilometre report, baseline data report, new entrant data report or annual activity level report shall be reliable for users.

It shall represent faithfully that, which it either purports to represent or may reasonably be expected to represent.

The process of verifying operator's or aircraft operator's report shall be an effective and reliable tool in support of quality assurance and quality control procedures, providing information upon which an operator or aircraft operator can act to improve performance in monitoring and reporting emissions or data relevant for free allocation.

Article 7

General obligations of the verifier

1. The verifier shall carry out the verification and the activities required by this Chapter with the aim of providing a verification report that concludes with reasonable assurance that the operator's or aircraft operator's report is free from material misstatements.

2. The verifier shall plan and perform the verification with an attitude of professional scepticism, recognising that circumstances may exist that cause the information in the operator's or aircraft operator's report to contain material misstatements.

3. The verifier must carry out verification in the public interest, and be independent of the operator or aircraft operator and the competent authorities responsible for Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

4. During the verification, the verifier shall assess whether:

(a) the operator's or aircraft operator's report is complete and meets the requirements laid down in Annex X to Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, in Annex IV to Delegated Regulation (EU) 2019/331 or Article 3(2) of Implementing Regulation (EU) 2019/1842, as appropriate;

(b) the operator or aircraft operator has acted in compliance with the requirements of the greenhouse gas emissions permit and the monitoring plan approved by the competent authority, where the verification of an operator's emission report is concerned, and with the requirements of the monitoring plan approved by the competent authority, where the verification of an aircraft operator's emission or tonne-kilometre report is concerned;

(c) where the verification of an operator's baseline data report, new entrant data report or annual activity level report is concerned, the operator has acted in conformance with the requirements of the monitoring methodology plan pursuant to Article 8 of Delegated Regulation (EU) 2019/331 approved by the competent authority;

(d) the data in the operator's or aircraft operator's report are free from material misstatements;

(e) information can be provided in support of the operator's or aircraft operator's data flow activities, control system and associated procedures to improve the performance of their monitoring and reporting.

By way of derogation from point (c), the verifier shall assess whether the operator's monitoring methodology plan is in compliance with the requirements of Delegated Regulation (EU) 2019/331 where the monitoring methodology plan is not subject to approval of the competent authority prior to submission of the baseline data report.

If the verifier discovers that a monitoring methodology plan does not comply with Delegated Regulation (EU) 2019/331, the operator shall modify the monitoring methodology plan so that it complies with that Regulation.

For the purpose of point (d) of this paragraph, the verifier shall obtain clear and objective evidence from the operator or aircraft operator to support the reported aggregated emissions, tonne-kilometres or data relevant for free allocation taking into account all other information provided in the operator's or aircraft operator's report.

5. If the verifier discovers that an operator or an aircraft operator is not complying with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or the operator is not complying with, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842, that irregularity shall be included in the verification report even if the monitoring plan or monitoring methodology plan concerned, as appropriate, has been approved by the competent authority.

6. If the monitoring plan has not been approved by the competent authority pursuant to Article 12 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, is incomplete or if significant modifications referred to in Article 15(3) or (4) of that Implementing Regulation have been made during the reporting period which have not been accordingly approved by the competent authority, the verifier shall advise the operator or aircraft operator to obtain the necessary approval from the competent authority.

If the monitoring methodology plan is subject to the approval of the competent authority prior to submission of the baseline data report pursuant to Article 8(4) of Delegated Regulation (EU) 2019/331 and the monitoring methodology plan has not been approved or is incomplete, or where significant modifications referred to in Article 9(5) of that Regulation have been made which have not been approved by the competent authority, the verifier shall advise the operator to obtain the necessary approval from the competent authority.

Following the approval by the competent authority, the verifier shall continue, repeat or adapt the verification activities accordingly.

If the approval has not been obtained before the issue of the verification report, the verifier shall report this in the verification report.

Article 8

Pre-contractual obligations

1. Before accepting a verification engagement, a verifier shall obtain a proper understanding of the operator or aircraft operator and assess whether it can undertake the verification.

For this purpose the verifier shall at least:

(a) evaluate the risks involved to undertake the verification of the operator's or aircraft operator's report in accordance with this Regulation;

(b) undertake a review of the information supplied by the operator or aircraft operator to determine the scope of the verification;

(c) assess whether the engagement falls within the scope of its accreditation;

(d) assess whether it has the competence, personnel and resources required to select a verification team capable of dealing with the complexity of the installation or the aircraft operator's activities and fleet as well as whether it is capable of successfully completing the verification activities within the timeframe required;

(e) assess whether it is capable of ensuring that the potential verification team at its disposal holds all the competence, and persons required to carry out verification activities for that specific operator or aircraft operator;

(f) determine, for each verification engagement requested, the time allocation needed to properly carry out the verification.

2. The operator or aircraft operator shall provide the verifier with all relevant information that enables the verifier to carry out the activities referred to in paragraph 1.

Article 9

Time allocation

1. When determining the time allocation for a verification engagement referred to in Article 8(1)(f), the verifier shall at least take into account:

(a) the complexity of the installation or the aircraft operator's activities and fleet;

(b) the level of information and the complexity of the monitoring plan approved by the competent authority or the monitoring methodology plan, as appropriate;

(c) the required materiality level;

(d) the complexity and completeness of the data flow activities and the control system of the operator or aircraft operator;

(e) the location of information and data related to greenhouse gas emissions, tonne-kilometre data or data relevant for free allocation.

2. The verifier shall ensure that the verification contract provides for the possibility for time to be charged in addition to the time agreed in the contract, where such additional time is found to be needed for the strategic analysis, risk analysis or other verification activities.

The situations where the additional time may be needed shall include at least the following:

(a) during the verification where the data flow activities, control activities or logistics of the operator or aircraft operator seem to be more complex than initially anticipated;

(b) where misstatements, non-conformities, insufficient data or errors in the data sets are identified by the verifier during the verification.

3. The verifier shall record the time allocated in the internal verification documentation.

Article 10

Information from an operator or aircraft operator

1. Before the strategic analysis and at other points of time during the verification, the operator or aircraft operator shall provide the verifier with all of the following:

(a) the operator's greenhouse gas emissions permit, if this concerns the verification of an operator's emission report;

(b) the latest version of the operator's or aircraft operator's monitoring plan as well as any other relevant versions of the monitoring plan approved by the competent authority, including evidence of the approval;

(c) the latest version of the operator's monitoring methodology plan as well as any other relevant versions

of the monitoring methodology plan, including, where applicable, evidence of the approval;

(d) a description of the operator's or aircraft operator's data flow activities;

(e) the operator's or aircraft operator's risk assessment referred to in Article 59(2)(a) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or Article 11(1) of Delegated Regulation (EU) 2019/331, as appropriate, and an outline of the overall control system;

(f) where applicable, the simplified uncertainty assessment referred to in Article 7(2)(c) of Delegated Regulation (EU) 2019/331;

(g) the procedures mentioned in the monitoring plan as approved by the competent authority or the monitoring methodology plan, including procedures for data flow activities and control activities;

(h) the operator's or aircraft operator's annual emission, tonne-kilometre report, baseline data report, new entrant data report or annual activity level report, as appropriate;

(i) the baseline data reports of previous allocation periods for earlier allocation phases and annual activity level reports of the previous years submitted to the competent authority for the purpose of Article 10a(21) of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, if applicable;

(j) where applicable, the operator's sampling plan referred to in Article 33 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** as approved by the competent authority;

(k) if the monitoring plan was modified during the reporting period, a record of all those modifications in accordance with Article 16(3) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(ka) if the monitoring methodology plan was modified, a record of all modifications in accordance with Article 9 of Delegated Regulation (EU) 2019/331;

(l) where applicable, the reports referred to in Article 69(1) and 69(4) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(la) where applicable, information on how the operator has corrected non-conformities or addressed recommendations of improvements that were reported in the verification report concerning an annual activity level report from the previous year or a relevant baseline data report;

(m) the verification report from the previous year or the previous baseline period, as appropriate, if the verifier did not carry out the verification for that particular operator or aircraft operator the previous year or baseline period, as appropriate;

(n) all relevant correspondence with the competent authority, in particular information related to the notification of modifications of the monitoring plan or monitoring methodology plan as well as corrections of reported data, as appropriate;

(o) information on databases and data sources used for monitoring and reporting purposes, including those from Eurocontrol or another relevant organisation;

(p) where the verification concerns the emission report of an installation carrying out the geological storage of greenhouse gases in a storage site **<…>**, the monitoring plan **<…>** and the reports **<…>**, covering at least the reporting period of the emissions report to be verified;

(q) where applicable, the approval of the competent authority for not carrying out site visits for installations pursuant to Article 31(1);

(r) the operator's evidence demonstrating compliance with the uncertainty thresholds for the tiers laid down in the monitoring plan;

(s) any other relevant information necessary for planning and carrying out the verification.

2. Before the verifier issues the verification report, the operator or aircraft operator shall provide it with the final authorised and internally validated operator's or aircraft operator's report.

Article 11

Strategic analysis

1. At the beginning of the verification the verifier shall assess the likely nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the installation or the aircraft operator.

2. For the purposes of understanding the activities carried out by the installation or the aircraft operator, the verifier shall collect and review the information needed to assess that the verification team is sufficiently competent to carry out the verification, to determine that the time allocation indicated in the contract has been set correctly and to ensure that it is able to conduct the necessary risk analysis.

The information shall include at least:

(a) the information referred to in Article 10(1);

(b) the required materiality level;

(c) the information obtained from the verification in previous years, if the verifier is carrying out the verification for the same operator or aircraft operator.

3. When reviewing the information referred to in paragraph 2, the verifier shall at least assess the following:

(a) for the purposes of the verification of the operator's emission report, the category of the installation referred to in Article 19 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and the activities carried out at that installation;

(b) for the purposes of the verification of the aircraft operator's emission or tonne- kilometre report, the size and nature of the aircraft operator, the distribution of information in different locations as well as the number and type of flights;

(c) the monitoring plan approved by the competent authority or monitoring methodology plan, as appropriate, as well as the specifics of the monitoring methodology laid down in that monitoring plan or the monitoring methodology plan as appropriate;

(d) the nature, scale and complexity of emission sources and source streams as well as the equipment and processes that have resulted in emissions, tonne-kilometre data or data relevant for free allocation, including the measurement equipment described in the monitoring plan or monitoring methodology plan as appropriate, the origin and application of calculation factors and other primary data sources;

(e) the data flow activities, the control system and the control environment.

4. When carrying out the strategic analysis, the verifier shall check the following:

(a) whether the monitoring plan or monitoring methodology plan, as appropriate, presented to it is the most recent version and, where required, approved by the competent authority;

(b) whether there have been any modifications to the monitoring plan during the reporting period;

(ba) whether there have been any modifications to the monitoring methodology plan during the baseline period or the activity level reporting period, as appropriate;

(c) where applicable, whether the modifications referred to in point (b) have been notified to the competent authority pursuant to Article 15(1) or Article 23 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or approved by the competent authority in accordance with Article 15(2) of that Implementing Regulation.

(d) where applicable, whether the modifications referred to in point (ba) have been notified to the competent authority pursuant to Article 9(3) of Delegated Regulation (EU) 2019/331 or approved by the competent authority in accordance with Article 9(4) of that Regulation.

Article 12

Risk analysis

1. The verifier shall identify and analyse the following elements to design, plan and implement an effective verification:

(a) the inherent risks;

(b) the control activities;

(c) where control activities referred to in point (b) have been implemented, the control risks concerning the effectiveness of those control activities.

2. When identifying and analysing the elements referred to in paragraph 1, the verifier shall at least consider:

(a) the findings from the strategic analysis referred to in Article 11(1);

(b) the information referred to in Article 10(1) and Article 11(2)(c);

(c) the materiality level referred to in Article 11(2)(b).

3. If the verifier determines that the operator or aircraft operator has failed to identify the relevant inherent risks and control risks in its risk assessment, the verifier shall inform the operator or aircraft operator thereof.

4. Where appropriate according to the information obtained during the verification, the verifier shall revise the risk analysis and modify or repeat the verification activities to be performed.

Article 13

Verification plan

1. The verifier shall draft a verification plan commensurate with the information obtained and the risks identified during the strategic analysis and the risk analysis, and including at least:

(a) a verification programme describing the nature and scope of the verification activities as well as the time and manner in which these activities are to be carried out;

(b) a test plan setting out the scope and methods of testing the control activities as well as the procedures for control activities;

(c) a data sampling plan setting out the scope and methods of data sampling related to data points underlying the aggregated emissions in the operator or aircraft operator's emission report, the aggregated tonne-kilometre data in the aircraft operator's tonne-kilometre report or the aggregated data relevant for free allocation in the operator's baseline data report, new entrant data report or annual activity level report.

2. The verifier shall set up the test plan referred to in point (b) of paragraph 1 in a manner that allows it to determine the extent to which the relevant control activities may be relied on for the purposes of assessing compliance with the requirements mentioned in Article 7(4)(b), (c), (d) or the second subparagraph of Article 7(4).

When determining the sampling size and sampling activities for testing the control activities, the verifier shall consider the following elements:

(a) the inherent risks;

(b) the control environment;

(c) the relevant control activities;

(d) the requirement to deliver a verification opinion with reasonable assurance.

3. When determining the sampling size and sampling activities for sampling the data referred to in point (c) of paragraph 1, the verifier shall consider the following elements:

(a) the inherent risks and control risks;

(b) the results of the analytical procedures;

(c) the requirement to deliver a verification opinion with reasonable assurance;

(d) the materiality level;

(e) the materiality of the contribution of an individual data element for the overall data set.

4. The verifier shall set up and implement the verification plan such that the verification risk is reduced to an acceptable level to obtain reasonable assurance that the operator's or aircraft operator's report is free from material misstatements.

5. The verifier shall update the risk analysis and the verification plan, and adapt the verification activities during the verification when it finds additional risks that need to be reduced or when there is less actual risk than initially expected.

Article 14

Verification activities

The verifier shall implement the verification plan and, based on the risk analysis, the verifier shall check the implementation of the monitoring plan as approved by the competent authority or monitoring methodology plan, as appropriate.

To that end, the verifier shall at least carry out substantive testing consisting of analytical procedures, data verification and checking the monitoring methodology and check the following:

(a) the data flow activities and the systems used in the data flow, including information technology systems;

(b) whether the control activities of the operator or aircraft operator are appropriately documented, implemented, maintained and effective to mitigate the inherent risks;

(c) whether the procedures listed in the monitoring plan or monitoring methodology plan, as appropriate, are effective to mitigate the inherent risks and control risks and whether the procedures are implemented, sufficiently documented and properly maintained.

For the purposes of point (a) of the second paragraph, the verifier shall track the data flow following the sequence and interaction of the data flow activities from primary source data to the compilation of the operator's or aircraft operator's report.

Article 15

Analytical procedures

1. The verifier shall use analytical procedures to assess the plausibility and completeness of data where the inherent risk, the control risk and the aptness of the operator's or aircraft operator's control activities show the need for such analytical procedures.

2. In carrying out the analytical procedures referred to in paragraph 1, the verifier shall assess reported data to identify potential risk areas and to subsequently validate and tailor the planned verification activities.

The verifier shall at least:

(a) assess the plausibility of fluctuations and trends over time or between comparable items;

(b) identify immediate outliers, unexpected data and data gaps.

3. In applying the analytical procedures referred to in paragraph 1, the verifier shall perform the following procedures:

(a) preliminary analytical procedures on aggregated data before carrying out the activities referred to in Article 14 in order to understand the nature, complexity and relevance of the reported data;

(b) substantive analytical procedures on the aggregated data and the data points underlying these data for the purposes of identifying potential structural errors and immediate outliers;

(c) final analytical procedures on the aggregated data to ensure that all errors identified during the verification process have been resolved correctly.

4. Where the verifier identifies outliers, fluctuations, trends, data gaps or data that are inconsistent with other relevant information or that differ significantly from expected amounts or ratios, the verifier shall obtain explanations from the operator or aircraft operator supported by additional relevant evidence.

Based on the explanations and additional evidence provided, the verifier shall assess the impact on the verification plan and the verification activities to be performed.

Article 16

Data verification

1. The verifier shall verify the data in the operator's or aircraft operator's report by applying detailed testing of the data, including by tracing the data back to the primary data source, cross-checking data with external data sources, performing reconciliations, checking thresholds regarding appropriate data and carrying out recalculations.

2. As part of the data verification referred to in paragraph 1 and taking into account the approved monitoring plan or monitoring methodology plan, as appropriate, including the procedures described in that plan, the verifier shall check:

(a) for the purposes of verifying an operator's emission report, the boundaries of an installation;

(b) for the purposes of verifying an operator's baseline data report, new entrant data report or annual activity level report, the boundaries of an installation and its sub-installations;

(c) for the purposes of verifying an operator's emission report, baseline data report, new entrant data report or annual activity level report, the completeness of source streams and emission sources as described in the monitoring plan approved by the competent authority or monitoring methodology plan, as appropriate;

(d) for the purposes of verifying an aircraft operator's emission report and tonne-kilometre report, the completeness of flights covered by an aviation activity listed in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** for which the aircraft operator is responsible as well as the completeness of emission data and tonne-kilometre data respectively;

(e) for the purposes of verifying an aircraft operator's emission report and tonne-kilometre report, the consistency between reported data and mass and balance documentation;

(f) for the purposes of verifying an aircraft operator's emission report, the consistency between aggregated fuel consumption and data on fuel purchased or otherwise supplied to the aircraft performing the aviation activity;

(fa) for the purposes of verifying an annual activity level report, the accuracy of the parameters listed in Articles 16(5), 19, 20, 21 or 22 of Delegated Regulation (EU) 2019/331 as well as data required under paragraphs 1, 2 and 4 of Article 6 of Implementing Regulation (EU) 2019/1842;

(g) the consistency of the aggregated reported data in an operator's or aircraft operator's report with primary source data;

(h) where an operator applies a measurement-based methodology referred to in Article 21(1) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the measured values using the results of the calculations performed by the operator in accordance with Article 46 of that Implementing Regulation;

(i) the reliability and accuracy of the data.

3. For the purposes of checking the completeness of flights referred to in point (d) of paragraph 2, the verifier shall use an aircraft operator's air traffic data, including data collected from Eurocontrol or other relevant organisations which can process air traffic information such as that available to Eurocontrol.

Article 17

Verification of the correct application of the monitoring methodology

1. The verifier shall check the correct application and implementation of the monitoring methodology as approved by the competent authority in the monitoring plan including specific details of that monitoring methodology.

2. For the purposes of verifying the operator's emission report, the verifier shall check the correct application and implementation of the sampling plan referred to in Article 33 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, as approved by the competent authority.

3. For the purposes of verifying the operator's baseline data report, new entrant data report or annual activity level report, the verifier shall check whether the methodology for collecting and monitoring data defined in the monitoring methodology plan is applied in the correct way, including:

(a) whether all data on emissions, inputs, outputs and energy flows are attributed correctly to the sub-installations in line with the system boundaries as referred to in Annex I to Delegated Regulation (EU) 2019/331;

(b) whether data are complete and whether data gaps or double counting have occurred;

(c) whether activity levels for product benchmarks are based on a correct application of the product definitions listed in Annex I to Delegated Regulation (EU) 2019/331;

(d) whether activity levels for the heat benchmark sub-installations, the district heating sub-installation, the fuel benchmark sub-installations and the process emissions sub-installations have been correctly attributed according to the products produced **<…>**;

(e) whether the energy consumption has been correctly attributed to each sub-installation where applicable;

(f) whether the value of the parameters listed in Articles 16(5), 19, 20, 21 or 22 of Delegated Regulation (EU) 2019/331 is based on a correct application of that Regulation;

(g) for the purposes of verifying an annual activity level report and a new entrant data report, the date of start of normal operation as referred to in Article 5(2) of Delegated Regulation (EU) 2019/331;

(h) for the purposes of verifying an annual activity level report, whether the parameters listed in points 2.3 to 2.7 of Annex IV to Delegated Regulation (EU) 2019/331, as appropriate to the installation, have been monitored and reported in the correct way in accordance with the monitoring methodology plan.

4. Where transferred CO_2 is subtracted in accordance with Article 49 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or transferred N_2O is not counted as emitted in accordance with Article 50 of that Regulation, and the CO_2 or N_2O transferred is measured by both the transferring and receiving installation, the verifier shall check whether differences between the measured values at both installations can be explained by the uncertainty of the measurement systems and whether the correct arithmetic average of the measured values has been used in the emission reports of both installations.

Where the differences between the measured values at both installations cannot be explained by the uncertainty of the measurement systems, the verifier shall check whether adjustments were made to align the differences between the measured values, whether those adjustments were conservative and whether the competent authority has granted approval for those adjustments.

Article 18

Verification of methods applied for missing data

1. Where methods laid down in the monitoring plan as approved by the competent authority have been used to complete missing data pursuant to Article 66 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the verifier shall check whether the methods used were appropriate for the specific situation and whether they have been applied correctly.

If the operator or aircraft operator has obtained an approval by the competent authority to use other methods than those referred to in the first subparagraph in accordance with Article 66 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the verifier shall check whether the approved approach has been applied correctly and appropriately documented.

Where an operator or an aircraft operator is not able to obtain such approval in time, the verifier shall check whether the approach used by the operator or aircraft operator to complete the missing data ensures that the emissions are not underestimated and that this approach does not lead to material misstatements.

2. The verifier shall check the effectiveness of the control activities implemented by the operator or aircraft operator to prevent missing data referred to in Article 66 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** from occurring.

3. Where data gaps in baseline data reports, new entrant data reports or annual activity level reports have occurred, the verifier shall check whether methods are laid down in the monitoring methodology plan to deal with data gaps pursuant to Article 12 of Delegated Regulation (EU) 2019/331, whether those methods were appropriate for the specific situation and whether they have been applied correctly.

Where no applicable data gap method is laid down in the monitoring methodology plan, the verifier shall check whether the approach used by the operator to compensate for the missing data is based on reasonable evidence and ensures that the data required by Annex IV to Delegated Regulation (EU) 2019/331 or Article 3(2) of Implementing Regulation (EU) 2019/1842 are not underestimated or overestimated.

Article 19

Uncertainty assessment

1. Where Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** requires the operator to demonstrate compliance with the uncertainty thresholds for activity data and calculation factors, the verifier shall confirm the validity of the information used to calculate the uncertainty levels as set out in the approved monitoring plan.

2. Where an operator applies a monitoring methodology not based on tiers, as referred to in Article 22 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the verifier shall check the following:

(a) whether an assessment and quantification of the uncertainty has been carried out by the operator demonstrating that the required overall uncertainty threshold for the annual level of greenhouse gas

emissions pursuant to point (c) of Article 22 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** has been met;

(b) the validity of the information used for the assessment and quantification of the uncertainty;

(c) whether the overall approach used for the assessment and the quantification of the uncertainty is in accordance with point (b) of Article 22 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(d) whether evidence is provided that the conditions for the monitoring methodology referred to in point (a) of Article 22 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** have been met.

3. Where Delegated Regulation (EU) 2019/331 requires the operator to carry out a simplified uncertainty assessment, the verifier shall confirm the validity of the information used for that assessment.

Article 20

Sampling

1. When checking the conformance of control activities and procedures referred to in points (b) and (c) of Article 14 or when performing the checks referred to in Articles 15 and 16, the verifier may use sampling methods specific to an installation or aircraft operator provided that, based on the risk analysis, sampling is justified.

2. Where the verifier identifies a non-conformity or a misstatement in the course of sampling, it shall request the operator or aircraft operator to explain the main causes of the non-conformity or the misstatement in order to assess the impact of the non-conformity or misstatement on the reported data.

Based on the outcome of that assessment, the verifier shall determine whether additional verification activities are needed, whether the sampling size needs to be increased, and which part of the data population has to be corrected by the operator or aircraft operator.

3. The verifier shall document the outcome of the checks referred to in Articles 14 to 17, including the details of additional samples, in the internal verification documentation.

Article 21

Site visits

1. At one or more appropriate times during the verification process, the verifier shall conduct a site visit in order to assess the operation of measuring devices and monitoring systems, to conduct interviews, to carry out the activities required by this Chapter as well as to gather sufficient information and evidence enabling it to conclude whether the operator's or aircraft operator's report is free from material misstatements.

2. The operator or aircraft operator shall provide the verifier access to its sites.

3. For the purposes of verifying the operator's emission report, the verifier shall also use a site visit to assess the boundaries of the installation as well as the completeness of source streams and emission sources.

4. For the purposes of verifying the operator's baseline data report, new entrant data report and annual

activity level report, the verifier shall also use a site visit to assess the boundaries of the installation and its sub-installations as well as the completeness of source streams, emission sources and technical connections.

5. For the purposes of verifying the operator's emission report, baseline data report, new entrant data report or annual activity level report the verifier shall decide, based on the risk analysis, whether visits to additional locations are needed, including where relevant parts of data flow activities and control activities are carried out in other locations such as company headquarters and other off-site offices.

Article 22

Addressing misstatements, non-conformities and non-compliance

1. If the verifier identifies misstatements, non-conformities or non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 as appropriate, during the verification, it shall inform the operator or aircraft operator thereof on a timely basis and request relevant corrections.

The operator or aircraft operator shall correct any communicated misstatements or non-conformities.

Where a non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 has been identified, the operator or aircraft operator shall notify the competent authority and correct the non-compliance as appropriate without undue delay.

2. The verifier shall document and mark as resolved in the internal verification documentation all misstatements, non-conformities or non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 that have been corrected by the operator or aircraft operator during the verification.

3. If the operator or aircraft operator does not correct the misstatements or non-conformities communicated to them by the verifier in accordance with paragraph 1 before the verifier issues the verification report, the verifier shall request the operator or aircraft operator to explain the main causes of the non-conformity or misstatement in order to assess the impact of the non-conformities or misstatements on the reported data.

The verifier shall determine whether the uncorrected misstatements, individually or when aggregated with other misstatements, have a material effect on the total reported emissions, tonne-kilometre data or data relevant for free allocation.

In assessing the materiality of misstatements the verifier shall consider the size and nature of the misstatement as well as the particular circumstances of their occurrence.

The verifier shall assess whether the uncorrected non-conformity, indi vidually or when combined with other non-conformities, has an impact on the reported data and whether this leads to material misstatement.

If the operator or aircraft operator does not correct the non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 in accordance with paragraph 1 before the verifier issues the verification report, the verifier shall assess whether the uncorrected

non-compliance has an impact on the reported data and whether this leads to material misstatement.

The verifier may consider misstatements as material even if those misstatements, individually or when aggregated with other misstatements, are below the materiality level set out in Article 23, where such consideration is justified by the size and nature of the misstatements and the particular circumstances of their occurrence.

Article 23

Materiality level

1. For the purposes of verifying emission reports, the materiality level shall be 5 % of the total reported emissions in the reporting period which is subject to verification, for any of the following:

(a) category A installations referred to in Article 19(2)(a) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and category B installations referred to in Article 19(2)(b) of that Implementing Regulation;

(b) aircraft operators with annual emissions equal to or less than 500 kilotonnes of fossil CO_2.

2. For the purposes of verifying emissions reports the materiality level shall be 2 % of the total reported emissions in the reporting period which is subject to verification, for any of the following:

(a) category C installations referred to in Article 19(2)(c) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(b) aircraft operators with annual emissions of more than 500 kilo tonnes of fossil CO_2.

3. For the purposes of verifying tonne-kilometre reports of aircraft operators, the materiality level shall be 5 % of the total reported tonne-kilometre data in the reporting period which is subject to verification.

4. For the purposes of verifying baseline data report, new entrant data reports or annual activity level reports, the materiality level shall be 5 % of the total reported value of the following:

(a) the installation's total emissions, where the data relate to emissions;

(b) the sum of imports and production of net measurable heat, if relevant, where the data relate to measurable heat data;

(c) the sum of the amounts of waste gases imported and produced within the installation, if relevant;

(d) the activity level of each relevant product benchmark sub-installation individually.

Article 24

Concluding on the findings of verification

When completing the verification and considering the information obtained during the verification, the verifier shall:

(a) check the final data from the operator or aircraft operator, including data that have been adjusted based upon information obtained during the verification;

(b) review the operator's or aircraft operator's reasons for any differences between the final data and data

previously provided;

(c) review the outcome of the assessment to determine whether the monitoring plan approved by the competent authority or monitoring methodology plan, as appropriate, including the procedures described in that plan, has been implemented correctly;

(d) assess whether the verification risk is at an acceptably low level to obtain reasonable assurance;

(e) ensure that sufficient evidence has been gathered to be able to give a verification opinion with reasonable assurance that the report is free from material misstatements;

(f) ensure that the verification process is fully documented in the internal verification documentation and that a final judgment in the verification report can be given.

Article 25

Independent review

1. The verifier shall submit the internal verification documentation and the verification report to an independent reviewer prior to the issuance of the verification report.

2. The independent reviewer shall not have carried out any verification activities that are subject to their review.

3. The scope of the independent review shall encompass the complete verification process described in this Chapter and recorded in the internal verification documentation.

The independent reviewer shall perform the review so as to ensure that the verification process is conducted in accordance with this Regulation, that the procedures for verification activities referred to in Article 41 have been correctly carried out, and that due professional care and judgment has been applied.

The independent reviewer shall also assess whether the evidence gathered is sufficient to enable the verifier to issue a verification report with reasonable assurance.

4. Where circumstances occur which may cause changes in the verification report after the review, the independent reviewer shall also review those changes and the evidence thereof.

5. The verifier shall properly authorize a person to authenticate the verification report based upon the conclusions of the independent reviewer and the evidence in the internal verification documentation.

Article 26

Internal verification documentation

1. The verifier shall prepare and compile internal verification documentation containing at least:

(a) the results of the verification activities performed;

(b) the strategic analysis, risk analysis and verification plan;

(c) sufficient information to support the verification opinion, including justifications for judgments made on whether or not the misstatements identified have material effect on the reported emissions, tonne-kilometre data or data relevant for free allocation.

2. The internal verification documentation referred to in paragraph 1 shall be drafted in such a manner that the independent reviewer referred to in Article 25 and the national accreditation body can assess whether the verification has been performed in accordance with this Regulation.

After authentication of the verification report pursuant to Article 25(5), the verifier shall include results of the independent review in the internal verification documentation.

3. The verifier shall, upon request, provide the competent authority access to the internal verification documentation and other relevant information to facilitate an evaluation of the verification by the competent authority.

The competent authority can set a timeframe within which the verifier must provide access to that documentation.

Article 27

Verification report

1. Based on the information collected during the verification, the verifier shall issue a verification report to the operator or aircraft operator on each emission report, tonne-kilometre report, baseline data report, new entrant data report or annual activity level report that was subject to verification.

(a) the report is verified as satisfactory;

(b) the operator's or aircraft operator's report contains material misstatements that were not corrected before issuing the verification report;

(c) the scope of verification is too limited pursuant to Article 28 and the verifier could not obtain sufficient evidence to issue a verification opinion with reasonable assurance that the report is free from material misstatements;

(d) non-conformities, individually or combined with other non-conformities, provide insufficient clarity and prevent the verifier from stating with reasonable assurance that the operator's or aircraft operator's report is free from material misstatements;

(e) where the monitoring methodology plan is not subject to the approval of the competent authority, non-compliance with Delegated Regulation (EU) 2019/331 provide insufficient clarity and prevent the verifier from stating with reasonable assurance that the baseline data report or new entrant data report is free from material misstatements.

For the purposes of point (a) of the first subparagraph, the operator's or aircraft operator's report may be verified as satisfactory only where the operator's or aircraft operator's report is free from material misstatements.

2. The operator or aircraft operator shall submit the verification report to the competent authority together with the operator's or aircraft operator's report concerned.

3. The verification report shall at least contain the following elements:

(a) the name of the operator or aircraft operator that was subject to verification;

(b) the objectives of the verification;

(c) the scope of the verification;

(d) a reference to the operator's or aircraft operator's report that has been verified;

(e) the criteria used to verify the operator's or aircraft operator's report, including the permit, where applicable, and versions of the monitoring plan approved by the competent authority or monitoring methodology plan, as appropriate, as well as the period of validity for each plan;

(f) **<…>**

(g) where it concerns the verification of the operator's or aircraft operator's emission report, aggregated emissions or tonne-kilometres per activity referred to in Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and per installation or aircraft operator;

(h) where it concerns the verification of the baseline data report or new entrant data report, aggregated annual verified data for each year in the baseline period for each sub-installation for the annual activity level and the emissions attributed to the sub-installation;

(ha) where it concerns the verification of the annual activity level report, aggregated annual verified data for each year in the activity level reporting period for each sub-installation for its annual activity level;

(i) the reporting period, the baseline period or the activity level reporting period subject to verification;

(j) the responsibilities of the operator or aircraft operator, the competent authority and the verifier;

(k) the verification opinion statement;

(l) a description of any identified misstatements and non-conformities that were not corrected before the issuance of the verification report;

(m) the dates on which site visits were carried out and by whom;

(n) information on whether any site visits were waived as well as the reasons for waiving these site visits;

(o) any issues of non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 which have become apparent during the verification;

(p) if approval by the competent authority cannot be obtained in time for the method used to complete the data gap pursuant to the last subparagraph of Article 18(1), a confirmation whether the method used is conservative and whether it does or does not lead to material misstatements;

(q) a statement if the method used to complete any data gap pursuant to Article 12 of Delegated Regulation (EU) 2019/331 leads to material misstatements;

(ra) where the verifier has observed relevant changes to the parameters listed in Articles 16(5), 19, 20, 21 or 22 of Delegated Regulation (EU) 2019/331 or changes in the energy efficiency pursuant to paragraphs 1, 2 and 3 of Article 6 of Implementing Regulation 2019/1842, a description of those changes and related remarks;

(rb) where applicable, confirmation that the date of start of normal operation as referred to in Article 5(2) of Delegated Regulation (EU) 2019/331 has been checked;

(s) recommendations for improvements, where applicable;

(t) the names of the EU ETS lead auditor, the independent reviewer and, where applicable, the EU ETS auditor and the technical expert that were involved in the verification of the operator's or aircraft operator's report;

(u) the date and signature by an authorised person on behalf of the verifier, including his name.

4. The verifier shall describe the misstatements, non-conformities and non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 in sufficient detail in the verification report to allow the operator or aircraft operator as well as the competent authority to understand the following:

(a) the size and nature of the misstatement, non-conformity or non-compliance with Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842;

(b) why the misstatement has material effect, or not;

(c) to which element of the operator's or aircraft operator's report the misstatement refers, or to what element of the monitoring plan or the monitoring methodology plan the non-conformity refers;

(d) to which Article in Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 or Implementing Regulation (EU) 2019/1842 the non-compliance relates.

5. For the purposes of verifying emission reports or tonne-kilometre reports, if a **Contracting Party** requires the verifier to submit information on the verification process in addition to the elements described in paragraph 3 and that information is not necessary to understand the verification opinion, the operator or aircraft operator may, for efficiency reasons, submit that additional information to the competent authority separately from the verification report at an alternative date, but no later than 15 May of the same year.

Article 28

Limitation of scope

The verifier may conclude that the scope of the verification referred to in Article 27(1)(c) is too limited in any of the following situations:

(a) data are missing that prevent a verifier from obtaining the evidence required to reduce the verification risk to the level needed to obtain reasonable level of assurance;

(b) the monitoring plan is not approved by the competent authority;

(c) the monitoring plan or monitoring methodology plan, as appropriate, does not provide sufficient scope or clarity to conclude on the verification;

(d) the operator or aircraft operator has failed to make sufficient information available to enable the verifier to carry out the verification;

(e) where Delegated Regulation (EU) 2019/331 or the **Contracting Party** required approval of the monitoring methodology plan by the competent authority prior to submission of the baseline data report and that plan has not been approved by the competent authority before the start of verification.

Article 29

Addressing outstanding non-material non-conformities

1. The verifier shall assess whether the operator or aircraft operator has corrected the non-conformities indicated in the verification report related to the previous monitoring period according to the requirements on the operator referred to in Article 69(4) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, where relevant.

If the operator or aircraft operator has not corrected those non-conformities pursuant to Article 69(4) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, the verifier shall consider whether the omission increases or may increase the risk of misstatements.

The verifier shall report in the verification report whether those non-conformities have been resolved by the operator or aircraft operator.

1a. For the purposes of the verification of the annual activity level report, the verifier shall assess whether the operator has corrected the non-conformities indicated in the verification report related to the corresponding baseline data report, the new entrant data report or the annual activity level report from the previous activity level reporting period.

If the operator has not corrected those non-conformities, the verifier shall consider whether the omission increases or may increase the risk of misstatements.

The verifier shall report in the verification report whether those non-conformities have been resolved by the operator.

2. The verifier shall record in the internal verification documentation details of when and how identified non-conformities are resolved by the operator or aircraft operator during the verification.

Article 30

Improvement of the monitoring and reporting process

1. Where the verifier has identified areas for improvement in the operator's or aircraft operator's performance related to points (a) to (e) of this paragraph, it shall include in the verification report recommendations for improvement related to the operator's or aircraft operator's performance on those points:

(a) the operator's or aircraft operator's risk assessment;

(b) the development, documentation, implementation and maintenance of data flow activities and control activities as well as the evaluation of the control system;

(c) the development, documentation, implementation and maintenance of procedures for data flow activities and control activities as well as other procedures that an operator or aircraft operator has to establish pursuant to Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or Article 11(2) of Delegated Regulation (EU) 2019/331;

(d) the monitoring and reporting of emissions or tonne kilometres, including in relation to achieving higher tiers, reducing risks and enhancing efficiency in the monitoring and reporting;

(e) the monitoring and reporting of data for baseline data reports, new entrant data reports and annual activity level reports.

2. During verification following a year in which recommendations for improvement were made in a verification report, the verifier shall check whether the operator or aircraft operator has implemented those recommendations for improvement and the manner in which this has been done.

Where the operator or aircraft operator has not implemented those recommendations or has not implemented them correctly, the verifier shall assess the impact this has on the risk of misstatements and non-conformities.

Article 31

Simplified verification for installations

1. By way of derogation from Article 21(1), the verifier may decide, subject to the approval by a competent authority in accordance with the second subparagraph of this Article, not to carry out site visits to installations.

This decision shall be based on the outcome of the risk analysis and after determining that all relevant data can be remotely accessed by the verifier and that the conditions for not carrying out site visits are met.

The verifier shall inform the operator thereof without undue delay.

The operator shall submit an application to the competent authority requesting the competent authority to approve the verifier's decision not to carry out the site visit.

On an application submitted by the operator concerned, the competent authority shall decide whether to approve the verifier's decision not to carry out the site visit, taking into consideration all of the following elements:

(a) the information provided by the verifier on the outcome of the risk analysis;

(b) information that the relevant data can be remotely accessed;

(c) evidence that the requirements laid down in paragraph 3 are not applicable to the installation;

(d) evidence that the conditions for not carrying out the site visits are met.

2. The approval of the competent authority referred to in paragraph 1 of this Article is not required for not carrying out site visits of installations with low emissions referred to in Article 47(2) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

3. The verifier shall always carry out site visits in the following situations:

(a) when an operator's emission report or annual activity level report is verified for the first time by the verifier;

(b) for the purposes of verifying the operator's emission report, if a verifier has not carried out a site visit in two reporting periods immediately preceding the current reporting period;

(ba) for the purposes of verifying the operator's annual activity level report, if a verifier has not carried out a site visit during the verification of an annual activity level report or a baseline data report in the two activity level reporting periods immediately preceding the current activity level reporting period;

(c) if, during the reporting period, there have been significant modifications of the monitoring plan including those referred to in Article 15(3) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(ca) if, during the activity level reporting period, there have been significant changes to the installation or its sub-installations which require significant modifications to the monitoring methodology plan, including those changes referred to in Article 9(5) of Delegated Regulation (EU) 2019/331;

(d) if an operator's baseline data report or new entrant data report is verified.

4. Points (c) and (ca) of paragraph 3 are not applicable where, during the reporting period, there have been only modifications of the default value as referred to in Article 15(3)(h) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or Article 9(5)(c) of Delegated Regulation (EU) 2019/331.

Article 32

Conditions for not carrying out site visits

The conditions for not carrying out site visits referred to in Article 31(1) are any of the following: (1) the verification of an operator's emission report concerns a category A installation referred to in Article 19(2)(a) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or a category B installation referred to in Article 19(2)(b) of that Implementing Regulation whereby:

(a) the installation has only one source stream as referred to in Article 19(3)(c) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** which is natural gas, or one or more *de minimis* source streams which aggregated do not exceed the threshold for *de minimis* source streams laid down in Article 19 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(b) the natural gas is monitored through fiscal metering which is subject to an appropriate legal regime for the control of fiscal meters and meets the required uncertainty levels related to the applicable tier;

(c) only default values for the calculation factors of natural gas are applied;

(2) the verification of an operator's emission report concerns a category A installation referred to in Article 19(2)(a) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or a category B installation referred to in Article 19(2)(b) of that Implementing Regulation whereby:

(a) the installation has only one source stream which is a fuel without process emissions, and that fuel is either a solid fuel directly combusted in the installation without intermediate storage, or a liquid or gaseous fuel for which there may be intermediate storage;

(b) the activity data related to the source stream is monitored by using one of the following methods:

(i) fiscal metering method which is subject to an appropriate legal regime for the control of fiscal meters and meets the required uncertainty levels related to the applicable tier;

(ii) method based solely on invoice data taking into account stock changes if relevant;

(c) only default values for calculation factors are applied;

(d) the competent authority has allowed the installation to use a simplified monitoring plan in accordance with Article 13 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**;

(3) the verification of an operator's emission report concerns an installation with low emissions as referred to in Article 47(2) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and paragraphs (a) to (c) of point (2) are applicable;

(3a) the verification of an operator's annual activity level report concerns an installation as referred to in point 1, 2 or 3 whereby:

(a) that installation has no other sub-installation than one sub-installation to which a product benchmark pursuant to Article 10(2) of Delegated Regulation (EU) 2019/331 is applicable; and

(b) the production data relevant for the product benchmark has been evaluated as part of an audit for financial accounting purposes and the operator provides evidence thereof;

(3b) the verification of an operator's annual activity level report concerns an installation as referred to in point 1, 2 or 3 whereby:

(a) the installation has a maximum of two sub-installations;

(b) the second sub-installation contributes less than 5 % to the installation's total final allocation of allowances; and

(c) the verifier has sufficient data available to assess the split of sub-installations if relevant;

(3c) the verification of an operator's annual activity level report concerns an installation as referred to in point 1, 2 or 3 whereby:

(a) the installation has only heat benchmark or district heating sub-installations; and

(b) the verifier has sufficient data available to assess the split of sub-installations if relevant;

(4) the verification of the operator's emission report or annual activity level report concerns an installation located on an unmanned site whereby:

(a) telemetered data from the unmanned site is sent directly to another location where all data is processed, managed and stored;

(b) the same person is responsible for all data management and recording for the site;

(c) the meters have already been inspected on site by the operator or a laboratory in accordance with Article 60 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or Article 11 of Delegated Regulation (EU) 2019/331 and a signed document or date-stamped photographic evidence provided by the operator demonstrates that no metering or operational changes have occurred at the installation since that inspection;

(5) the verification of the operator's emission report or annual activity level report concerns an installation located on a remote or inaccessible site, in particular an off-shore installation, whereby:

(a) there is a high level of centralisation of data collected from that site and transmitted directly to another location where all the data is processed, managed and stored with good quality assurance; and

(b) the meters have already been inspected on site by the operator or a laboratory in accordance with Article 60 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** or Article 11 of Delegated Regulation (EU) 2019/331 and a signed

document or date-stamped photographic evidence provided by the operator demonstrates that no metering or operational changes have occurred at the installation since that inspection.

Point (2) may also be applied if, in addition to the source stream as referred to in point (a) of that point, the installation uses one or more *de minimis* source streams which aggregated do not exceed the threshold for *de minimis* source streams laid down in Article 19 of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Point (3a)(b) must be applied if the sub-installation contributing 95 % or more to the installation's total final allocation of allowances as referred to in point (3b)(b) is a sub-installation to which a product benchmark pursuant to Article 10(2) of Delegated Regulation (EU) 2019/331 is applicable.

Article 33

Simplified verification for aircraft operators

1. By way of derogation from Article 21(1) of this Regulation, a verifier may decide not to carry out a site visit of a small emitter referred to in Article 55(1) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** if the verifier has concluded, based on its risk analysis, that all relevant data can be remotely accessed by the verifier.

2. Where an aircraft operator uses the simplified tools referred to in Article 55(2) of Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** to determine the fuel consumption and the reported data has been generated using those tools independently from any input from the aircraft operator, the verifier may, based on its risk analysis, decide not to carry out the checks referred to in Articles 14 and 16, Article 17(1) and (2) and Article 18 of this Regulation.

Article 34

Simplified verification plans

Where a verifier uses a simplified verification plan, the verifier shall keep a record of justifications for using such plans in the internal verification documentation, including evidence that the conditions for using simplified verification plans have been met.

Article 34a

Virtual site visits

1. By way of derogation from Article 21(1), where serious, extra ordinary and unforeseeable circumstances, outside the control of the operator or aircraft operator, prevent the verifier from carrying out a physical site visit and where these circumstances cannot, after using all reasonable efforts, be overcome, the verifier may decide, subject to the approval of the competent authority in accordance with paragraph 3 of this Article, to carry out a virtual site visit.

The verifier shall take measures to reduce the verification risk to an acceptable level to obtain reasonable

assurance that the operator's or aircraft operator's report is free from material misstatements.

A physical visit to the site of the installation or aircraft operator shall be carried out without undue delay.

The decision to carry out a virtual site visit shall be based on the outcome of the risk analysis and after determining that the conditions for carrying out a virtual site visit are met.

The verifier shall inform the operator or aircraft operator thereof without undue delay.

2. The operator or aircraft operator shall submit an application to the competent authority requesting the competent authority to approve the verifier's decision to carry out a virtual site visit.

The application shall include the following elements:

(a) evidence that it is not possible to carry out a physical site visit because of the serious, extraordinary and unforeseeable circumstances, outside the control of the operator or aircraft operator;

(b) information on how the virtual site visit will be carried out;

(c) the information on the outcome of the risk analysis by the verifier;

(d) evidence of the measures taken by the verifier to reduce the verification risk to an acceptable level to obtain reasonable assurance that the operator's or aircraft operator's report is free from material misstatements.

3. On an application submitted by the operator or aircraft operator concerned, the competent authority shall decide whether to approve the verifier's decision to carry out a virtual site visit, taking into consideration the elements specified in paragraph 2.

4. By way of derogation from paragraph 3, where a large number of installations or aircraft operators are affected by the similar serious, extraordinary and unforeseeable circumstances, outside the control of the operator or aircraft operator, and immediate action is needed because of legally imposed national health reasons, the competent authority may authorise verifiers to carry out virtual site visits without a need for an individual approval referred to in paragraph 3 provided that:

(a) the competent authority has established that there are serious extra ordinary and unforeseeable circumstances, outside the control of the operator or aircraft operator and immediate action is needed because of legally imposed national health reasons;

(b) the operator or aircraft operator informs the competent authority about the verifier's decision to carry out a virtual site visit, including the elements specified in paragraph 2.

The competent authority shall review the information provided by the operator or aircraft operator in accordance with point (b) during the assessment of the operator's or aircraft operator's report and inform the national accreditation body about the outcome of the assessment.

CHAPTER III
REQUIREMENTS FOR VERIFIERS

Article 35

Sectoral scopes of accreditation

The verifier shall only issue a verification report to an operator or aircraft operator that performs an activity that is covered by the scope of the activity referred to in Annex I for which the verifier has been granted accreditation according to the provisions of **<…>** this Regulation.

Article 36

Continued competence process

1. The verifier shall establish, document, implement and maintain a competence process to ensure that all personnel entrusted with verification activities are competent for the tasks that are allocated to them.

2. As part of the competence process referred to in paragraph 1, the verifier shall at least determine, document, implement and maintain the following:

(a) general competence criteria for all personnel undertaking verification activities;

(b) specific competence criteria for each function within the verifier undertaking verification activities, in particular for the EU ETS auditor, EU ETS lead auditor, independent reviewer and technical expert;

(c) a method to ensure the continued competence and regular evaluation of the performance of all personnel that undertake verification activities;

(d) a process for ensuring ongoing training of the personnel undertaking verification activities;

(e) a process for assessing whether the verification engagement falls within the scope of the verifier's accreditation, and whether the verifier has the competence, personnel and resources required to select the verification team and successfully complete the verification activities within the timeframe required.

The competence criteria referred to in point (b) of the first subparagraph shall be specific for each scope of accreditation in which these persons are carrying out verification activities.

In evaluating the competence of the personnel pursuant to point (c) of the first subparagraph, the verifier shall assess that competence against the competence criteria referred to in points (a) and (b).

The process referred to in point (e) of the first subparagraph shall also include a process for assessing whether the verification team holds all the competence and persons required to carry out verification activities for a specific operator or aircraft operator.

The verifier shall develop general and specific competence criteria which are in conformity with the criteria laid down in Article 37(4) and Articles 38, 39 and 40.

3. The verifier shall regularly monitor the performance of all personnel that undertake verification activities to confirm the continued competence of that personnel.

4. The verifier shall regularly review the competence process referred to in paragraph 1 to ensure that:

(a) the competence criteria referred to in points (a) and (b) of the first subparagraph of paragraph 2 are developed in accordance with the competence requirements under this Regulation;

(b) all issues that may be identified related to the setting of the general and specific competence criteria pursuant to points (a) and (b) of the first subparagraph of paragraph 2 are addressed;

(c) all the requirements in the competence process are updated and maintained as appropriate.

5. The verifier shall have a system for recording the results of the activities carried out in the competence process referred to in paragraph 1.

6. A sufficiently competent evaluator shall assess the competence and performance of an EU ETS auditor and EU ETS lead auditor.

The competent evaluator shall monitor those auditors during the verification of the operator's or aircraft operator's report on the site of the installation or aircraft operator as appropriate, to determine whether they meet the competence criteria.

7. If a member of personnel fails to demonstrate that the competence criteria for a specific task allocated to that member have been fully met, the verifier shall identify and organise additional training or supervised work experience.

The verifier shall monitor that member until the member demonstrates to the verifier that the member meets the competence criteria.

Article 37

Verification teams

1. For each particular verification engagement, the verifier shall assemble a verification team capable of performing the verification activities referred to in Chapter II.

2. The verification team shall at least consist of an EU ETS lead auditor, and, where the verifier's conclusions during the assessment referred to in Article 8(1)(e) and the strategic analysis so require, a suitable number of EU ETS auditors and technical experts.

3. For the independent review of the verification activities related to a particular verification engagement, the verifier shall appoint an independent reviewer who shall not be part of the verification team.

4. Each team member shall:

(a) have a clear understanding of their individual role in the verification process;

(b) be able to communicate effectively in the language necessary to perform their specific tasks.

5. The verification team shall include at least one person with the technical competence and understanding required to assess the specific technical monitoring and reporting aspects related to the activities referred to in Annex I that are carried out by the installation or aircraft operator.

The verification team shall also include one person who is able to communicate in the language required for the verification of an operator's or aircraft operator's report in the Member State **or Contracting Party** where the verifier is carrying out that verification.

Where the verifier is carrying out verification of baseline data reports, new entrant data reports or annual activity level reports the verification team shall include in addition at least one person with the technical

competence and understanding required to assess the specific technical aspects regarding the collection, monitoring and reporting of data relevant for free allocation.

6. Where the verification team consists of one person, this person shall meet all the competence requirements for the EU ETS auditor and EU ETS lead auditor and meet the requirements laid down in paragraphs 4 and 5.

Article 38

Competence requirements for EU ETS auditors and EU ETS lead auditors

1. **The provisions of this Article will be applicable from 24 months from the deadline for transposing this Regulation in national legislation.**

An EU ETS auditor shall have the competence to perform the verification.

To this end, the EU ETS auditor shall have at least:

(a) knowledge of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, Delegated Regulation (EU) 2019/331 and Implementing Regulation (EU) 2019/1842 in the case of verification of the baseline data report, new entrant data report or annual activity level report, this Regulation, relevant standards, and other relevant legislation, applicable guidelines, as well as relevant guidelines and legislation issued by the Member State **or Contracting Party** in which the verifier is carrying out a verification;

(b) knowledge and experience of data and information auditing, including:

(i) data and information auditing methodologies, including the application of the materiality level and assessing the materiality of misstatements;

(ii) analysing inherent risks and control risks;

(iii) sampling techniques in relation to data sampling and checking the control activities;

(iv) assessing data and information systems, IT systems, data flow activities, control activities, control systems and procedures for control activities.

(c) the ability to perform the activities related to the verification of an operator's or aircraft operator's report as required by Chapter II;

(d) knowledge of and experience in the sector specific technical monitoring and reporting aspects that are relevant for the scope of activities referred to in Annex I in which the EU ETS auditor is carrying out verification.

2. An EU ETS lead auditor shall meet the competence requirements for an EU ETS auditor and shall have demonstrated competence to lead a verification team and to be responsible for carrying out the verification activities in accordance with this Regulation.

Article 39

Competence requirements for independent reviewers

1. The independent reviewer shall have the appropriate authority to review the draft verification report and internal verification documentation pursuant to Article 25.

2. The independent reviewer shall meet the competence requirements of an EU ETS lead auditor referred to in Article 38(2).

3. The independent reviewer shall have the necessary competence to analyse the information provided to confirm the completeness and integrity of the information, to challenge missing or contradictory information as well as to check data trails for the purposes of assessing whether the internal verification documentation is complete and provides sufficient information to support the draft verification report.

Article 40

Use of technical experts

1. When carrying out verification activities, a verifier may use technical experts to provide detailed knowledge and expertise on a specific subject matter needed to support the EU ETS auditor and EU ETS lead auditor in carrying out their verification activities.

2. Where the independent reviewer does not have the competence to assess a particular issue in the review process, the verifier shall request the support of a technical expert.

3. The technical expert shall have the competence and expertise required to support the EU ETS auditor and EU ETS lead auditor, or the **verification team or the** independent reviewer, where necessary, effectively on the subject matter for which their knowledge and expertise is requested.

In addition, the technical expert shall have a sufficient understanding of the issues described in points (a), (b) and (c) of Article 38(1).

4. The technical expert shall undertake specified tasks under the direction and full responsibility of the EU ETS lead auditor of the verification team in which the technical expert is operating or the independent reviewer.

Article 41

Procedures for verification activities

1. A verifier shall establish, document, implement and maintain one or more procedures for verification activities as described in Chapter II, and the procedures and processes required by Annex II.

When establishing and implementing these procedures and processes the verifier shall carry out the activities listed in Annex II of this Regulation in accordance with the harmonised standard referred to in that Annex.

2. A verifier shall design, document, implement and maintain a management system in accordance with the harmonised standard referred to in Annex II to ensure consistent development, implementation, improvement and review of the procedures and processes referred to in paragraph 1.

The management system shall include at least the following:

(a) policies and responsibilities;

(b) management review;

(c) internal audits;

(d) corrective action;

(e) actions to address risk and opportunities and to take preventive action;

(f) control of documented information.

Article 42

Records and communication

1. A verifier shall maintain and manage records, including records on the competence and impartiality of personnel, to demonstrate compliance with this Regulation.

2. A verifier shall on a regular basis make information available to the operator or aircraft operator and other relevant parties in accordance with the harmonised standard referred to in Annex II.

3. A verifier shall safeguard the confidentiality of information obtained during the verification in accordance with the harmonised standard referred to in Annex II.

Article 43

Impartiality and independence

1. A verifier shall be independent from an operator or aircraft operator and impartial in carrying out its verification activities.

To ensure independence and impartiality, the verifier and any part of the same legal entity shall not be an operator or aircraft operator, the owner of an operator or aircraft operator or owned by them, nor shall the verifier have relations with the operator or aircraft operator that could affect its independence and impartiality.

The verifier shall also be independent from bodies that trade emission allowances under **any greenhouse gas emission allowances trading system <…>**.

2. A verifier shall be organised in a manner that safeguards its objectivity, independence and impartiality.

For the purposes of this Regulation, the relevant requirements on the structure and organisation of the verifier laid down in the harmonised standard referred to in Annex II shall apply.

3. A verifier shall not carry out verification activities for an operator or aircraft operator that poses an unacceptable risk to its impartiality or that creates a conflict of interest for it.

The verifier shall not use personnel or contracted persons in the verification of an operator's or aircraft operator's report that involves an actual or potential conflict of interest.

The verifier shall also ensure that the activities of personnel or organisations do not affect the confidentiality, objectivity, independence and impartiality of the verification.

For this purpose, the verifier shall monitor the risks to impartiality and take appropriate action to address those risks.

An unacceptable risk to impartiality or a conflict of interest referred to in the first sentence of the first subparagraph shall be considered to have arisen in particular in either of the following cases:

(a) where a verifier or any part of the same legal entity provides consulting services to develop part of the monitoring and reporting process that is described in the monitoring plan approved by the competent authority or in the monitoring methodology plan, as applicable, including the development of the monitoring methodology, the drafting of the operator's or aircraft operator's report and the drafting of the monitoring plan or monitoring methodology plan;

(b) where a verifier or any part of the same legal entity provides technical assistance to develop or maintain the system implemented to monitor and report emissions, tonne-kilometre data or data relevant for free allocation.

4. A conflict of interest for a verifier in the relations between it and an operator or an aircraft operator shall be considered to have arisen in particular in either of the following cases:

(a) where the relationship between the verifier and the operator or aircraft operator is based on common ownership, common governance, common management or personnel, shared resources, common finances and common contracts or marketing;

(b) where the operator or aircraft operator has received consulting services referred to in point (a) of paragraph 3 or technical assistance referred to in point (b) of that paragraph from a consultancy body, technical assistance body or another organisation having relations with the verifier and threatening the impartiality of the verifier.

For the purposes of point (b) of the first subparagraph, the verifier's impartiality shall be considered compromised where the relations between the verifier and the consultancy body, technical assistance body or the other organisation is based on common ownership, common governance, common management or personnel, shared resources, common finances, common contracts or marketing and common payment of sales commission or other inducement for the referral of new clients.

5. A verifier shall not outsource the closing of the agreement between the operator or aircraft operator and the verifier, the independent review or the issuance of the verification report.

For the purposes of this Regulation, when outsourcing other verification activities, the verifier shall meet the relevant requirements laid down in the harmonised standard referred to in Annex II.

However, contracting individuals to carry out verification activities shall not constitute outsourcing for the purposes of the first subparagraph if the verifier, when contracting those persons, takes full responsibility for the verification activities performed by contracted personnel.

When contracting individuals for carrying out verification activities the verifier shall require these individuals to sign a written agreement that they comply with the procedures of the verifier and that there is no conflict of interest in carrying out these verification activities.

6. A verifier shall establish, document, implement and maintain a process to ensure continuous impartiality and independence of the verifier, parts of the same legal entity as the verifier, other organisations referred to in paragraph 4, and of all personnel and contracted persons involved in the verification.

That process shall include a mechanism to safeguard the impartiality and independence of the verifier and shall meet the relevant requirements laid down in the harmonised standard referred to in Annex II.

6a. When verifying the same operator or aircraft operator as in the previous year, the verifier shall consider the risk to impartiality and take measures to reduce the risk to impartiality.

7. If the EU ETS lead auditor undertakes six annual verifications for a given aircraft operator, then the EU ETS lead auditor shall take a three consecutive year break from providing verification services to that same aircraft operator.

The six years maximum period includes any greenhouse gas verifications performed for the aircraft operator starting after the entry into force of this regulation.

8. If the EU ETS lead auditor undertakes annual verifications for a period of five consecutive years for a given installation, then the EU ETS lead auditor shall take a three consecutive year break from providing verification services to that same installation.

The five years maximum period includes EU ETS verifications of emissions or allocation data performed for the installation starting after 1 January 2021.

CHAPTER IV
ACCREDITATION

Article 44
Accreditation

A verifier issuing a verification report to an operator or an aircraft operator shall be accredited for the scope of activities referred to in Annex I for which the verifier is carrying out the verification of an operator's or aircraft operator's report.

For the purpose of verifying baseline data reports, new entrant data reports or annual activity level reports, a verifier issuing a verification report to an operator shall in addition be accredited for activity group No 98 referred to in Annex I.

Article 45
Objectives of accreditation

During the accreditation process and the monitoring of accredited verifiers, each national accreditation body shall assess whether the verifier and its personnel undertaking verification activities:

(a) have the competence to carry out the verification of operator's or aircraft operator's reports in accordance with this Regulation;

(b) are performing the verification of operator's or aircraft operator's reports in accordance with this Regulation;

(c) meet the requirements referred to in Chapter III.

Article 46

Request for accreditation

1. Any legal person established under national law of a Member State **or Contracting Party** may request accreditation pursuant to **<…>** the provisions of this Chapter.

The request shall contain the information required on the basis of the harmonised standard referred to in Annex III.

2. In addition to the information referred to in paragraph 1 of this Article, an applicant shall also, prior to the commencement of the assessment pursuant to Article 45, make available to the national accreditation body the following:

(a) all information requested by the national accreditation body;

(b) procedures and information concerning processes referred to in Article 41(1) and the information on the quality management system referred to in Article 41(2);

(c) the competence criteria referred to in Article 36(2)(a) and (b), the results of the competence process referred to in Article 36 as well as other relevant documentation on the competence of all personnel involved in verification activities;

(d) information on the process for ensuring continuous impartiality and independence referred to in Article 43(6), including relevant records on the impartiality and independence of the applicant and its personnel;

(e) information on the technical experts and key personnel involved in the verification of operator's or aircraft operator's reports;

(f) the system and process for ensuring appropriate internal verification documentation;

(g) other relevant records referred to in Article 42(1).

Article 47

Preparation for assessment

1. When preparing the assessment referred to in Article 45, each national accreditation body shall take into account the complexity of the scope for which the applicant requests accreditation as well as the complexity of the quality management system referred to in Article 41(2), the procedures and information on processes referred to in Article 41(1) and the geographical areas in which the applicant is carrying out or planning to carry out verification.

2. For the purposes of this Regulation, the national accreditation body shall meet the minimum requirements set out in the harmonised standard referred to in Annex III.

Article 48

Assessment

1. The assessment team referred to in Article 58 **– as soon as it becomes applicable in the Energy**

Community – shall carry out at least the following activities for the purposes of making the assessment referred to in Article 45:

(a) a review of all relevant documents and records referred to in Article 46;

(b) a visit of the premises of the applicant to review a representative sample of the internal verification documentation and to assess the implementation of the applicant's quality management system and the procedures or processes referred to in Article 41;

(c) witnessing of a representative part of the requested scope for accreditation and the performance and competence of a representative number of the applicant's staff involved in the verification of the operator's or aircraft operator's report to ensure that the staff are operating in accordance with this Regulation.

In carrying out those activities, the assessment team shall meet the requirements set out in the harmonised standard referred to in Annex III.

2. The assessment team shall report the findings and non-conformities to the applicant in accordance with the requirements set out in the harmonised standard referred to in Annex III and shall request the applicant to respond to the reported findings and non-conformities in accordance with those provisions.

3. An applicant shall take corrective action to address any non-conformities reported pursuant to paragraph 2 and indicate in applicant's response to the reported findings and non-conformities of the assessment team what actions are taken or are planned to be taken within a time set by the national accreditation body to resolve any identified non-conformities.

4. The national accreditation body shall review the responses of the applicant to the findings and non-conformities submitted pursuant to paragraph 3.

Where the national accreditation body finds the response of the applicant to be insufficient or ineffective, it shall request further information or action from the applicant.

The national accreditation body may also request evidence of the effective implementation of actions taken or carry out a follow-up assessment to assess the effective implementation of the corrective actions.

Article 49

Decision on accreditation and accreditation certificate

1. The national accreditation body shall take into account the requirements laid down in the harmonised standard referred to in Annex III when preparing and taking the decision on whether to grant, extend or renew the accreditation of an applicant.

2. Where the national accreditation body has decided to grant, extend or renew the accreditation of an applicant, it shall issue an accreditation certificate to that effect.

The accreditation certificate shall at least contain the information required on the basis of the harmonised standard referred to in Annex III.

The accreditation certificate shall be valid for a period not exceeding five years after the date on which the national accreditation body has issued that certificate.

Article 50

Surveillance

1. The national accreditation body shall carry out an annual surveillance of each verifier to which it has issued an accreditation certificate.

The surveillance shall at least comprise the following:

(a) a visit to the premises of the verifier with a view to carrying out the activities referred to Article 48(1)(b);

(b) witnessing the performance and competence of a representative number of the verifier's staff in accordance with Article 48(1)(c).

2. The national accreditation body shall carry out the first surveillance of a verifier in accordance with paragraph 1 no later than 12 months after the date on which the accreditation certificate has been issued to that verifier.

3. The national accreditation body shall prepare its plan for the surveillance of each verifier in a manner that allows for representative samples of the scope of accreditation to be assessed, in accordance with the requirements laid down in the harmonised standard referred to in Annex III.

4. Based on the results of the surveillance referred to in paragraph 1, the national accreditation body shall decide whether to confirm the continuation of accreditation.

5. Where a verifier carries out a verification in another Member State **of the European Union or Contracting Party**, the national accreditation body that has accredited the verifier may request the national accreditation body of the Member State **of the European Union or Contracting Party,** where the verification is performed to carry out surveillance activities on its behalf and under its responsibility.

Article 51

Reassessment

1. Before the expiry of the accreditation certificate, the national accreditation body shall carry out a reassessment of the verifier to which the national accreditation body has issued an accreditation certificate to determine whether the validity of that accreditation certificate may be extended.

2. The national accreditation body shall prepare its plan for the reassessment of each verifier in a manner that allows representative samples of the scope of accreditation to be assessed.

In planning and carrying out the reassessment, the national accreditation body shall meet the requirements laid down in the harmonised standard referred to in Annex III.

Article 52

Extraordinary assessment

1. The national accreditation body may conduct an extraordinary assessment of the verifier at any time to ensure that the verifier meets the requirements of this Regulation.

2. For the purposes of enabling the national accreditation body to assess the need for an extraordinary assessment, the verifier shall inform the national accreditation body forthwith of any significant changes relevant to its accreditation concerning any aspect of its status or operation.

Significant changes shall include those changes mentioned in the harmonised standard referred to in Annex III.

Article 53

Extension of scope

The national accreditation body shall, in response to an application by a verifier for an extension of the scope of a granted accreditation, undertake the necessary activities to determine whether the verifier meets the requirements of Article 45 for the requested extension of the scope of its accreditation.

Article 54

Administrative measures

1. The national accreditation body may suspend, withdraw or reduce an accreditation of a verifier if the verifier does not meet the requirements of this Regulation.

The national accreditation body shall suspend, withdraw or reduce an accreditation of a verifier if the verifier so requests.

The national accreditation body shall establish, document, implement and maintain a procedure for the suspension of the accreditation, the withdrawal of the accreditation and the reduction of the scope of accreditation.

2. The national accreditation body shall suspend an accreditation, or restrict the scope of an accreditation in any of the following cases:

(a) the verifier has committed a serious breach of the requirements of this Regulation;

(b) the verifier has persistently and repeatedly failed to meet the requirements of this Regulation;

(c) the verifier has breached other specific terms and conditions of the national accreditation body.

3. The national accreditation body shall withdraw the accreditation in the following cases:

(a) the verifier has failed to remedy the grounds for a decision to suspend the accreditation certificate;

(b) a member of the top management of the verifier or a verifier's staff involved in verification activities under this Regulation has been found guilty of fraud;

(c) the verifier has intentionally provided false information or concealed information.

4. The decision of a national accreditation body to suspend, withdraw or reduce the scope of the accreditation in accordance with paragraphs 2 and 3 shall be subject to appeal.

Contracting Parties shall establish procedures for the resolution of those appeals.

5. The decision of a national accreditation body to suspend, withdraw or reduce the scope of the accreditation shall take effect upon its notification to the verifier.

The national accreditation body shall terminate the suspension of an accreditation certificate where it has received satisfactory information and is confident that the verifier meets the requirements of this Regulation.

CHAPTER V

REQUIREMENTS CONCERNING ACCREDITATION BODIES FOR THE ACCREDITATION OF ETS VERIFIERS

Article 55

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Article 56

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Article 57

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Article 58

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Article 59

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Article 60

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Article 61

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Article 62

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Article 63

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Article 64

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Article 65

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Article 66

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Article 67

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Article 68

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Article 69

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CHAPTER VI
INFORMATION EXCHANGE

Article 70

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Article 71

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Article 72

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Article 73

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Article 74

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Article 75

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Article 76

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Article 77

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CHAPTER VII
FINAL PROVISIONS

Article 78

<...>

Article 79

This Regulation enters into force on the day of the adoption of Ministerial Council Decision 2022/05/MC-EnC and is addressed to the Parties and the institutions of the Energy Community.

ANNEX I
Scope of accreditation for verifiers

The scope of accreditation of verifiers shall be indicated in the accreditation certificate using the following groups of activities pursuant to Annex I to Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** and other activities pursuant to Articles 10a and 24 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**.

Those provisions shall equally apply to verifiers certified by a national authority in accordance with Article 55(2) of this Regulation.

Activity Group No.	**Scopes of Accreditation**
1a	Combustion of fuels in installations, where only commercial standard fuels as defined in Commission Implementing Regulation (EU) 2018/2066 **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** are used, or where natural gas is used in category A or B installations.
1b	Combustion of fuels in installations, without restrictions
2	Refining of mineral oil
3	Production of coke — Metal ore (including sulphide ore) roasting or sintering, including pelletisation — Production of pig iron or steel (primary or secondary fusion) including continuous casting
4	Production or processing of ferrous metals (including ferro-alloys) — Production of secondary aluminium — Production or processing of non-ferrous metals, including production of alloys
5	Production of primary aluminium (CO_2 and PFC emissions)
6	Production of cement clinker — Production of lime or calcination of dolomite or magnesite — Manufacture of glass including glass fibre — Manufacture of ceramic products by firing — Manufacture of mineral wool insulation material — Drying or calcination of gypsum or production of plaster boards and other gypsum products
7	Production of pulp from timber or other fibrous materials — Production of paper or cardboard
8	Production of carbon black — Production of ammonia — Production of bulk organic chemicals by cracking, reforming, partial or full oxidation or by similar processes — Production of hydrogen (H_2) and synthesis gas by reforming or partial oxidation — Production of soda ash (Na_2CO_3) and sodium bicarbonate ($NaHCO_3$)
9	Production of nitric acid (CO_2 and N_2O emissions) — Production of adipic acid (CO_2 and N_2O emissions) — Production of glyoxal and glyoxylic acid (CO_2 and N_2O emissions)

10	Capture of greenhouse gases from installations covered by Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC** for the purpose of transport and geological storage in a storage site permitted under Directive 2009/31/EC — Transport of greenhouse gases by pipelines for geological storage in a storage site permitted under Directive 2009/31/EC
11	Geological storage of greenhouse gases in a storage site permitted under Directive 2009/31/EC
12	Aviation activities (emissions and tonne-kilometre data)
98	Other activities pursuant to Article 10a of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**
99	Other activities, included by a **Contracting Party** pursuant to Article 24 of Directive 2003/87/EC **as adapted and adopted by the Ministerial Council Decision 2022/05/MC-EnC**, to be specified in detail in the accreditation certificate

ANNEX II
Requirements on verifiers

With respect to the requirements on verifiers, the harmonised standard pursuant to Regulation (EC) No 765/2008 concerning requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition, shall apply.

In addition, the following procedures, processes and arrangements referred to in Article 41(1), shall apply:

(a) a process and policy for communication with the operator or aircraft operator and other relevant parties;

(b) adequate arrangements to safeguard the confidentiality of information obtained;

(c) a process for dealing with appeals;

(d) a process for dealing with complaints (including indicative timescale);

(e) a process for issuing a revised verification report where an error in the verification report or operator's or aircraft operator's report has been identified after the verifier has submitted the verification report to the operator or aircraft operator for onwards submission to the competent authority;

(f) a procedure or process for outsourcing verification activities to other organisations;

(g) a procedure or process to ensure that the verifier takes full responsibility for verification activities performed by contracted individuals;

(h) processes ensuring the proper functioning of the management system as referred to in Article 41(2), including:

i. processes for the review of management system at least once a year, not exceeding 15 months between management reviews;

ii. processes for conducting internal audits at least once a year, not exceeding 15 months between internal audits;

iii. processes for identifying and managing non-conformities in the verifier's activities and taking corrective action to address those non-conformities;

iv. processes for identifying risks and opportunities in verifier's activities and taking preventive actions to mitigate those risks;

v. processes for the control of documented information.

ANNEX III

Minimum requirements of the accreditation process and requirements on accreditation bodies

With respect to the minimum requirements for accreditation, and the requirements for accreditation bodies, the harmonised standard pursuant to Regulation (EC) No 765/2008 concerning general requirements for accreditation bodies accrediting conformity assessment bodies shall apply.

ANNEX IV

<...>

COMMISSION IMPLEMENTING REGULATION (EU) 2022/2299 of 15 November 2022 laying down rules for the application of Regulation (EU) 2018/1999 as regards the structure, format, technical details and process for the integrated national energy and climate progress reports

Incorporated and adapted by Permanent High Level Group Decision 2024/01/PHLG-EnC of 11 December 2024

The adaptations made by Permanent High Level Group Decision 2024/01/PHLG-EnC EnC are highlighted in **bold and blue.**

CHAPTER I
DEFINITIONS

Article 1
Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) 'mandatory if applicable' means the following categories of information that **Contracting Parties** have to submit:

(a) information regarding national objectives, targets and contributions or national policies and measures, only if the **Contracting Parties** have set or adopted **them or if they are described in Decision 2022/02/MC-EnC of the Ministerial Council of the Energy Community**;

(b) information regarding how the **Contracting Parties** address a recommendation issued pursuant to Article 32(1) or (2) of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** only if the **Secretariat has** issued it;

(2) 'mandatory if available' means a category of information that **Contracting Parties** have to submit only if such information is available to them at the time of the submission of the biennial progress report.

CHAPTER II
REPORTING ON NATIONAL OBJECTIVES, TARGETS AND CONTRIBUTIONS

Article 2
Reporting on progress with respect to the decarbonisation dimension

1. **Contracting Parties** shall report the information on progress towards **achieving** the objectives, including **<…>** the **national targets for net Greenhouse Gas Emissions compared to 1990 levels, as adopted by the Ministerial Council Decision 2022/02/MC-Enc**, **<…> set out in the adopted integrated national energy and climate plan, and in related national legisla-**

tion, and **achieving** the targets with respect to greenhouse gas emissions and removals referred to in Article 4, point (a)(1) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex I to this Regulation.

The **Secretariat** shall consider biennial reports by **Contracting Parties** submitted pursuant to Article 18(1), point (b) of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** and annual reports submitted pursuant to Article 26(3) of that Regulation, taking into account the initial checks as referred to in Article 37(4) of that Regulation, as a submission for the purpose of biennial integrated national energy and climate progress reports pursuant to Article 17(1) of that Regulation with regard to the area of greenhouse gas emissions.

2. **Contracting Parties** shall report the information on progress towards the objectives, targets and contributions with respect to renewable energy referred to in Article 4, point (a)(2) and Article 20, point (a) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex II to this Regulation.

3. **Contracting Parties** shall report the information on adaptation referred to in Article 4, point (a)(1) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex III to this Regulation.

Article 3

Reporting on progress with respect to the energy efficiency dimension

Contracting Parties shall report the information on progress towards the objectives, targets and contributions with respect to the energy efficiency dimension referred to in Article 4, point (b) and Article 21, point (a) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex IV to this Regulation.

Article 4

Reporting on progress with respect to the energy security dimension

Contracting Parties shall report the information on progress towards the objectives, targets and contributions with respect to the energy security dimension referred to in Article 4, point (c) and Article 22, points (a) to (d) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex V to this Regulation.

Article 5

Reporting on progress with respect to the internal energy market dimension

Contracting Parties shall report the information on progress towards the objectives, targets and contributions with respect to internal energy market dimension referred to in Article 4, point (d) and Article 23(1), points (a) to (g) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex VI to this Regulation.

Article 6

Reporting on progress with respect to the research, innovation and competitiveness dimension

1. **Contracting Parties** shall report the information on progress towards the objectives, targets and contributions with respect to the research, innovation and competitiveness dimension referred to in Article 4, point (e) and Article 25, points (a) to (c) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex VII to this Regulation.

2. **Contracting Parties** shall report the information on progress towards the national objectives to phase out energy subsidies, in particular for fossil fuels, referred to in Article 25(d) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex VIII to this Regulation.

CHAPTER III
REPORTING ON POLICIES AND MEASURES

Article 7

Reporting on national policies and measures

1. **Contracting Parties** shall report the information on progress towards implementing the national policies and measures, and where appropriate updated or new policies and measures, or groups of policies and measures, referred to in Article 17(2), points (a) and (c), and Articles 20 to 25 of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex IX to this Regulation.

2. The **Secretariat** shall consider biennial reports by **Contracting Parties** submitted pursuant to Article 18(1), point (a) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** as submissions for the purpose of biennial integrated national energy and climate progress reports pursuant to Article 17(1) of that Reg-

ulation with regard to the area of greenhouse gas emissions. **Contracting Parties** shall complement the reports pursuant to Article 18(1), point (a) with information referred to in Article 10 and Article 11 of this Regulation.

3. When reporting on the new policies and measures referred to in Article 21, point (b)(3) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC Contracting Parties** shall, in addition, report the information in accordance with the formats set out in Annex X to this Regulation.

Article 8

Reporting on the amount of energy savings achieved under Article 7 of Directive 2012/27/EU

Contracting Parties shall report the information referred to in Part 2, points (b) to (d) of Annex IX to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex XI to this Regulation.

Article 9

Reporting in accordance with Article 5 of Directive 2012/27/EU

1. **Contracting Parties** shall report the total renovated building floor area of heated and cooled buildings owned and occupied by their central government referred to in Part 2, point (g) of Annex IX to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Table 1 of Annex XII to this Regulation.

2. **Contracting Parties** shall report the amount of energy savings in eligible buildings owned and occupied by their central government referred to in Part 2, point (g) of Annex IX to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Table 2 of Annex XII to this Regulation.

Article 10

Reporting on progress towards financing

Contracting Parties shall report the information on progress towards financing the policies and measures, or groups of policies and measures, referred to in Article 17(2), point (a), Article 20, point (b)(3), Article 21, point (b)(7), Article 22, point (g), Article 23(1), point (j) and Article 25, point (g) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** and reported in accordance with Article 7(1) of this Regulation,

including a review of actual investment against initial investment assumptions, in accordance with the formats set out in Annex XIII to this Regulation.

Article 11

Reporting on impact on air quality and on emissions of air pollutants

When reporting on quantification of the impact of the policies and measures, or groups of policies and measures, on air quality and on emissions of air pollutants, that are covered by the reports submitted in accordance with Article 7(1) and (2), **Contracting Parties** shall do so in accordance with the formats set out in Annex XIV.

Article 12

Reporting on policies and measures to phase out energy subsidies, in particular for fossil fuels

Contracting Parties shall report on the policies and measures referred to in Article 17(2), points (a) and (c) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** concerning the phasing out of energy subsidies, in particular for fossil fuels, in accordance with the formats set out in Annex XV to this Regulation.

CHAPTER IV
OTHER REPORTING OBLIGATIONS

Article 13

Additional reporting obligations in the area of renewable energy

Contracting Parties shall report the additional information referred to in Part 1 of Annex IX to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in the area of renewable energy in accordance with the formats set out in Annex XVI to this Regulation.

Article 14

Additional reporting obligations in the area of energy efficiency

Contracting Parties shall report the additional information referred to in Part 2, points (e), (f) and (h) to (k) of Annex IX to Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex XVII to this Regulation.

Article 15

Reporting on energy poverty and just transition

1. Where Article 3(3), point (d), second subparagraph, of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** applies, **Contracting Parties** shall report:

(a) the information on progress towards the national indicative objectives to reduce the number of households in energy poverty, referred to in Article 24, point (a) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**, in accordance with the formats set out in Annex XVIII to this Regulation;

(b) the quantitative information on the number of households in energy poverty, referred to in Article 24, point (b) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**, in accordance with the formats set out in Table 1 of Annex XIX to this Regulation.

2. **Contracting Parties** may report on the indicators in relation to energy poverty in accordance with the formats set out in Tables 2 and 3 of Annex XIX to this Regulation.

3. **Contracting Parties** may report the information on national definition of energy poverty in accordance with the formats set out in Table 4 of Annex XIX to this Regulation.

4. **Contracting Parties** may report the information on how the implementation of their integrated national energy and climate plans contribute to the just transition including through the promotion of both human rights and gender equality and address inequalities in energy poverty in accordance with the formats set out in Annex XX to this Regulation.

Article 16

Reporting on implementation of regional cooperation

Contracting Parties shall report the information on the implementation of regional cooperation referred to in Article 12, Article 20, point (b)(2), Article 21, point (b)(6), Article 22, point (f), Article 23(1), point (i), and Article 25, point (f) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in the context of the implementation of the objectives, targets and contributions and policies and measures referred to in Chapters II and III of this Regulation in accordance with the formats set out in Annex XXI to this Regulation.

Article 17

Reporting on implementation of recommendations referred to in Article 32(1) or (2) of Regulation (EU) 2018/1999, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC

Where the **Secretariat** has issued recommendations pursuant to Article 32(1) or (2) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC Contracting Parties** shall report the information on the policies and measures adopted, or intended to be adopted and implemented, to address those recommendations as referred to in Article 17(6) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex XXII to this Regulation.

Where the **Contracting Parties** concerned decide not to address a recommendation or a substantial part thereof, they shall provide their reasoning in accordance with the formats set out in Annex XXII to this Regulation.

Article 18

Reporting on multilevel climate and energy dialogue referred to in Article 11 of Regulation (EU) 2018/1999, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC

Contracting Parties shall report the information on progress in establishing the dialogue referred to in Article 11 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in accordance with the formats set out in Annex XXIII to this Regulation.

CHAPTER V
SUBMISSION PROCESSES

Article 19

Submission of reports

Contracting Parties shall use the e-platform referred to in Article 28 of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** and the tools and templates linked to it for the submission of their integrated national energy and climate progress reports pursuant to this Regulation.

CHAPTER VI
FINAL PROVISIONS

Article 20

Entry into force

This decision shall enter into force on the date of its adoption.[1]

1 The text displayed here corresponds to Article 1 of Decision 2024/01/PHLG-EnC.

ANNEX I
DECARBONISATION: GREENHOUSE GAS EMISSIONS AND REMOVALS

Table 1

Current and projected national progress towards the national greenhouse gas (GHG) emissions reduction targets in view of climate-neutrality

Reporting element	ID (1)	Specification	Scope (2)	Unit	GWP (3)	Year					Target year for climate-neutrality	Indirect CO_2-emissions included (yes/no)? (10)
						X-3 <...>	X-2	2030	2040	2050		
Climate-neutrality (4)	A1	M_{iap}										
Role of removals (5)	A2	M_{iap}		$ktCO_2e$	AR 5							
National GHG target – for 2030 and beyond, if available, and indicative milestones for 2040 and 2050.	B	M_{iap}	Total GHG emissions excluding LULUCF, excluding international aviation (6)	$ktCO_2e$	AR 5							
	C	M_{iap}	Total GHG emissions including LULUCF, excluding international aviation (6)	$ktCO_2e$	AR 5							
	D	M_{iap}	Total GHG emissions including LULUCF, including international aviation (6)	$ktCO_2e$	AR 5							

Historic emissions	E	M_{iap}	Total GHG emissions excluding LULUCF, excluding international aviation ([7])	$ktCO_2e$	AR 5							
	F	M_{iap}	Total GHG emissions including LULUCF, excluding international aviation ([7])	$ktCO_2e$	AR 5							
	G	M_{iap}	Total GHG emissions including LULUCF, including international aviation ([7])	$ktCO_2e$	AR 5							

Article 18 WEM scenario	H	M_{iap}	Total GHG emissions excluding LULUCF, excluding international aviation ([8])	$ktCO_2e$	AR 5							
	I	M_{iap}	Total GHG emissions including LULUCF, excluding international aviation ([8])	$ktCO_2e$	AR 5							
	J	M_{iap}	Total GHG emissions including LULUCF, including international aviation ([8])	$ktCO_2e$	AR 5							

Article 18 WAM scenario	K	M_{iav}	Total GHG emissions excluding LULUCF, excluding international aviation ([8])	$ktCO_2e$	AR 5							
	L	M_{iav}	Total GHG emissions including LULUCF, excluding international aviation ([8])	$ktCO_2e$	AR 5							
	M	M_{iav}	Total GHG emissions including LULUCF, including international aviation ([8])	$ktCO_2e$	AR 5							

Current progress (X-3): Difference between historical data and values in line with national GHG target path	N1	n/a	Total GHG emissions excluding LULUCF, excluding international aviation	Percent ([9])	AR 5							
	O1	n/a	Total GHG emissions including LULUCF, excluding international aviation	Percent ([9])	AR 5							
	P1	n/a	Total GHG emissions including LULUCF, including international aviation	Percent ([9])	AR 5							

Current progress (X-2): Difference between historical data and values in line with national GHG target path	N2	n/a	Total GHG emissions excluding LULUCF, excluding international aviation	Percent (9)	AR 5							
	O2	n/a	Total GHG emissions including LULUCF, excluding international aviation	Percent (9)	AR 5							
	P2	n/a	Total GHG emissions including LULUCF, including international aviation	Percent (9)	AR 5							

Projected progress: Difference between WEM scenario and values in line with national GHG target path	Q	n/a	Total GHG emissions excluding LULUCF, excluding international aviation	Percent (9)	AR 5							
	R	n/a	Total GHG emissions including LULUCF, excluding international aviation	Percent (9)	AR 5							
	S	n/a	Total GHG emissions including LULUCF, including international aviation	Percent (9)	AR 5							

Projected progress: Difference between WAM scenario and values in line with national GHG target path	T	n/a	Total GHG emissions excluding LULUCF, excluding international aviation	Percent (9)	AR 5							
	U	n/a	Total GHG emissions including LULUCF, excluding international aviation	Percent (9)	AR 5							
	V	n/a	Total GHG emissions including LULUCF, including international aviation	Percent (9)	AR 5							

Notation: X = reporting year; M_{iap} = mandatory if applicable; M_{iav} = mandatory if available.

Notes:

(1) IDs are shown to demonstrate how progress is calculated – the calculations using these IDs are listed in note 9.

(2) Data only to be supplied in those lines which apply to Contracting parties target scope. Report data in line with GHG inventory. The totals reported for this column should include indirect CO_2-emissions if these are reported in the GHG inventory.

(3) Information according to which Global Warming Potential values the GHG emissions shall be reported. GHG inventory data: the Global Warming Potential applies that applies to GHG inventories in the same year. AR 5 = Global Warming Potential values from the IPCCs 5th Assessment Report.

(4) If national **economy-wide** climate-neutrality objective is in place, targeted year for climate-neutrality.

(5) If national total GHG emissions target for 2030, 2040 or 2050 is in place, total estimated removals for the target year respectively. If national climate-neutrality objective is in place, total estimated removals for the target year of climate-neutrality in $ktCO_2e$.

(6) Provided by the **Contracting Parties** according to information in current integrated national energy and climate plan (as in Annex I, Part 1, Section A, Section 2, point 2.1.1(ii). Objectives and targets consistent with the Paris Agreement and the existing long-term strategies of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**) in line with its long-term strategy reported under Article 15 of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**.

(7) Final total GHG emissions as submitted by the **Contracting Parties** in their final GHG inventory information under Article 26(3) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in the same reporting year and reported in line with GHG inventory guidelines (see Article 8 of Commission Implementing Regulation (EU) 2020/1208, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC).**

(8) Final data from **Contracting Parties** submissions in the same reporting year according to Annex XXV to Commission Implementing Regulation (EU) 2020/1208, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** for reporting under Article 18(1), point (b) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**.

(9) Values are automatically calculated as percent difference to the given target. Only automatically calculated for those reporting elements where the corresponding row in block with IDs B-D was completed. If no automatic calculation is possible, the cell to be filled with notation key NA – not applicable. A negative value indicates that emissions are x % higher than the given target, while positive value indicates emissions are x % below the target.
N1= (B-E)/B – using data from X-3 for E
N2= (B-E)/B – using data from X-2 for E
O1= (C-F)/C – using data from X-3 for F
O2= (C-F)/C – using data from X-2 for F
P1= (D-G)/D – using data from X-3 for G
P2= (D-G)/D – using data from X-2 for G
Q= (B-H)/B
R= (C-I)/C
S= (D-J)/D
T= (B-K)/B
U=(C-L)/C
V=(D-M)/D

(10) Indicates with yes/no whether indirect CO_2-emissions are included in the target figure.

Table 2

Current and projected progress towards the national greenhouse gas (GHG) emissions reduction targets in view of climate-neutrality, excluding GHG emissions from LULUCF <…>

Reporting element	ID	Specification	Unit	GWP (1)	Year				
					X-3 (4)	X-2 (5)	t	t+5	t+10
National GHG Emissions Target, excluding GHG emissions from LULUCF	A	M_{iap}	$ktCO_2e$	AR 5					
Total **reported GHG** emissions X-3 and X-2, **excluding GHG emissions from LULUCF** (2)	B	M	$ktCO_2e$	AR 5					
Total **projected GHG** emissions WEM scenario, **excluding GHG emissions from LULUCF** (3)	C	M	$ktCO_2e$	AR 5					
Total **projected GHG** emissions WAM scenario, **excluding GHG emissions from LULUCF** (3)	D	M_{iav}	$ktCO_2e$	AR 5					
<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>
<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>
<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>
<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>
<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>	<…>

Notation: X = reporting year; M = Mandatory; M_{iav} = mandatory if available; t = the first future year ending with 0 or 5 immediately following the reporting year.

Notes:

(1) Information according to which Global Warming Potential values the GHG emissions shall be reported. GHG inventory data: the Global Warming Potential applies that applies to GHG inventories in the same year. AR 5 = Global Warming Potential values from the IPCC's 5th Assessment Report.

(2) Final total GHG emissions as submitted by the **Contracting Parties** in their final GHG inventory information of the same reporting year **<…>**

(3) Final data from **Contracting Parties** submissions in the same reporting year according to Annex XXV to Implementing Regulation (EU) 2020/1208, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** for reporting under Article 18(1), point (b) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.**

(4) X-3 shall not apply for the first and second progress reports in 2025 and 2027 respectively.

(5) X-2 shall not apply for the first progress report in 2025.

Table 3

Current and projected ***<…> GHG emissions from LULUCF <…>*** *as reported pursuant to Article 26(3) and Article 18(1), point (b) of Regulation (EU) 2018/1999,* ***as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC***

Reporting element	ID	Specification	Description	Unit	GWP (1)	Year				
						X-3 (5)	X-2 (6)	t	t+5	t+10
Land Use, Land-Use Change and Forestry (2)	A	M		$ktCO_2e$	AR 5					
Land Use, Land-Use Change and Forestry in the WEM scenario (3)	B	M		$ktCO_2e$	AR 5					
Land Use, Land-Use Change and Forestry in the WAM scenario (3)	C	M_{iav}		$ktCO_2e$	AR 5					
LULUCF commitment stated in current NECP (4)	D	M_{iap}								
LULUCF commitment in National GHG emissions target	**E**	**M_{iap}**		**$ktCO_2e$**	**AR 5**					

Notation: X = reporting year, t signifies the first future year ending with 0 or 5 immediately following the reporting year; M = mandatory; M_{iap} = mandatory if applicable; M_{iav} = mandatory if available.

Notes:

(1) Information according to which Global Warming Potential values the GHG emissions shall be reported. GHG inventory data: the Global Warming Potential applies that applies to GHG inventories in the same year. AR 5 = Global Warming Potential values from the IPCC's 5th Assessment Report.

(2) Final total GHG emissions as submitted by the **Contracting Parties** in their final GHG inventory information under Article 26(3) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** in the same reporting year and reported in line with GHG inventory guidelines (see Article 8 of Implementing Regulation (EU) 2020/1208, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC).**

(3) Final data from **Contracting Parties** submissions in the same reporting year according to Annex XXV to Commission Implementing Regulation (EU) 2020/1208, **as adapted and adopted by Ministerial Council Decision 2021/14/MC-EnC** for reporting under Article 18(1), point (b) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.**

(4) The individual national LULUCF commitment as stated in current integrated national energy and climate plan. **Contracting Parties** shall provide textual description in column "Description". **Contracting Parties** shall provide numerical data in columns under "Year" and indicate the Unit and GWP used in the respective columns.

(5) X-3 shall not apply for the first **and second** progress reports in 2025 **and 2027 respectively**.

(6) X-2 shall not apply for the first progress reports in 2025.

Table 4

Current and projected progress towards other national greenhouse-gas related targets and objectives set out in integrated national energy and climate plans, including sector targets in accordance with Article 4(a), point (1)(iii) of Regulation (EU) 2018/1999, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC

National target/ objective (1)	Specification	Reporting Element	Name of national target/ objective	Sector(s) addressed	Description (2)	Unit (3)	GWP used (4)	Year				
								X-3 (5)	X-2	t	t+5	t+10
National target/ objective #1 (1)	M_{iap}	Target/objective										
		Current progress										
		Projected progress under WEM scenario										
		Projected progress under WAM scenario										
National target/ objective #2 (1)	M_{iap}	Target/objective										
		Current progress										
		Projected progress under WEM scenario										
		Projected progress under WAM scenario										
Add further rows if needed for any other national target/ objective	M_{iap}	Target/objective										
		Current progress										
		Projected progress under WEM scenario										
		Projected progress under WAM scenario										

Notation: X = reporting year; M_{iap} = mandatory if applicable; t = the first future year ending with 0 or 5 immediately following the reporting year.

Notes:

(1) **Contracting Parties** shall add further rows in case other national targets/objectives apply.

(2) Textual description to be provided for clarification and in case targets/objectives and progress towards these cannot be expressed using the quantitative columns.

(3) Unit comparable to the unit of projected progress data.

(4) Information according to which Global Warming Potential values the GHG emissions were calculated. AR 4 = Global Warming Potential values from the IPCC's 4th Assessment Report; AR 5 = Global Warming Potential Values from the IPCC's 5th Assessment Report.

(5) **<…>**

ANNEX II
DECARBONISATION: RENEWABLE ENERGY

Table 1

Sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources (1)

Reporting element	Specification	Unit	Year	
			X-3	X-2
Gross final consumption of energy from renewable sources	M	ktoe		
Gross final consumption of energy with aviation adjustment	M	ktoe		
Overall RES share	M	%		
Renewable electricity generation (with normalisation)	M	GWh		
Total Gross Electricity Consumption	M	GWh		
RES-E generation share	M	%		
RES-T numerator with multipliers	M	ktoe		
RES-T denominator with multipliers	M	ktoe		
RES-T consumption share	M	%		
RES-H&C numerator	M	ktoe		
RES-H&C denominator	M	ktoe		
Of which waste heat and cold utilised through district heating/cooling networks	M (2)	ktoe		
RES -H&C share	M	%		
RES-H&C share with waste heat and cold	M	%		
Energy from renewable sources and from waste heat and cold used in district heating and cooling	M (2)	ktoe		
Energy from all sources used for district heating and cooling	M (2)	ktoe		
Share of energy from renewable sources and from waste heat and cold in district heating and cooling	M (2)	%		
Statistical transfers/Joint projects/joint support schemes – total amount to be added	M (2)	Ktoe		

Statistical transfers/Joint projects/joint support schemes –total amount to be deducted	M	ktoe		
Indigenous renewable hydrogen production	V	ktoe		
Indigenous biogas production	V	ktoe		
In case one or more of the RES shares in X-3 or X-2 have fallen below the national trajectory as reported in the integrated national energy and climate plan, or the baseline share of 2020, explain the reasons for this development and information on additional measures that are planned in order to cover the gap compared to the national reference point.	M_{iap}			
Please provide information on whether the **CP** intends to use waste heat and waste cold for the purposes of fulfilling the H&C target (Article 23) and DH&C targets (Article 24) of REDII (pursuant to Article 23(1) of REDII) and accordingly whether the **CP** plans to apply target 1.1 ppt (pure RES) or 1.3 (RES + waste heat/cold).	M_{iap}			
In case the average annual increase is lower than the H&C target in Article 23 of REDII, please state the achieved level and provide reasons, including of choice of measures (pursuant to the second and third subparagraphs of Article 23(2) of REDII)	M_{iap}			

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable; V = voluntary.

(1) All calculation provisions set out in Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** are applied to the total numerator and the total denominator.

(2) < ... >

Table 2

Total installed capacity from each renewable energy technology (1)

Renewable energy technology	**Specifica-tion**	**Unit**	**Year**	
			X-3	X-2
Hydro	M	MW		
Of which pure hydro power with no pumping	M	MW		
Of which mixed hydro power	M	MW		
Of which pumped hydro power	M	MW		
Geothermal	M	MW		
Solar	M	MW		

Of which photovoltaic	M	MW		
Of which photovoltaic < 30 kW	M (5)	MW		
Of which rooftop	M (5)	MW		
Of which off grid	M (5)	MW		
Of which photovoltaic 30 kW – 1 000 kW	M (5)	MW		
Of which rooftop	M (5)	MW		
Of which off grid	M (5)	MW		
Of which photovoltaic ≥ 1 MW	M (5)	MW		
Of which rooftop	M (5)	MW		
Of which off grid	M (5)	MW		
Of which concentrated solar power	M	MW		
Tide, wave, ocean	M	MW		
Wind	M	MW		
Of which onshore	M	MW		
Of which offshore	M	MW		
Biomass (2) (3)	M	MW		
Of which solid biomass fuels (4)	M	MW		
Of which bioliquids	M	MW		
Of which gaseous biomass fuels (4)	M	MW		
Solar collectors surface	M	1 000 m^2		
Liquid biofuels plants capacity	M	1 000 tonnes		
Of which biogasoline	M	1 000 tonnes		
Of which biodiesels	M	1 000 tonnes		
Of which bio jet kerosene	M	1 000 tonnes		
Of which other liquid biofuels	M	1 000 tonnes		
Relevant information, in case the evolution of installed capacity has an impact on the overall and sectoral trajectories for renewable energy from 2025 to 2030.	M			

Notation: X = reporting year; M = mandatory.

Notes:

(1) Categories to be reported in this table are based on the annual energy questionnaires on Renewables and Wastes **<…>**, according to Regulation (EC) No 1099/2008**, as adapted and adopted by Ministerial Council Decisions 2012/02/MC-EnC, 2013/02/MC-EnC, 2015/02/MC-EnC, 2021/12/MC-EnC and Permanent High Level Group Decision 2022/01/PHLG-EnC.**

(2) As defined in Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**: 'biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin.

(3) In case of blended solid or gaseous biomass fuels or bioliquids only the capacity corresponding to the bio part should be taken into account. If no capacity data available then provide an estimate based on inputs, efficiencies, generation and full load hours of both fossil and RE fuels.

(4) As defined in Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC,** Article 2 Definitions (27) 'biomass fuels' means gaseous and solid fuels produced from biomass.

(5) <…>

Table 3

Total actual contribution (gross electricity generation) from each renewable energy technology in electricity

Renewable energy technology	Specification	Unit	Year	
			X-3	X-2
Normalised hydro generation	M	GWh		
Of which normalised pure hydro power with no pumping	M	GWh		
Of which normalised mixed hydro power (only the part of generation without pumping)	M	GWh		
Normalised wind generation	M	GWh		
Of which normalised on-shore wind generation	M **(1)**	GWh		
Of which normalised off-shore wind generation	M **(1)**	GWh		
From pure **bioliquids, compliant + non-compliant**	M	GWh		
of which from **compliant** pure (non-blended) bioliquids	M	GWh		
of which not from food and feed crops	M **(1)**	GWh		
of which from food and feed crops	M **(1)**	GWh		
of which from NON high-ILUC risk	M **(1)**	GWh		
From **compliant** blended bioliquids, only bio part	M	GWh		
of which not from food and feed crops	M **(1)**	GWh		
of which from food and feed crops	M **(1)**	GWh		
of which from NON high-ILUC risk	M **(1)**	GWh		
From biogas blended in the grid	M	GWh		

Of which compliant	M (1)	GWh		
From biogas accounted towards electricity based on certificates	M (1)	GWh		
Geothermal	M	GWh		
Solar photovoltaic	M	GWh		
Of which photovoltaic < 30 kW	M (2)			
Of which rooftop	M (2)			
Of which off grid	M (2)			
Of which photovoltaic 30 kW – 1 000 kW	M (2)			
Of which rooftop	M (2)			
Of which off grid	M (2)			
Of which photovoltaic ≥ 1 MW	M (2)			
Of which rooftop	M (2)			
Of which off grid	M (2)			
Solar thermal	M			
Tide, wave and ocean	M			
Municipal waste (renewable)	M			
Solid biofuels	M			
Of which compliant	M (1)			
From pure biogas	M			
Of which compliant	M (1)			
Relevant information, in case the evolution of gross electricity generation has an impact on the overall and sectoral trajectories for renewable energy from 2025 to 2030.	M			

Notation: X = reporting year; M = mandatory.

(1) <...>

(2) <...>

Table 4

Total actual contribution (gross final energy consumption) from each renewable energy technology in heating and cooling

Renewable energy technology	Specification	Unit	Year	
			X-3	X-2
Final Energy Consumption of renewable sources and fuels in Industry and Other Sectors (households, commercial and public services, agriculture and forestry, fishing and not elsewhere specified) excluding transport	M	ktoe		
Charcoal	M	ktoe		
Pure biogas	M	ktoe		
Biogas blended in the grid	M	ktoe		
Of which compliant	M (1)	ktoe		
Biogas accounted towards FEC in industry and other sectors based on certificates	M (1)	ktoe		
Geothermal (excluding geothermal heat pumps)	M	ktoe		
Solar thermal	M	ktoe		
Municipal waste renewable	M	ktoe		
Solid biofuels excluding charcoal	M	ktoe		
Of which compliant	M (1)	ktoe		
all bioliquids, **compliant** and also **non-compliant**	M	ktoe		
of which only **compliant** bioliquids	M	ktoe		
of which not from food and feed crops	M (1)	ktoe		
of which from food and feed crops	M (1)	ktoe		
of which from NON high-ILUC risk	M (1)	ktoe		
Production of heat from renewable fuels	M	ktoe		
Geothermal energy (excluding geothermal heat pumps)	M	ktoe		
Solar thermal	M	ktoe		
Municipal Waste – Renewable	M	ktoe		
Solid biofuels	M	ktoe		
Of which compliant	M (1)	ktoe		
From pure biogas	M	ktoe		

Of which compliant	M (1)	ktoe		
From biogas blended in the grid	M	ktoe		
Of which compliant	M (1)	ktoe		
From biogas accounted towards heat production based on certificates	M	ktoe		
all pure bioliquids, **compliant** and also **non-compliant**	M	ktoe		
of which only **compliant** pure bioliquids	M	ktoe		
of which not from food and feed crops	M (1)	ktoe		
of which from food and feed crops	M (1)	ktoe		
of which from NON high-ILUC risk	M (1))	ktoe		
blended bioliquids, **compliant,** only bio- part	M	ktoe		
of which not from food and feed crops	M (1)	ktoe		
of which from food and feed crops	M (1)	ktoe		
of which from NON high-ILUC risk	M (1)	ktoe		
From hydrogen of renewable origin	M (1)	ktoe		
From RFNBOs	M (1)	ktoe		
Ambient heat (captured by heat pumps, with the exception of geothermal heat pumps)	M	ktoe		
Of which air-air	M	ktoe		
Of which air-water	M	ktoe		
Of which air-air reversible	M	ktoe		
Of which air-water reversible	M	ktoe		
Of which exhaust air-air	M	ktoe		
Of which exhaust air-water	M	ktoe		
Of which water-air	M	ktoe		
Of which water-water	M	ktoe		
Geothermal energy using heat pumps	M	ktoe		
Of which ground-air	M	ktoe		
Of which ground-water	M	ktoe		
Renewable cooling	M (1)	ktoe		
Of which individual cooling systems higher than or equal to 1.5 MW capacity	M (1)	ktoe		

Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
Of which Individual cooling systems below 1.5 MW capacity	M (1)	ktoe		
Space cooling in residential sector	M (1)	ktoe		
Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
Space cooling in the tertiary sector	M (1)	ktoe		
Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
Process cooling	M (1)	ktoe		
Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
Other individual cooling systems	M (1)	ktoe		
Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
District cooling	M (1)	ktoe		
Of which from renewable heat driven cooling (absorption and adsorption)	M (1)	ktoe		
Relevant information, in case the evolution of final energy consumption for heating and cooling has an impact on the overall and sectoral trajectories for renewable energy from 2025 to 2030.	M			

Notation: X = reporting year; M = mandatory.

(1) **<...>**

Table 5

Total actual contribution (gross final energy consumption) from each renewable energy technology in the transport sector

		Volumes			Greenhouse gas saving performance [3]		
Renewable energy technology	Specification	Unit	X -3	X -2	Unit [4]	X-3	X-2
Biofuels in transport [1]							
Liquid biofuels in road transport	M	ktoe					
Liquid biofuels in rail transport	M	ktoe					
Liquid biofuels in other modes	M	ktoe					
Gaseous biofuels in road transport	M	ktoe					
Gaseous biofuels in rail transport	M	ktoe					
Gaseous biofuels in other modes	M	ktoe					
Non-biomass fuels that can be counted towards transport							
Hydrogen of renewable origin	M	ktoe					
Of which in Art 27.2(c) – in maritime sector	M [5]	ktoe					
Of which in Art 27.2(c) – in aviation sector	M [5]	ktoe					
Renewable fuels of non-biological origin (RFNBOs)	M	ktoe					
Of which in Art 27.2(c) – in maritime sector	M [5]	ktoe					
Of which in Art 27.2(c) – in aviation sector	M [5]	ktoe					
Recycled carbon fuels	M	ktoe					
Of which in Art 27.2(c) – in maritime sector	M [5]	ktoe					

Of which in Art 27.2(c) – in aviation sector	M (5)	ktoe					
COMPLIANT biofuels in transport (2)							
all compliant biofuels in all transport modes	M	ktoe					
Annex IX (all transport modes)	M	ktoe					
Of which Art. 27.2(c) – in maritime sector	M (5)	ktoe					
Of which Art. 27.2(c) – in aviation sector	M (5)	ktoe					
By feedstock (all modes)							
Part A							
Of which Part A in maritime sector (Art. 27.2c)	M (5)	ktoe					
Of which Part A in aviation sector (Art. 27.2c)	M (5)	ktoe					
Part A by feedstock (all modes)							
(a)	M	ktoe					
(b)	M	ktoe					
(c)	M	ktoe					
(d)	M	ktoe					
(e)	M	ktoe					
(f)	M	ktoe					
(g)	M	ktoe					
(h)	M	ktoe					
(i)	M	ktoe					

(j)	M	ktoe					
(k)	M	ktoe					
(l)	M	ktoe					
(m)	M	ktoe					
(n)	M	ktoe					
(o)	M	ktoe					
(p)	M	ktoe					
(q)	M	ktoe					
Part B	M	ktoe					
Of which Part B in maritime sector (Art. 27.2c)	M (5)	ktoe					
Of which Part B in aviation sector (Art. 27.2c)	M (5)	ktoe					
Part B by feedstock (all modes)	M	ktoe					
(a)	M	ktoe					
(b)	M	ktoe					
Article 26(1) – From food and feed crops	M	ktoe					
of which from NON high ILUC risk	M (5)	ktoe					
other compliant biofuels	M	ktoe					
Of which in maritime sector (Art. 27.2c)	M (5)	ktoe					
Of which in aviation sector (Art. 27.2c)	M (5)	ktoe					

Renewable electricity in the grid used in the transport sector							
All electricity in transport	M	ktoe					
All electricity in road transport	M	ktoe					
RE in road transport	M	ktoe					
non-RE in road transport	M	ktoe					
All electricity in rail transport	M	ktoe					
RE in rail transport	M	ktoe					
non-RE in rail transport	M	ktoe					
All electricity in all other transport modes	M	ktoe					
RE in all other transport modes	M	ktoe					
non-RE in all other transport modes	M	ktoe					
Relevant information, in case the evolution of final energy consumption for transport has an impact on the overall and sectoral trajectories for renewable energy from 202**5** to 2030.	M						

Notation: X = reporting year; M = mandatory.

Notes:

(1) This includes all biofuels, compliant and non-compliant, pure biofuels and corresponding part of blended biofuels, other renewable fuels, hydrogen and synthetic fuels of renewable origin in transport

(2) This includes only compliant biofuels and biomass fuels (Articles 29 & 30 of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC),** pure and corresponding renewable part of blended fuels used in transport

(3) Greenhouse saving performance has to be reported for the total of sustainable biofuels. Data may be reported more detailed and, in that case, if information cannot be provided because of confidentiality, **Contracting Parties** to include "C" for the related category.

(4) Specify the unit in which the greenhouse saving performance is expressed.

(5) <…>

Table 6

Biomass supply for energy use

	X-3					X-2				
	Indigenous production in 1000 m³ (1)	**Imports in 1000 m³ (1)**	**Exports in 1000 m³ (1)**	**Stock changes in 1000 m³ (1)**	**Average net calorific value (TJ/1000 m³) (2)**	**Indigenous production in 1000 m³ (1)**	**Imports in 1000 m³ (1)**	**Exports in 1000 m³ (1)**	**Stock changes in 1000 m³ (1)**	**Average net calorific value (TJ/1000 m³) (2)**
Specification	M (6)	M (6)	V	V	V	M	M	V	V	V
(1) Forest biomass used for energy production										
(a) Primary biomass from forest										
(i) Branches and tree tops	(3)	(3)				(3)	(3)			
(ii) Stumps	(4)	(4)				(4)	(4)			
(iii) Roundwood										
(I) Industrial roundwood										
(II) Fuelwood										
(b) Forest-based industry co-products										
(i) Bark										
(ii) Chips, sawdust and other wood particles										

(iii) Black liquor and crude tall oil (tonnes)										
(c) Post-consumer wood	(3)	(3)				(3)	(3)			
(d) Processed wood-based fuel, produced from feedstocks not accounted under point (1)(a), (b) or (c):										
(i) Wood charcoal										
(ii) Wood pellets and wood briquettes										
(2) Agricultural biomass	(3)	(3)				(3)	(3)			
(a) Energy crops for electricity or heat (including short rotation coppice)	(3)	(3)				(3)	(3)			
(i) Of which: From food and feed feedstocks	(3)	(3)				(3)	(3)			
(b) Agricultural crop residues for electricity or heat	(3)	(3)				(3)	(3)			
(3) Organic waste biomass	(3)	(3)				(3)	(3)			
(a) Organic fraction of industrial waste	(3)	(3)				(3)	(3)			

(b) Organic fraction of municipal waste	(3)	(3)				(3)	(3)			
(c) Waste sludges	(3)	(3)				(3)	(3)			

For forest biomass: Description how these meet the land-use, land-use change and forestry (LULUCF) criteria of Article 29(7) of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** (5)	
Relevant information, in case the evolution on bioenergy supply has an impact on the overall and sectoral trajectories for renewable energy from 202**5** to 2030.	

Notation: X = reporting year; M = mandatory; V = voluntary.

(1) except 1b(iii) in tonne

(2) except 1b(iii) in TJ/tonne

(3) reporting mandatory if available

(4) reporting mandatory if applicable

(5) With per country or regional economic integration organisation of origin of the forest biomass, detailing whether the country or organisation is a Party to the Paris Agreement and: it has submitted a nationally determined contribution (NDC) that includes the LULUCF sector;
it reports to the UNFCCC a national GHG emission inventory that includes the LULUCF sector or will start doing so by 2025 at the latest; or
it has national or sub-national laws in place, in accordance with Article 5 of the Paris Agreement, applicable in the area of harvest, to conserve and enhance carbon stocks and sinks, and provides evidence that reported LULUCF-sector emissions do not exceed removals.

(6) <…>

Table 7

Other national trajectories and objectives

Trajectory or objective	**Descrip-tion**	**Target (1)**	**Target year**	**Progress to-wards target/ objective**	**Progress Indicator (if applicable) (2)**			
					Name of indica-tor to monitor progress (3)	**Unit**	X-3	X-2
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Renewable energy use in district heating								
Renewable energy use in buildings								
Renewable energy produced by cities								
Renewable energy communities								
Renewables self-consumers								
Energy recovered from the sludge acquired through the treatment of wastewater								
Other national objective and trajectory, including sectoral and long term								
Add further rows, as needed								

Notation: X = reporting year; M_{iap} = mandatory if applicable.

Notes

(1) Can be quantitative or qualitative

(2) If the target/objective is quantifiable, **Contracting Parties** to provide an indication of progress, with the latest available information. Indicators for reporting are to be determined on the basis of national objectives or targets

(3) Contracting Parties to refer to a base year and value, as appropriate, if this aids in demonstrating progress.

Table 8

Assessment of the support for electricity from renewable sources pursuant to Article 6(4) of Directive (EU) 2018/2001, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC

When applicable, provide information on the assessment of the support for electricity from renewable sources that **Contracting Parties** are to carry out pursuant to Article 6(4) of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** (1)	M_{iap}	

Notation: M_{iap} = mandatory if applicable.

Notes:

(1) Contracting Parties to include references to concerned policies and measures

ANNEX III
DECARBONISATION: ADAPTATION

Table 1

Adaptation goals in integrated national energy and climate plans

Adaptation goals in integrated national energy and climate plans	**Specification**	**Response**
Are adaptation goals in accordance with Article 4 included in the integrated national energy and climate plan? (1)	M	
Will the next submission of the integrated national energy and climate plan include adaptation goals? (1)	V	
If adaptation goals are included in the integrated national energy and climate plan or the planned submission of the integrated national energy and climate plan, please provide an overview of these goals.	V	
If available, please provide other documents containing adaptation goals relevant to meeting the objectives **<…>** of the Energy Union, **the targets of the Contracting Parties** and the **Contracting Party`s** long-term **<…>** greenhouse gas emissions commitments consistent with the Paris Agreement, including the date of adoption and a link to the document.	V	

Notes:

M = mandatory; V = voluntary

(1) **Contracting Parties** to choose from the following options: Yes; No.

Table 2

Information on adaptation, which may affect delivery of Energy Union objectives <…> targets of the Contracting Parties and the Contracting Party`s long-term <…> GHG emission reduction commitments under the Paris Agreement

Information on adaptation which may affect delivery of Energy Union objectives, <…> targets of the Contracting Parties and the Contracting Party`s long-term <…> GHG emission reduction commitments under the Paris Agreement	**Dimension**	**Specification**	**Response**
National circumstances			
1. Vulnerabilities, including adaptive capacities (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references), that are relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	M	
	Decarbonisation: renewable energy	M_{iap}	
	Energy efficiency	M_{iap}	
	Energy security		
	Internal energy market	M_{iap}	
	Research, innovation and competitiveness	M_{iap}	
a. Where relevant and available, please provide information on vulnerabilities, including adaptive capacities, referred to in field 1 above, disaggregated by vulnerable group. ([1])	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	

2. Risk of potential future impacts (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1– please cite references), that are relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	M	
	Decarbonisation: renewable energy	M_{iap}	
	Energy efficiency	M_{iap}	
	Energy security	M_{iap}	
	Internal energy market	M_{iap}	
	Research, innovation and competitiveness	M_{iap}	
Strategies and plans			
3. Adaptation goals (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references) that are relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	M	
	Decarbonisation: renewable energy	M_{iap}	
	Energy efficiency	M_{iap}	
	Energy security	M_{iap}	
	Internal energy market	M_{iap}	
	Research, innovation and competitiveness	M_{iap}	
4. Challenges, gaps and barriers (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references) that are relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	
5. Foreseen actions, budget and timeline related to the adaptation goals identified in Field 3.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	

6. Overview of the content of sub-national strategies, policies, plans and efforts related to the adaptation goals identified in Field 3.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	
Monitoring and evaluation			
7. Progress towards reducing climate impacts, vulnerabilities and risks (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references), relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	
a. Where relevant and available, please provide information on progress towards reducing climate impacts, vulnerabilities and risks, referred to in field 7 above, disaggregated by vulnerable group. ([1])	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	
8. Progress towards increasing adaptive capacity (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references), relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	

9. Progress of implementation towards meeting the adaptation goals identified in Field 3.	Decarbonisation: GHG emissions and removals	M	
	Decarbonisation: renewable energy	M_{iap}	
	Energy efficiency	M_{iap}	
	Energy security	M_{iap}	
	Internal energy market	M_{iap}	
	Research, innovation and competitiveness	M_{iap}	
10. Progress towards addressing barriers (identified in the integrated national energy and climate plan and/or in other documents identified in Table 1 – please cite references) that are relevant to the Energy Union dimension selected.	Decarbonisation: GHG emissions and removals	V	
	Decarbonisation: renewable energy	V	
	Energy efficiency	V	
	Energy security	V	
	Internal energy market	V	
	Research, innovation and competitiveness	V	

Notes:

M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

(1) Vulnerable group refers to a segment of the human population that has the propensity or predisposition to be adversely affected by climate variability and change.

ANNEX IV
ENERGY EFFICIENCY

Table 1

National contribution and indicative trajectory for primary and final energy consumption

Reporting element	Specification	Unit	Indicator	
Definition of the 2030 savings contribution (1)	M	n/a		
Description of the 2030 contribution and indicative trajectory from 2025–2030	M	n/a		
Value of the savings contribution 2030	M			
Translation into absolute level of PEC	M	ktoe		
Translation into absolute level of FEC	M	ktoe		
			X-3 (4)	X-2
Progress towards indicative trajectory 2025–2030 in PEC (2)	M	ktoe		
Progress towards indicative trajectory 2025–2030 in FEC (2)	M	ktoe		
Baseline GDP level, if the contribution is set as an intensity target	M_{iap}	Million-euro, chain-linked volumes (3)		
General comments on the national contribution and indicative trajectory for primary and final energy consumption (5)	V			

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

Notes:

(1) **Contracting Parties** shall select from the following options: primary energy consumption; final energy consumption; primary energy savings; final energy savings; energy intensity.

(2) PEC and FEC according to the Eurostat indicators of the complete energy balances [nrg_bal_c] – Primary and Final energy consumption (Europe 2020–2030). Please see the PEC and FEC definitions (as the monitoring indicators for the Directive on energy efficiency) in the most recent version of the Energy balance guide on the website of Eurostat (see chapter "Complementing indicators").

(3) Reference year 2015 (at 2015 exchange rates).

(4) **<…>**

(5) **Contracting Parties** may provide additional explanation on the national contribution and indicative trajectory for primary and final energy consumption, including their underlying methodology.

Table 2

Milestones and progress indicators of the long-term strategy for the renovation of the national stock of residential and non-residential buildings – building stock

	Number of buildings (1)			Total floor area (m^2) (2)			Primary energy use of buildings (TJ) (3)			Final energy use of buildings (TJ) (3)			Direct GHG emissions in buildings (tCO_{2e})			Total GHG emissions in buildings (tCO_{2e})			Other (4)		
	2020	X-3	X-2	2020	X-3	X-2	2020	X-3	X-2	2020	X-3	X-2	2020	X-3	X-2	2020	X-3	X-2	2020	X-3	X-2
Specification	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}
Residential buildings																					
Of which worst performing buildings (5)																					
Non-Residential buildings																					
Of which worst performing buildings																					
Public buildings (6)																					
Of which worst performing buildings																					

Notation: M_{iav} = mandatory if available;

Notes:

(1) Building means a roofed construction having walls, for which energy is used to condition the indoor climate (Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**, Article 2(1)) whereas Annex I of the same directive defines, for the purpose of the calculation of energy performance of buildings, the following classification of categories: (a) single-family houses of different types; (b) apartment blocks; (c) offices; (d) educational buildings; (e) hospitals; (f) hotels and restaurants; (g) sports facilities; (h) wholesale and retail trade services buildings; (i) other types of energy-consuming buildings (Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**, Annex I point 5.).

(2) Floor area used as reference size for the assessment of the energy performance of a building, calculated as the sum of the useful floor areas of the spaces within the building envelope specified for the energy performance assessment.

(3) As considered in the energy performance calculation of buildings defined by Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC.**

(4) As presented in the national long-term renovation strategy. Other indicators could reflect the number of buildings and/or total floor area (m2) per energy performance class, per construction period, per building size, per climatic zone, the number of Energy Performance Certificates per building type and/or per energy performance class, an overview of the capacities in the construction, the share of heating system in the building sector, heating system type, etc. Other externalities could also be used to provide a better picture of the buildings sector, such as investments for the renovation of the existing stock, construction's share in GDP, health issues, etc.

(5) As defined in the national long-term renovation strategy. The COMMISSION RECOMMENDATION (EU) 2019/786 on building renovation provides examples to determine the worst-performing segments of the national building stock: (a) setting a specific threshold, such as an energy performance category (e.g. below 'D'); (b) using a primary energy consumption figure (expressed in kWh/m2 per year); or even (c) targeting buildings built before a specific date (e.g. before 1980).

(6) The COMMISSION RECOMMENDATION (EU) 2019/786 on building renovation, clarifies that Article 2a(1)(e) of Directive 2010/31/EU concerns all public buildings (and not just public bodies buildings' that are owned and occupied by central government). Policies and actions under Article 2a(1)(e) of Directive 2010/31/EU should include, for example, buildings that are occupied (e.g. leased or rented) by local or regional authorities and buildings that are owned by central government and regional or local authorities, but not necessarily occupied by them.

Table 3

Milestones and progress indicators of the long-term strategy for the renovation of the national stock of residential and non-residential buildings – renovation rates (1)

		Number of buildings renovated		**Total floor area renovated (m^2) (2)**		**Renovation rate (3)**		**Deep renovation equivalent rate (5)**	
		X-3	X-2	X-3	X-2	X-3	X-2	X-3	X-2
Specification		M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	V	V
Residential buildings	Light								
	Medium								
	Deep								
	Total								
Residential buildings – worst performing	Light								
	Medium								
	Deep								
	Total								
Non-residential buildings	Light								
	Medium								
	Deep								
	Total								
Non-residential buildings – worst performing	Light								
	Medium								
	Deep								
	Total								
Public buildings (4)	Light								
	Medium								
	Deep								
	Total								

Public buildings – worst performing	Light								
	Medium								
	Deep								
	Total								

Notation: X = reporting year; M_{iav} = mandatory if available; V = voluntary

Notes:

(1) An energy renovation means the change of one or more building elements (building envelope and technical building systems according to EPBD, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** Art. 2(9)),having the potential to significantly affect the calculated or metered amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting.

(2) Floor area used as reference size for the assessment of the energy performance of a building, calculated as the sum of the useful floor areas of the spaces within the building envelope specified for the energy performance assessment.

(3) Renovation rate refers to the cumulated affected building floor area [m2] of all buildings that underwent an energy renovation in calendar year X-3 or X-2, for different renovation depths, divided by the total floor area [m^2] of the building stock in the same period.

Renovation depths can be defined as "light" (3 % ≤ x ≤ 30 % savings), "medium" (30 % < x ≤ 60 % savings) and "deep" (a renovation which transforms a building or building unit **<…>** into a nearly zero-energy building **<…>**).
The total energy renovation rate is defined as the sum of all renovation rates of the covered depths.

The definition of nearly zero-energy buildings (NZEB) is according to official national NZEB definitions transposing Article 9 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC and 2021/14/MC-EnC** following the framework definition in Article 2 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC: and 2021/14/MC-EnC** "Nearly zero-energy building means a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby."

(4) The COMMISSION RECOMMENDATION (EU) 2019/786 on building renovation, clarifies that Article 2a(1)(e) of Directive 2010/31/EU concerns all public buildings (and not just public bodies buildings' that are owned and occupied by central government). Policies and actions under Article 2a(1)(e) of Directive 2010/31/EU should include, for example, buildings that are occupied (e.g. leased or rented) by local or regional authorities and buildings that are owned by central government and regional or local authorities, but not necessarily occupied by them.

(5) Deep renovation equivalent rate equalises/weights the renovation rates at deep renovation depth and can be calculated by the following formula: Equivalent deep renovation rate = [(light renovation depth)* (light renovation rate) + (medium renovation depth)*(medium renovation rate) + (deep renovation depth)*(deep renovation rate)]/(deep renovation depth)] – all factors in %.
Renovation depths are the ratio between primary energy saved and total primary energy before renovation of the respective part of the stock.

Table 4

Milestones and progress indicators of the long-term strategy for the renovation of the national stock of residential and non-residential buildings – other indicators

Milestones and progress indicators of the long-term strategy for the renovation of the national stock of residential and non- residential buildings	Description	Target (1)	Target year	Progress towards target/ objective	Progress Indicator (if applicable) (2)			
					Name of indicator to monitor progress (3)	Unit	X-3	X-2
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Milestone/progress indicator 1								
Milestone/progress indicator 2								
Add further rows, as needed								

Notation: X = reporting year; M = mandatory.

Notes:

(1) Can be quantitative or qualitative

(2) If the target/objective is quantifiable, **Contracting Parties** to provide an indication of progress, with the latest available information. Indicators for reporting are to be determined on the basis of national objectives or targets

(3) Contracting Parties to refer to a base year and value, as appropriate, if this aids in demonstrating progress.

Table 5

Milestones and progress indicators of the long-term strategy for the renovation of the national stock of residential and non-residential buildings – the contributions to the Contracting Party's energy efficiency targets

	Specification	Description
Please describe how progress towards the milestones in the long-term renovation strategy contributed to achieving the **Contracting Party's** energy efficiency targets in accordance with Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**	M	

Notation: M = mandatory.

Table 6

Update of other national objectives on energy efficiency as reported in the integrated national energy and climate plan

Name of national target/objective	Description	Progress towards target/objective (1)	Expected impacts of the set objective (2)
M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/objective 1			
National target/objective 2			
Add further rows, as needed			

Notes:

M_{iap} = mandatory if applicable

(1) **Contracting Parties** shall provide an update on the progress achieved up to the current situation. If targets were set, an overview of the main actions and achieved milestones should be given. If targets were not set, then an update on whether targets have since been set and a description of the targets should be provided.

(2) **Contracting Parties** shall describe the expected impacts of the set objectives, and their timeframe.

ANNEX V
ENERGY SECURITY

Table 1

Details about national objectives, targets and contributions

Name of national target/ objective	Description	Relevance to Article 22 (1)	Target year	Status (2)	Policy which drove setting the objective (where relevant)		Entity responsible for achieving the objective	Energy sources and fuels covered (5)
					Union policy (3)	National policy (Legal reference) (4)		
M	M	M_{iap}	M_{iap}	M	M_{iap}	M_{iap}	M	M
National target/ objective 1								
National target/ objective 2								
National target/ objective 3								
Add further rows, as needed								

Notes:

M = mandatory; M_{iap} = mandatory if applicable

(1) **Contracting Parties** shall select from the following objectives (additional objectives may be added and specified under 'other'): diversification of energy sources and supply, reducing energy import dependency from third countries, development of the ability to cope with constrained or interrupted supply, flexibility of the national energy system, other.

(2) **Contracting Parties** shall select from the following categories: planned; adopted; implemented; expired.

(3) **Contracting Parties** shall select a policy/policies from a list provided in the electronic version of the tabular format, or select other and specify the name of the Union policy.

(4) National law or document defining the objective.

(5) **Contracting Parties** shall select from the following options (more than one option can be selected, additional energy sources and fuels may be added and specified under 'other fuels'): whole system, electricity, gas, petroleum products, nuclear, other fuels.

Table 2

Progress towards implementation of quantifiable national objectives and targets

Name of national target/ objective	Indicator(s)	Unit	Category	Year			Target value/Year (3)	Methodological notes (4)
				X-3	X-2	X-1 (2)		
				M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Overall objectives and targets								
Diversification of energy sources and supply	Primary production	TJ	Coal					
			Natural Gas					
			Other fossil fuels and wastes					
			Oil and petroleum products					
			Renewables and biofuels					
			Nuclear Heat					
	Imports (1)		Imports (1)					
	Exports (1)		Exports (1)					

Reducing energy import dependency from third countries	Energy dependence from third countries by fuel type ([5])	Percentage	Overall						
			By fuel	Coal					
				Natural gas					
				Other fossil fuels and wastes					
				Oil and petroleum products					
				Combustible renewables (biofuels)					
				Electricity and heat (including nuclear)					
Development of the ability to cope with constrained or interrupted supply of an energy source ([6])	Resilience of the power system	Hours	LOLE (Loss of load expectation) ([7])						
		MWh	EENS (expected energy not served) ([7])						
	Resilience of the gas system	Percent	Result of the N-1 formula ([8])						

Nationally set objectives and targets									
National target/ objective 1									
National target/ objective 2									
National target/ objective 3									
Add further rows, as needed									

Notation: X = reporting year; M_{iap} = mandatory if applicable

Notes:

(1) Total imports and exports across all fuels included in the energy balances.

(2) For Year X-1, **Contracting Parties** shall report on reporting elements for which such assessment is available.

(3) Contracting Parties to report the value of the target and the relevant year the target should be achieved, where quantified targets associated with the metrics are present.

(4) Contracting Parties to provide further methodological information regarding the indicator.

(5) Only imports from third countries **(All countries that are not Energy Community Contracting Parties and European Union Member States).**

(6) Contracting Parties should report data from the most recent adequacy assessment made for the relevant year. For example, they should report the LOLE for the year X-1 as estimated either in year X-1, X-2 or earlier. The year in which the resource adequacy assessment was performed should be reported under Methodological notes. See also note (5).

(7) To be calculated in accordance with the requirements of Regulation (EU) 2019/941, **as adapted and adopted by Ministerial Council Decisions 2021/13/MC-EnC and 2022/03/MC-EnC** and of Regulation (EU) 2019/943, **as adapted and adopted by Ministerial Council Decision 2022/03/MC-EnC.** The specific methodology is set by the Agency for the Cooperation of Energy Regulators, in the Annex I of its decision on the Methodology for calculating the value of lost load, the cost of new entry, and the reliability standard.

(8) To be calculated in accordance with the requirements of Annex II, Regulation (EU) 2017/1938, **as adapted and adopted by Ministerial Council Decisions 2021/15/MC-EnC and 2022/01/MC-EnC.** The N-1 rule calculates the technical capacity of the remaining infrastructure in case of disruption of the single largest gas infrastructure element, estimating whether this is able to satisfy gas needs equal to a day of exceptionally high demand that occurs with probability of once in 20 years.

Table 3

Progress towards implementation of non-quantifiable national objectives and targets

Name of national target/objective	**Indicator(s)/ Milestone(s)**	**Target year**	**Description of indicator/ milestone (1)**	**Progress towards target/objective (2)**	**Details concerning the monitoring strategy (3)**	**Reference to assessments and underpinning technical reports**
M	M	M_{iap}	M	M	V	V
National target/ objective 1						
National target/ objective 2						
National target/ objective 3						
Add further rows, as needed						

Notes:

M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

(1) **Contracting Parties** shall provide details on the indicators/milestone and why this has been chosen to present progress with the objective.

(2) **Contracting Parties** shall provide qualitative information to summarise the current status of the indicator (for example whether it is on track, already achieved, missed, delayed, etc.).

(3) Details about how the indicator is monitored, for example via a set of indicators, via an expert review, via a panel, via a specific methodology and so on.

ANNEX VI
INTERNAL ENERGY MARKET

Table 1

Progress towards national objectives relating to electricity interconnectivity

Name of national target/objective	**Unit**	**Year**		**Target value in 2030**
		X-3	X-2	
		M	M	M_{iap}
Nominal transmission capacity to installed generation capacity	%			
Nominal transmission capacity to peak load	%			
Nominal transmission capacity to installed renewable generation capacity	%			
Average or absolute hourly price differentials for day-ahead markets **(for each border between a Contracting party of the Energy Community and an EU Member State)** ([1])	EUR/MWh			
Border 1	EUR/MWh			
Border 2	EUR/MWh			
Add further rows, as needed	EUR/MWh			

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable

Notes:

(1) <…>

Table 2

Information on transmission Projects of Energy Community Interest (PECIs) or Projects of Mutual Interest (PMIs)

Please report any important developments on **PECI** projects compared to the last **PECI** Monitoring Report that might have an impact on the objectives and targets set in the national energy and climate plan.	M	

Table 3

Information on other main infrastructure projects

Project description										**Project implementation**					
Project name (1)	TYNDP ID	Energy carrier (2)	Project type (3)	Project description	Planned year of commission- ing	Transmission capacity (MW for electricity GWh/d for natural gas, hydrogen and other gases/liquids)	Description of how the project will contribute to achieving the planned levels reported under Article 23 (1)(a) (2)	Description of how the project will contribute to the Energy Union dimensions	Project status	Description of progress	Implementa- tion delay (years)	Rescheduling (years)	Reason for delays in implementa- tion or for rescheduling of the project plan
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Project 1													
Project 2													
Add further rows, if needed													

Notes:

M_{iap} = mandatory if applicable

(1) Contracting Parties shall include in this table also **PECIs and PMIs** other than cross-border transmission projects, if they indirectly contribute to increasing the cross-border interconnectivity. The contribution to increased cross-border interconnectivity should be explained in the table.

(2) Contracting Parties to select from the following energy carriers (additional energy carrier may be added and specified under 'Other'): Electricity; Natural gas; Hydrogen; Other.

(3) Contracting Parties to provide general categories of infrastructure (for example LNG terminal; storage facility; third-country interconnector).

Table 4

Progress towards national objectives relating to energy system flexibility, including with regards to renewable energy production

Name of national target/ objective	Description	Energy carrier (1)	Element(s) of system flexibility addressed (2)	Target (3)	Target year	Progress towards target/ objective	Progress Indicator(s) (if applicable) (4)			
							Name of indicator to monitor progress (5)	Unit	X-3	X-2
M	M_{iap}	M	M	M	M	M	M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/ objective 1										
National target/ objective 2										
National target/ objective 3										
Add further rows, as needed										

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable

Notes:

(1) **Contracting Parties** shall select from the following options: electricity; natural gas; hydrogen.

(2) **Contracting Parties** shall select from the following options (more than one option may be selected, additional options may be added and specified under 'other'): market integration and coupling aiming to increase the tradeable capacity and efficient use of interconnectors; smart metering/grids; aggregation; demand response; storage; distributed generation; mechanisms for dispatching, re-dispatching and curtailment; real-time price signals; other.

(3) Can be quantitative or qualitative

(4) If the target/objective is quantifiable, **Contracting Parties** shall provide an indication of progress, with the latest available information. Indicators for reporting are to be determined on the basis of national objectives or targets.

(5) **Contracting Parties** shall refer to a base year and value, as appropriate, if this aids in demonstrating progress.

Table 5

Progress towards national objectives relating to non-discriminatory participation in energy markets

Name of national target/objective	Description	Energy carrier (1)	Element(s) of non-discriminatory participation addressed (2)	Target (3)	Target year	Progress towards target/objective (4)
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/objective 1						
National target/objective 2						
National target/objective 3						
Add further rows, as needed						

Notes:

M_{iap} = mandatory if applicable

(1) **Contracting Parties** shall select from the following options: electricity; natural gas; hydrogen.

(2) **Contracting Parties** shall select from the following options (more than one option may be selected, additional options may be added and specified under 'other'): renewable energy; demand response; storage; other.

(3) Can be quantitative or qualitative

(4) When describing progress, **Contracting Parties** shall detail progress on non- discriminatory participation, considering the following elements, as relevant. This list is non-exhaustive and may be complemented by **Contracting Parties**:
In relation to markets: elements such as balancing markets, capacity markets (where applicable), wholesale energy markets, retail markets.
In relation to technologies: elements such as demand response, energy storage, aggregation, citizen energy communities/renewable energy communities, prosumers.
In relation to participation: elements such as market participation, tariff availability (including for charging points for electromobility; and energy storage e.g. preventing double charging for injection and withdrawal), dynamic price contract availability, simultaneous multi-service/product participation.

Table 6

Progress towards national objectives relating to consumer participation in the energy system and benefits from self-generation and new technologies, including smart meters

Name of national target/objective	Description	Energy carrier (1)	Element(s) of consumer participation addressed (2)	Target (3)	Target year	Progress towards target/objective	Progress Indicator(s) (if applicable) (4)			
							Name of indicator to monitor progress (5)	Unit	X-3	X-2
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/ objective 1										
National target/ objective 2										
National target/ objective 3										
Add further rows, as needed										

Notation: X = reporting year; M_{iap} = mandatory if applicable

Notes:

(1) **Contracting Parties** shall select from the following options: electricity; natural gas; hydrogen.

(2) **Contracting Parties** shall select from the following options (more than one option may be selected, additional options may be added and specified under 'other'): self generation; new technologies (including smart meters); other.

(3) Can be quantitative or qualitative

(4) If the target/objective is quantifiable, **Contracting Parties** shall provide an indication of progress, with the latest available information. Indicators for reporting are to be determined on the basis of national objectives or targets.

(5) **Contracting Parties** shall refer to a base year and value, as appropriate, if this aids in demonstrating progress.

Table 7

Progress towards national objectives relating to electricity system adequacy

Name of national target/ objective	Description	Element(s) addressed (1)	Target (2)	Target year	Progress towards target/ objective	Progress Indicator(s) (if applicable) (3)			
						Name of indicator to monitor progress (4)	Unit	X-3	X-2
M	M_{iap}	M	M	M	M	M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/ objective 1									
National target/ objective 2									
National target/ objective 3									
Add further rows, as needed									

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable

Notes:

(1) **Contracting Parties** shall select one or more from the following options: flexibility of energy system – renewable energy production; roll-out of intraday market coupling; roll-out of cross-border balancing markets; other.

(2) Can be quantitative or qualitative

(3) If the target/objective is quantifiable, **Contracting Parties** to provide an indication of progress, with the latest available information. Indicators for reporting are to be determined on the basis of national objectives or targets.

(4) **Contracting Parties** to refer to a base year and value, as appropriate, if this aids in demonstrating progress.

ANNEX VII

RESEARCH, INNOVATION AND COMPETITIVENESS

Table 1

Progress towards national objectives translating the SET Plan objectives and policies to a national context

Name of national target/objective (1)	Description	Supported Energy Union R&I priority (2)	Supported Clean energy/ low carbon technologies (3) (4)	Progress towards target/ objective	Progress indicator(s) (if applicable)				General comments
					Name of indicator to monitor progress	Value of indicator	Reference year	Unit	
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	V
National target/ objective 1									
National target/ objective 2									
Add further rows, as needed									

Notes:

M_{iap} = mandatory if applicable; V = voluntary

(1) Contracting Parties shall describe any national objective set up in the country, which is supporting the implementation and translation of the SET Plan.

(2) Contracting Parties shall select one or more priorities from a list provided in the electronic version of the tabular format.

(3) Contracting Parties shall select one or more technologies from a list provided in the electronic version of the tabular format.

(4) 'Clean energy and low carbon technologies' include all the technologies covered under the SET Plan.

Table 2

Progress towards quantifiable national objectives for total public and, where available, private spending in research and innovation relating to clean energy technologies as well as for technology cost and performance development (1)

Name of national target/objective	Unit	Specification	Year		Target value/ year	General comments
			X-3	X-2		
Public R&I expenditure						
Total Yearly R&I public expenditure in clean energy and low carbon technologies	Million EUR	M_{iap}				
Total yearly R&I public expenditure in clean energy and low-carbon technologies, as a percentage share of overall public R&I expenditure	%	M_{iap}				
Total yearly R&I public expenditure in clean energy and low-carbon technologies, as a percentage share of annual GDP	%	M_{iap}				
Private R&I expenditure						
Total Yearly R&I private expenditure in clean energy and low carbon technologies	Million EUR	V				
Total yearly R&I private expenditure in clean energy and low-carbon technologies, as a percentage share of overall private R&I expenditure	%	V				
Total yearly R&I private expenditure in clean energy and low-carbon technologies, as a percentage share of annual GDP	%	V				
Other nationally set objectives and targets						
National target/objective 1		M_{iap}				
National target/objective 2		M_{iap}				
Add further rows, as needed		M_{iap}				

Notation: X = reporting year; M_{iap} = mandatory if applicable; V = voluntary

(1) 'Clean energy technologies and low carbon technologies' include all the technologies covered under the SET Plan. **Contracting Parties** shall provide national objectives for total public and, where available, private spending in research and innovation relating to clean energy technologies as well as for technology cost and performance development. **Contracting Parties** to include separate objectives as needed, covering public and private spending, technology focus objectives, performance development, etc.

Table 3

Progress towards non-quantifiable national objectives for total public and, where available, private spending in research and innovation relating to clean energy technologies as well as for technology cost and performance development (1)

Name of national target/ objective	**Description**	**Supported Energy Union RI priority (2)**	**Supported Clean energy/low carbon technologies (3)**	**Progress towards target/ objective (4)**	**Expected impacts of the set objective (5)**
M_{iap}	M_{iap}	V	V	M_{iap}	M_{iap}
National target/ objective 1					
National target/ objective 2					
Add further rows, as needed					

Notes:

M_{iap} = mandatory if applicable; V = voluntary

(1) 'Clean energy technologies and low carbon technologies' include all the technologies covered under the SET Plan. **Contracting Parties** shall provide national objectives for total public and, where available, private spending in research and innovation relating to clean energy technologies as well as for technology cost and performance development. **Contracting Parties** to include separate objectives as needed, covering public and private spending, technology focus objectives, performance development, etc.

(2) Contracting Parties may select one or more priorities from a list provided in the electronic version of the tabular format.

(3) Contracting Parties may select one or more technologies from a list provided in the electronic version of the tabular format.

(4) Contracting Parties shall provide an update on the progress achieved up to the current situation. If targets were set, an overview of the main actions and achieved milestones should be given. If targets were not set, then an update on whether targets have since been set and a description of the targets should be provided.

(5) Contracting Parties shall describe the expected impacts of the set objectives, and their timeframe.

Table 4

Progress towards national objectives, including long-term targets for 2050 for the deployment of technologies for decarbonising energy- and carbon-intensive industrial sectors and, where applicable, for related carbon transport, use, and storage infrastructure (1)

Name of national target/objective	Description	Progress towards target/ objective	Progress indicator(s) (if applicable)				General Comments
			Name of indicator to monitor progress	Value of indicator	Reference year	Unit	
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	V
National target/ objective 1							
National target/ objective 2							
Add further rows, as needed							

Notes:

M_{iap} = mandatory if applicable; V = voluntary

(1) Contracting Parties shall describe any long-term plans for decarbonising measures in the industrial sector. Elements such as energy efficiency, carbon capture and storage, electrification and any other technologies that will contribute towards decarbonisation should be included. Milestones, objectives, and timeframe should be provided, as well as an indication of the considered technologies and their expected deployment.

Table 5

Progress towards national objectives with regard to competitiveness

Name of national target/ objective	**Description**	**Progress towards target/objective**	**Progress indicator(s) (if applicable)**				**General Comments**
			Name of indicator to monitor progress	**Value of indicator**	**Reference year**	**Unit**	
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	V
National target/ objective 1							
National target/ objective 2							
Add further rows, as needed							

Notes:

M_{iap} = mandatory if applicable; V = voluntary

(1) Contracting Parties shall describe any targets or objectives in the area of competitiveness. These could include objectives related to:

- Patents and research publications
- Value chain aspects such as milestones and targets in new job fields, company start-ups and growth in specific energy sectors.
- The global or internal/domestic market, such as international/national market penetration of technologies and trade volumes (change in imports and/or exports) on both a European and global scale.

ANNEX VIII

NATIONAL OBJECTIVES TO PHASE OUT ENERGY SUBSIDIES, IN PARTICULAR FOSSIL FUELS

Table 1

Progress towards national objectives to phase out energy subsidies, in particular for fossil fuels (1)

National objective(s) or plan(s) set to phase out energy subsidies, in particular for fossil fuels	**Description**	**Target year (2)**	**Milestones (3)**	**Progress towards target/ objective (4)**	**Steps to ensure phase out does not affect efforts to reduce energy poverty (5)**	**General comments**
M	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	V
National objective/ plan 1						
National objective/ plan 2						
National objective/ plan 3						
Add further rows, as needed						

Notes:

M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

(1) **Contracting Parties** shall report any objectives to phase-out fossil fuel subsidies and any objectives to phase-out other energy subsidies. **Contracting Parties** should indicate in the description column whether the objective has been laid down in legislation and, if applicable, provide the reference to the relevant legislation.
If no objectives are set to phase out energy subsidies, **Contracting Parties** shall report on any plans to make a phase out commitment or set a phase out objective. **Contracting Parties** shall include in the description column a short description of these plans, and clarify when such commitments are expected to become effective.

(2) **Contracting Parties** shall provide a target year the objective should be achieved.

(3) **Contracting Parties** shall specify any quantitative milestones. For example, 50 % phase out by 2024, 100 % phase out by 2026.

(4) **Contracting Parties** shall report on progress accomplished towards meeting the objective and the milestones, if relevant.

(5) **Contracting Parties** shall report on any steps taken to ensure the phase outs do not affect efforts to reduce energy poverty. **Contracting Parties** shall provide whether estimates of economic and other impacts of fossil fuel subsidy phase outs on energy poor households have been developed, what policies or measures are in place or proposed to alleviate such impacts (for example support for home energy renovations and high energy efficiency technology, such as electric heat pumps and home insulation).

ANNEX IX

PROGRESS ACCOMPLISHED TOWARDS IMPLEMENTING THE NATIONAL POLICIES AND MEASURES

Table 1

Key characteristics and progress towards implementing policies and measures

PaM number	PaM number in NECP, if different	Name of policy or measure	Single or grouped policy or measure	In case of a grouped policy or measure, which single policies or measures does it cover	Relevant objective(s), target(s) or contribution(s) the policy or measure contributes to (1)	Geographical coverage (2)	Sector(s) affected (3)	Objective (4)	Quantified objective (5)	Short description
M	M_{iap}	M	M	M	M	M	M	M	M_{iap}	M
PaM 1										
PaM 2										
Add further rows, as needed										

Notes:

M = mandatory; Miap = mandatory if applicable

(1) **Contracting Parties** shall select from the following objectives, targets and contributions in the integrated national energy and climate plan (more than one objective, target or contribution can be selected):

In dimension **Decarbonisation: GHG emissions and removals** – **<…> Contracting Party's national target for net Greenhouse Gas Emissions compared to 1990 levels, as adopted by Ministerial Council Decision 2022/02/MC-EnC;** Other objectives and targets, including sector targets and adaptation goals.

In dimension **Decarbonisation: Renewable energy** – **<…> The Contracting Party's national target for the share of renewable energy in gross final consumption of energy in 2030 as referred to in Article 3 and Annex I** of Directive (EU) 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC;** Estimated trajectories for the sectoral share of renewable energy in final energy consumption from 2025 to 2030 in the electricity, heating and cooling and transport sector; Estimated trajectories per renewable energy technology; Estimated trajectories on bioenergy demand, disaggregated between heat, electricity and transport, and on biomass supply, by feedstock and origin; Other national trajectories and objectives, including those that are long-term or sectoral (e.g. share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, renewable energy communities and renewables self-consumers, energy recovered from the

sludge acquired through the treatment of wastewater).

In dimension **Energy efficiency** – The indicative national energy efficiency contribution to achieving the **Energy Community 2030 headline target for energy efficiency** as referred to in Article 1(1) and Article 3(5) **and Annex XIV** of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC;** The cumulative amount of end-use energy savings to be achieved over the period 202**4**-2030 under point (b) of Article 7(1) on the energy saving obligations pursuant to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC; The indicative milestones of the long-term strategy for the renovation of the national stock of residential and non-residential buildings; The total floor area to be renovated or equivalent annual energy savings to be achieved **with increased 3% annual renovation rate from** 202**4** to 2030 under Article 5 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** on the exemplary role of public bodies' buildings; Other national objectives, including long-term targets or strategies and sectoral targets, and national objectives in areas such as energy efficiency in the transport sector and with regard to heating and cooling.

In dimension **Energy security** – National objectives with regard to increasing the diversification of energy sources and supply from third countries, the purpose of which may be to reduce energy import dependency; National objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems; National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage; National objectives with regard to addressing constrained or interrupted supply of an energy source, for the purpose of improving the resilience of regional and national energy systems.

In dimension **Internal energy market** – The level of electricity interconnectivity that the **Contracting Party** aims for in 2030**. <…>** Key electricity and gas transmission infrastructure projects, and, where relevant, modernisation projects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union; Main infrastructure projects envisaged other than Projects of **Energy Community Interest (PECIs) and Projects of Mutual Interest (PMIs);** National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals; National objectives related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets; National objectives with regard to ensuring that consumers participate in the energy system and benefit from self-generation and new technologies, including smart meters; National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production; National objectives to protect energy consumers and improve the competitiveness of the retail energy sector; national objectives with regard to energy poverty.

In dimension **Research, innovation and competitiveness** – National objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union; National

2050 objectives related to the promotion of clean energy technologies and, where appropriate, national objectives, including long-term targets (2050) for deployment of low-carbon technologies, including for decarbonising energy and carbon-intensive industrial sectors and, where applicable, for related carbon transport and storage infrastructure; National objectives with regard to competitiveness.

(2) **Contracting Parties** shall select from the following categories: covering two or more countries, national, regional, local.

(3) **Contracting Parties** shall select from the following sectors (more than one sector can be selected for cross-sectoral policies and measures): energy supply (comprising extraction, transmission, distribution and storage of fuels as well as the transformation of energy for heating and cooling and electricity production); energy consumption (comprising consumption of fuels and electricity by end users such as households, public administration; services, industry and agriculture); transport; industrial processes (comprising industrial activities that chemically or physically transform materials leading to greenhouse gas emissions, use of greenhouse gases in products and non-energy uses of fossil fuel carbon); agriculture; LULUCF; waste management/waste; other sectors.

(4) Objective means 'initial statement of the outcomes (including results and impacts) intended to be achieved by the intervention'. **Contracting Parties** shall select from the following objectives (more than one objective may be selected, additional objectives may be added and specified under 'other'):

For **energy supply** – increase in renewable energy sources in the electricity sector; increase in renewable energy in the heating and cooling sector; switch to less carbon-intensive fuels; enhanced non-renewable low carbon generation (nuclear); reduction of losses; efficiency improvement in the energy and transformation sector; carbon capture and storage or carbon capture and utilisation; control of fugitive emissions from energy production; increase the number of sources used in primary energy generation; reduce energy dependency from third countries; improve the resilience of energy supply infrastructure, including ensuring energy supply in case of major disruptions to the network; increase the ability of the power network to absorb increased share of renewable generation; increase electricity interconnectivity; increase price convergence of electricity markets; increase consumer participation in energy markets; increase electricity system flexibility and adequacy; research and innovation in energy supply; other energy supply.

For **energy consumption** – efficiency improvements of buildings; efficiency improvement of appliances; efficiency improvement in services/tertiary sector; efficiency improvement in industrial end-use sectors; demand management/reduction; research and innovation in technologies, processes and materials, which will contribute to reduction in energy consumption; other energy consumption.

For **transport** – efficiency improvements of vehicles; modal shift to public transport or non-motorized transport; low carbon fuels; electric road transport; demand management/reduction; improved behaviour; improved transport infrastructure; reduce emissions from international air or maritime transport; research and innovation to reduce emissions from the transport sector; innovation in digitalisation of transport; other transport.

For **industrial processes** – installation of abatement technologies; improved control of fugitive emissions from industrial processes; improved control of manufacturing, fugitive and disposal emissions of fluorinated gases; replacement of fluorinated gases by gases with a lower GWP value; research and innovation in making EU industry less energy intensive; other industrial processes.

For **waste management/waste** – demand management/reduction; enhanced recycling; enhanced CH4 collection and use; improved treatment technologies; improved landfill management; waste incineration with energy use; improved wastewater management systems; reduced landfilling; other waste.

For **agriculture** – reduction of fertilizer/manure use on cropland; other activities improving cropland management; improved livestock management; improved animal waste management systems; activities improving grazing land or grassland management; improved management of organic soils; other agriculture.

For **LULUCF** – afforestation and reforestation; conservation of carbon in existing forests; enhancing production in existing forests; increasing the harvested wood products pool; enhanced forest management; prevention of deforestation; strengthening protection against natural disturbances; substitution of GHG intensive feedstocks and materials with harvested wood products; prevention of drainage or rewetting of wetlands; restoration of degraded lands; other LULUCF.

For **Other** – **Contracting Parties** shall provide a brief description of the objective.

(5) **Contracting Parties** shall include, as a minimum, the figure(s), unit(s), end year and base year if the objective(s) is(are) quantified. Quantified objectives shall be specific, measurable, achievable, relevant and time related.

	Assessment of the contribution of the policy or measure to the achievement of the national targets for net Greenhouse Gas Emissions compared to 1990 levels, as adopted by the Ministerial Council Decision 2022/02/MC-EnC and to the achievement of the long-term strategy referred to in Article 15 Regulation (EU) 2018/1999, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC	Type of policy instrument ([6])	Union policies which resulted in the implementation of the PaM			Status of implementation ([9])	Implementation period		Entities responsible for implementing the policy ([10])		Indicators used to monitor and evaluate progress over time ([11])		
			Union policy ([7])	Other	Relevant provision ([8])		Start	Finish	Type	Name	Description	Year	Value
M	M	M	M_{iap}			M	M	M_{iap}	M		M_{iap}		
PaM 1													
PaM 2													
Add further rows, as needed													

Notes (cont.):

(6) **Contracting Parties** shall select from the following policy types: economic; fiscal; voluntary/negotiated agreements; regulatory; information; education; research; planning; other.

(7) List here only Union policy/policies that are implemented through the national policy or where national policies are aimed directly at meeting the objectives of Union policies. **Contracting Parties** shall select a policy/policies from a list provided in the electronic version of the tabular format, or select other and specify the name of the Union policy.

(8) **Contracting Parties** shall report on the policies and measures or groups of policies and measures that contribute to dimensions Decarbonisation: Renewable energy and Energy efficiency. **Contracting Parties** shall select a relevant provision from a list provided in the electronic version of the tabular format, or select other and specify the name of the provision.

(9) **Contracting Parties** shall select from the following categories: planned; adopted; implemented; expired.

(10) **Contracting Parties** shall select from the following options and enter the name/s of entities responsible for implementing the policy or measure (more than one entity may be selected): national government; regional entities; local government; companies/businesses/industrial associations; research institutions; others not listed.

(11) **Contracting Parties** shall provide any indicator (including the unit) and values for such indicators that will be used (ex-ante) to monitor and evaluate progress of policies and measures. **Contracting Parties** shall specify the year or years for which the value applies. Values for multiple indicators and years may be reported. Performance indicators identified by **Contracting Parties** shall be relevant, accepted, credible, easy and robust.

Update since last submission (12)	Explanations of the update or the link to an extra/ additional document	Progress against policy objective (13)	Progress against policy indicators (14)				Reference to assessments and underpinning technical reports	General Comments
			Indicator	Value	Year	Unit		
M	M_{iap}	M	M_{iap}				M	M

Notes (cont.):

(12) **Contracting Parties** shall select from the following options (additional options may be added and specified under 'Other'): Adoption of a new measure, conclusion of agreement, publication of legislation; Commencement/enforcement of a measure/programme; Abolition/termination/completion of measure; Amendments, implementation or design changes and extension of an on-going measure; Monitoring information, update on progress or impact assessment results; Continuation of existing measures/no significant updates; Drafts, announcements, commitments, planned measures, discussions for a new measure; Other.

(13) **Contracting Parties** shall provide qualitative description of the progress achieved against policy objective.

(14) Contracting Parties shall provide the indicator(s) (including the unit) and values for such indicators that have been used (ex-post) to monitor and evaluate progress of policies and measures. **Contracting Parties** shall specify the year or years for which the value applies. Values for multiple indicators and years may be reported. Performance indicators identified by **Contracting Parties** shall be relevant, accepted, credible, easy and robust.

	Dimension specific reporting		
Vector(s) affected ([15])	**Supported Energy Union R&I priority ([16])**	**Supported Clean energy/ low carbon technologies ([17])**	**Sectors supported ([18])**
Miap	M	M	M_{iap}

Notes (cont.):

(15) Contracting Parties shall report on the policies and measures or groups of policies and measures that contribute to dimension Energy security. **Contracting Parties** shall select from the following vectors (more than one vector can be selected; additional vectors may be added and specified under 'Other fuels'): Whole system; Electricity; Gas; Petroleum products; Nuclear; Heat; Other fuels.

(16) Contracting Parties shall report on the policies and measures or groups of policies and measures that contribute to dimension Research, innovation and competitiveness. **Contracting Parties** shall select one or more priorities from a list provided in the electronic version of the tabular format.

(17) Contracting Parties shall report on the policies and measures or groups of policies and measures that contribute to dimension Research, innovation and competitiveness. 'Clean energy and low carbon technologies' include all the technologies covered under the SET Plan. **Contracting Parties** shall select one or more technologies from a list provided in the electronic version of the tabular format.

(18) Contracting Parties shall report on the policies and measures or groups of policies and measures that contribute to dimension Research, innovation and competitiveness. **Contracting Parties** should include a description of which sectors are supported by this policy.

Table 2

Available results of ex-ante and ex-post assessments of the effects of individual or groups of policies and measures on renewable energy production (1)

PaM Number	Ex-ante assessment						Ex-post assessment			
	Renewable energy production (ktoe/year)				Explanation of the basis for the estimate	Documentation/ Source of estimation if available (provide a weblink of the report where the figure is referenced from)	Year for which production applies (2)	Renewable energy production (ktoe/year) (3)	Explanation of the basis for the estimate	Documentation/Source of estimation if available (provide a weblink of the report where the figure is referenced from)
	t	t + 5	t + 10	t + 15						
						V				
PAM 1										
PAM 2										
Add further rows, as needed										

Notation: V = voluntary; t signifies the first future year ending with 0 or 5 immediately following the reporting year.

Notes:

(1) **Contracting Parties** shall report on the policies and measures or groups of policies and measures that contribute to dimension Decarbonisation: Renewable energy. **Contracting Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available.

(2) **Contracting Parties** may report ex-post assessments for more than one year, where available reporting shall focus on years ending with 0 or 5.

(3) Ex-post evaluations include all evaluations based on results from parts of, or the whole implementation period.

Table 3

Available results of ex-ante and ex-post assessments of the effects of individual or groups of policies and measures on energy efficiency (1)

PaM Number	Ex-ante assessment						Ex-post assessment			
	Energy reductions (ktoe/year, final energy)				Explanation of the basis for the estimate	Documentation/ Source of estimation if available (provide a weblink of the report where the figure is referenced from)	Year for which reduction applies (2)	Energy reductions (ktoe/year, final energy) (3)	Explanation of the basis for the estimate	Documentation/ Source of estimation if available (provide a weblink of the report where the figure is referenced from)
	t	t + 5	t +10	t + 15						
V										
PAM 1										
PAM 2										
Add further rows, as needed										

Notation: V = voluntary; t signifies the first future year ending with 0 or 5 immediately following the reporting year.

Notes:

(1) **Contracting Parties** shall report on the policies and measures or groups of policies and measures that contribute to dimension Energy efficiency. **Contracting Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available.

(2) **Contracting Parties** may report ex-post assessments for more than one year, where available reporting shall focus on years ending with 0 or 5.

(3) Ex-post evaluations include all evaluations based on results from parts of, or the whole implementation period.

Table 4

Available projected and realised costs and benefits of individual or groups of policies and measures on renewable energy production (1)

Realised costs and benefits (ex-post assessment)	Description of other benefits	>			
	Documentation/source (provide a weblink of the report where the figure is referenced from)				
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) (3)				
	Price year				
	Absolute net costs per year in EUR				
	Absolute benefits (2) per year in EUR				
	Benefits (2) in EUR per toe renewable energy production				
	Absolute gross costs per year in EUR				
	Gross cost in EUR per toe renewable energy production				
	Year(s) for which cost has been calculated				
Projected costs and benefits (ex-ante assessment)	Description of other benefits				
	Documentation/source (provide a weblink of the report where the figure is referenced from)				
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) (3)				
	Price year				
	Absolute net cost per year in EUR				
	Net costs in EUR per toe renewable energy production				
	Benefits (2) in EUR per toe renewable energy production				
	Absolute benefits (2) per year in EUR				
	Absolute gross costs per year in EUR				
	Gross cost in EUR per toe renewable energy production				
	Year(s) for which cost has been calculated				
PaM Number			*PAM 1*	*PAM 2*	*Add further rows, as needed*

Notes:

V = voluntary

(1) **Contracting Parties** shall report on the policies and measures or groups of policies and measures that contribute to dimension Decarbonisation: Renewable energy. **Contracting Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available.

(2) A benefit shall be indicated as a negative value.

(3) The description shall include the type of costs and benefits that have been taken into consideration, the stakeholders considered in the assessment of costs and benefits, the baseline against which costs and benefits are compared, and the methodology.

Table 5

Available projected and realised costs and benefits of individual or groups of policies and measures on energy efficiency (1)

Realised costs and benefits (ex-post assessment)	Description of other benefits	>			
	Documentation/source (provide a weblink of the report where the figure is referenced from)				
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) (3)				
	Price year				
	Absolute net costs per year in EUR				
	Absolute benefits (2) per year in EUR				
	Benefits (2) in EUR per toe renewable energy production				
	Absolute gross costs per year in EUR				
	Gross cost in EUR per toe renewable energy production				
	Year(s) for which cost has been calculated				
Projected costs and benefits (ex-ante assessment)	Description of other benefits				
	Documentation/source (provide a weblink of the report where the figure is referenced from)				
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) (3)				
	Price year				
	Absolute net cost per year in EUR				
	Net costs in EUR per toe renewable energy production				
	Benefits (2) in EUR per toe renewable energy production				
	Absolute benefits (2) per year in EUR				
	Absolute gross costs per year in EUR				
	Gross cost in EUR per toe renewable energy production				
	Year(s) for which cost has been calculated				
PaM Number			*PAM 1*	*PAM 2*	*Add further rows, as needed*

Notes:

V = voluntary

(1) **Contracting Parties** shall report on the policies and measures or groups of policies and measures that contribute to dimension Energy efficiency. **Contracting Parties** shall report on all the policies and measures or groups of policies and measures for which such assessment is available.

(2) A benefit shall be indicated in the template as a negative value.

(3) The description shall include the type of costs and benefits that have been taken into consideration, the stakeholders considered in the assessment of costs and benefits, the baseline against which costs and benefits are compared, and the methodology.

ANNEX X

*NEW POLICIES AND MEASURES PURSUANT TO ARTICLE 21, POINT (B) 3 OF REGULATION (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC***

Table 1

Energy efficiency Obligation Schemes (EEOS) referred to in Article 7a of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC

PaM Number	M	
Source(s) of information (including the reference of the related law or other legal text(s))	M	
Expected savings for 2024-2030 and duration of the obligation period(s) (points 5(d) and 5(e) of Annex V to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC)		
Expected cumulative end-use energy savings for the period 2024-2030 (ktoe)	M	
Expected new annual end-use energy savings (ktoe/year) ([1])	M_{iap}	
<…>	**<…>**	
<…>	**<…>**	
<…>	**<…>**	
2024	M_{iap}	
2025	M_{iap}	
2026	M_{iap}	
2027	M_{iap}	
2028	M_{iap}	
2029	M_{iap}	
2030	M_{iap}	
Duration of the obligation period(s)	M	
Key design features		
Obligated parties and their responsibilities (point 5(b) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Target sectors (point 5(c) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([2])	M	

Sectors where individual actions are eligible to the EEOS (if different from the target sectors listed above) (point 5(c) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Individual actions eligible to the EEOS (point 5(f) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) and corresponding lifetimes (points 2(i) and 5(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([3])	M	
Information on the application of the following EED provisions:		
Where applicable, specific actions and/or share of savings to be achieved in vulnerable households, including those affected by energy poverty, and, where appropriate, in social housing (article 7(11) to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M_{iap}	
Savings achieved by energy service providers or other third parties (Article 7a(6), point (a) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** ([4])	M_{iap}	
Rules about banking and borrowing (point (b) of Article 7a(6), point (b) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M_{iap}	
Possibilities for trading of energy savings (where relevant)	M_{iap}	
Interactions with a National Energy Efficiency Fund in accordance with Article 20(6) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC (as considered in Article 7a(1) of that Directive**) ([5])	M_{iap}	
General information about the calculation methodology		
Measurement method(s) used (point 1 of Annex V, to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([6])	M	
Metric(s) used to express the energy savings (primary or final energy savings) (Article 7a(4), and point 3(d) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
How are lifetimes (and possible changes in savings over time) taken into account in savings calculations (points 2(i) and 5(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([7])	M	
Other sources of information or references (e.g. studies, evaluation reports) where more explanations and details about the savings calculations can be found	V	

Additionality and materiality (requirements related to points 2 and 5(g) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Description of the calculation methodology; including how additionality is taken into account in the calculation methodology (point 2(a) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([8])	M	
Does the EEOS promote early replacements? If so, how is it taken into account in the calculation of the savings? (point 2(f) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Benchmarks used for deemed and scaled savings (in case deemed or scaled savings are used) (point 1(c) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
How is materiality of savings ensured? (point 3(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Possible overlaps (between policy measures and between individual actions) and double counting		
Possible overlaps between individual actions eligible to the EEOS ([9])	M_{iap}	
Possible overlaps between the EEOS and alternative measure(s) reported according to Article 7 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**	M_{iap}	
How are possible overlaps (between the EEOS and alternative measures) addressed to avoid any double counting of energy savings? (point 3(g) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Climatic variations (where relevant) (points 2(h) and 5(i) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Are there climatic variations between regions? And can they affect the actions eligible to the EEOS?	M_{iap}	
How are climatic variations addressed in savings calculations where relevant?	M_{iap}	
Monitoring and verification (M&V) of savings (point 5(j) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Brief description of the monitoring & verification system and of the process of verification	M	
Authorities responsible for the M&V of the EEOS	M	

Independence of the M&V from obligated parties (Article 7a(5) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Verification of statistically representative samples (Article 7a(5) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([10])	M	
Reporting obligations for obligated parties (savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme)	M	
Publication of energy savings achieved each year under the EEOS (Article 7a(7) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Penalties applied in case of non-compliance (and related references, including the law or other legal texts setting the penalties and related conditions)	M	
Provision(s) in case the progress of the EEOS is not satisfactory (point 3(f) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Information about quality standards (point 2(g) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
How are quality standards (for products, services and installation of measures) promoted or required by the EEOS?	M_{iap}	
Complementary information or explanations		
Mention here any other information of explanation that can be useful for experience sharing	V	

Notes:

M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

(1) **Contracting Parties** shall complete this field if expected new annual end-use energy savings are stable. If the new annual end-use energy savings are expected to change over time **CP** shall complete the fields per year.

(2) **Contracting Parties** shall specify the sectors (residential; services; industry; transport;other(s)) taken into account to calculate the target(s) of the EEOS and to define obligated parties. If the sectors eligible for individual actions are different, it shall be specified in the next field.

(3) **Contracting Parties** shall specify here the eligible actions. If the list of measures is too long, **Contracting Parties** shall mention here the main eligibility criteria and provide the list as a separate file. **Contracting Parties** shall specify the lifetime values assumed for the different types or categories of actions using Table 4 in this Annex.

(4) In case obligated parties are allowed to count towards their obligation certified energy savings achieved by energy service providers or other third parties, **Contracting Parties** shall explain the eligibility criteria for these third parties and how it is ensured that the certification of energy savings follows an approval process that is clear and transparent.

(5) **Contracting Parties** shall specify if obligated parties can or shall fulfil their savings obligation, in whole or in part, as a contribution to an Energy Efficiency National Fund.

(6) **Contracting Parties** shall specify the methods used according to the typology defined in Annex V(1): (a) deemed savings/(b) metered savings/(c) scaled savings/(d) surveyed savings. **Contracting Parties** shall explain in case another type of method is used.

(7) **Contracting Parties** shall add explanation, especially if a method different from the one presented in point 2(i) of Annex V is used).

(8) **Contracting Parties** shall explain how the calculation methodology complies with points (a) to (c) of Annex V(2), includ-

ing how the effects of EU laws and regulations are taken into account, as required by points 2(b) and 2(c) of Annex V.

(9) **Contracting Parties** shall explain how such overlaps are taken into account in the savings calculations; for example interactions between insulation of walls and replacement of heating systems. **Contracting Parties** shall also explain how the M&V system prevents the same individual action to be reported by several obligated parties (avoiding double counting within the EEOS).

(10) **Contracting Parties** shall explain how verification of statistically representative samples of actions is ensured, and specify the criteria used to define and select representative samples.

Table 2

Alternative policy measures referred to in Article 7b and Article 20(6) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC (except taxation measures)

PaM Number	M	
Source(s) of information (including the reference of the related law or other legal text(s))	M	
Budget planned or estimated, including the corresponding implementation period(s)	V	
Expected savings for 2024-2030 and duration of the obligation period(s) (points 5(d) and 5(e) of Annex V to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC)		
Expected cumulative end-use energy savings for the period 2024-2030 (ktoe)	M	
Expected new annual end-use energy savings (ktoe/year) ([1])	M_{iap}	
<…>	**<…>**	
<…>	**<…>**	
<…>	**<…>**	
2024	M_{iap}	
2025	M_{iap}	
2026	M_{iap}	
2027	M_{iap}	
2028	M_{iap}	
2029	M_{iap}	
2030	M_{iap}	
Intermediate period(s), where relevant ([2])	M_{iap}	
Key design features		

Implementing public authorities, participating or entrusted parties and their responsibilities for implementing the policy measure (points 3(b) and 5(b) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Target sectors (point 5(c) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([3])	M	
Individual actions eligible to the alternative measure (point 5(f) of Annex V to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC) and corresponding lifetimes (points 2(i) and 5(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([4])	M	
Specific policy measures or individual actions targeting energy poverty (where applicable)	M_{lap}	
General information about the calculation methodology		
Measurement method(s) used (point 1 of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([5])	M	
Metric(s) used to express the energy savings (primary or final energy savings) (point 3(d) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
How are lifetimes (and possible changes in savings over time) taken into account in savings calculations (points 2(i) and 5(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([6])	M	
Other sources of information or references (e.g. studies, evaluation reports) where more explanations and details about the savings calculations can be found	V	
Additionality and materiality (requirements related to points 2 and 5(g) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Description of the calculation methodology; including how additionality is taken into account in the calculation methodology (point 2(a) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([7])	M	
Does the policy measure promote early replacements? If so, how is it taken into account in the calculation of the savings? (point 2(f) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	

Benchmarks used for deemed and scaled savings (in case deemed or scaled savings are used) (point 1(c) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
How is materiality of savings ensured? (point 3(h) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Possible overlaps (between policy measures and between individual actions) and double counting		
Possible overlaps between individual actions eligible to the policy measure ([8])	M_{iap}	
Possible overlaps between the EEOS (if any) and alternative measure(s) reported according to Article 7	M_{iap}	
How are possible overlaps (between the EEOS, if any, and alternative measures) addressed to avoid any double counting of energy savings? (point 3(g) of Annex V)	M	
Climatic variations (where relevant) (points 2(h) and 5(i) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Are there climatic variations between regions? And can they affect the actions eligible to the policy measure?	M_{iap}	
How are climatic variations addressed in savings calculations where relevant?	M_{iap}	
Monitoring and verification (M&V) of savings (point 5(j) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Brief description of the monitoring & verification system and of the process of verification	M	
Authorities responsible for the M&V of the policy measure	M	
Independence of the M&V from the participating or entrusted parties (Article 7b(2) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Verification of statistically representative samples (Article 7b(2) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([9])	M	
Publication of energy savings achieved each year under the policy measure (point 3(e) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Penalties applied in case of non-compliance (and related references, including the law or other legal texts setting the penalties and related conditions)	M	

Provision(s) in case the progress of the policy measure is not satisfactory (point 3(f) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Information about quality standards (point 2(g) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
How are quality standards (for products, services and installation of measures) promoted or required by the policy measure?	M_{iap}	
Complementary information or explanations		
Any other information of explanation that can be useful for experience sharing	V	

Notes:

M = mandatory; M_{iap} = mandatory if applicable; V = voluntary

(1) **Contracting Parties** shall complete this field if expected new annual end-use energy savings are stable. If the new annual end-use energy savings are expected to change over time **CP** shall complete the fields per year.

(2) **Contracting Parties** shall indicate here the periods or dates used to define intermediate objectives to enable reviewing the progress of the alternative measure.

(3) **Contracting Parties** shall specify the sectors (residential; services; industry; transport;other(s)) taken into account.

(4) **Contracting Parties** shall specify the categories of individual actions that can receive financial incentives or other types of support from the alternative measure, or that are promoted by the alternative measure through regulations, information or any type of policy instrument. If the list of measures is too long, **Contracting Parties** shall mention here the main eligibility criteria and provide the list as a separate file. **Contracting Parties** shall specify the lifetime values assumed for the different types or categories of actions using Table 4 in this Annex.

(5) **Contracting Parties** shall specify the methods used according to the typology defined in Annex V(1): (a) deemed savings/(b) metered savings/(c) scaled savings/(d) surveyed savings. **Contracting Parties** shall explain in case another type of method is used.

(6) **Contracting Parties** shall add explanation, especially if a method different from the one presented in point 2(i) of Annex V is used).

(7) **Contracting Parties** shall explain how the calculation methodology complies with points (a) to (c) of Annex V(2), including how the effects of EU laws and regulations are taken into account, as required by points 2(b) and 2(c) of Annex V).

(8) **Contracting Parties** shall explain how such overlaps are taken into account in the savings calculations; for example interactions between insulation of walls and replacement of heating systems.

(9) **Contracting Parties** shall explain how verification of statistically representative samples of actions is ensured, and specify the criteria used to define and select representative samples.

Table 3

Information on taxation measures

PaM Number	M	
Duration of taxation measure (point 5(k)(iv) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Implementing public authority (point 5(k)(ii) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Target sectors and segment of taxpayers (point 5(k)(i) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) (1)	M	
Source(s) of information (including the reference of the related law or other legal text(s))	M	
Expected savings for 2024-2030 and duration of the obligation period(s) (points 5(d) and 5(e) of Annex V to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)		
Expected cumulative end-use energy savings for the period 2024-2030 (ktoe)	M	
Expected new annual end-use energy savings (ktoe/year) (2)	M_{iap}	
<…>	**<…>**	
<…>	**<…>**	
<…>	**<…>**	
2024	M_{iap}	
2025	M_{iap}	
2026	M_{iap}	
2027	M_{iap}	
2028	M_{iap}	
2029	M_{iap}	
2030	M_{iap}	
Complementary explanations (when relevant)	V	
General information about the calculation methodology		
Calculation method(s) used (3)	M	
Approach to calculating savings (point (4)(a) of Annex V to Directive 2012/27/EU), **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) (4)	M	

Elasticities (short-term) (point (4)(b) of Annex V to Directive 2012/27/EU), **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([5])	M_{iap}	
Elasticities (long-term) (point (4)(b) of Annex V to Directive 2012/27/EU), **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([6])	M_{iap}	
How lifetimes are addressed in savings calculations (point 2(e) of Annex V to Directive 2012/27/EU), **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**) ([7])	M	
How is double counting with other policy measure(s) avoided? (point (4)(c) of Annex V to Directive 2012/27/EU), **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**)	M	
Independence from the implementing public authority ([8])	M	
Complementary explanations and source(s) of information	V	

Notes:

M = mandatory; Miap = mandatory if applicable; V = voluntary

(1) **Contracting Parties** shall specify the sectors (residential; services; industry; transport;other(s)) taken into account.

(2) **Contracting Parties** shall complete this field if expected new annual end-use energy savings are stable. If the new annual end-use energy savings are expected to change over time **CP** shall complete the fields per year.

(3) **Contracting Parties** shall explain the model used to calculate the savings, if short-term and/or long-term elasticities are taken into account and why, the variables taken into account in the model and how they were selected.

(4) **Contracting Parties** shall explain the method for analyzing the effects on energy consumption with and without the taxation measure (counterfactual); How the counterfactual is defined, and how it is ensured that at least the minimum EU levels of taxation are taken into account.

(5) When relevant, **Contracting Parties** shall explain how the short-term elasticities are defined, ensuring that they represent the responsiveness of energy demand to price changes. **Contracting Parties** shall mention the data sources to be used to define the elasticities.

(6) When relevant, **Contracting Parties** shall explain how the long-term elasticities are defined, ensuring that they represent the responsiveness of energy demand to price changes. **Contracting Parties** shall mention the data sources to be used to define the elasticities.

(7) **Contracting Parties** shall explain how the calculation methodology ensures that only savings from individual actions implemented after 31 December 2020 and before 31 December 2030 can be taken into account.

(8) **Contracting Parties** shall explain how the independence of the evaluator(s) of the energy savings from the taxation measure is ensured.

Table 4

Information about the lifetime of the individual actions eligible to the policies and measures reported for Article 7 of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC

Eligible action	End-use sector	Assumed lifetime value (in years)	Assumptions about possible changes in the energy savings over time	Source or method used to estimate the lifetime and related assumptions
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Action 1				
Action 2				
Action 3				

Notes: M_{iap} = mandatory if applicable

ANNEX XI

*INFORMATION ON THE ENERGY SAVINGS ACHIEVED UNDER ARTICLE 7 OF DIRECTIVE 2012/27/EU, **AS ADAPTED AND ADOPTED BY MINISTERIAL COUNCIL DECISIONS 2015/08/MC-EnC, 2021/14/MC-EnC AND 2022/02/MC-EnC*** **(1)**

Table 1

Energy savings achieved through Article 7 of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC in year X-2 (4)

PaM number	Unit	Vulnerable households addressed (2)	Final energy savings achieved through national EEOs referred to in Article 7a of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC or alternative measures adopted in application of Article 7b of that Directive (excl. Article 7(4), point (c) of that Directive)		
			Total annual end-use savings achieved in Year X-2 (3)	Thereof, savings achieved in Year X-2 only from new actions that were implemented in Year X-2	Total cumulative end-use savings achieved from 2024 to Year X-2
M		M	M	M	M
PaM 1	ktoe				
PaM 2	ktoe				
Add further rows, as needed	ktoe				

Of which final energy savings achieved by PaMs aimed at alleviation of energy poverty in line with Article 7(11) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC			**Amount of final energy savings achieved in accordance with Article 7(4), point (c) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**		
Total annual end-use savings achieved in Year X-2 (3)	Thereof, savings achieved in Year X-2 only from new actions that were implemented in Year X-2	Total cumulative end-use savings achieved from 2024 to Year X-2	Total annual end-use savings achieved in Year X-2 (3)	Thereof, savings achieved in Year X-2 only from new actions that were implemented in Year X-2	Total cumulative end-use savings achieved from 2024 to Year X-2
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}

Notation: Reporting for calendar year X-2, with X = reporting year, M = mandatory; M_{iap} = mandatory if applicable.

Notes:

(1) **Contracting Parties** shall report on national energy efficiency obligation scheme and alternative measures pursuant to Article 7a and 7b of Directive 2012/27/EU**, as adapted and adopted by Ministerial Council Decisions 015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**.

(2) **Contracting Parties** shall select from the following options whether vulnerable households, including those affected by energy poverty and, where appropriate, in social housing are included: Yes; No. For the definition on vulnerable households, guidance is provided in Article 28 of Directive (EU) 2019/944**, as adapted and adopted by Ministerial Council Decisions 2021/13/MC-EnC and 2022/03/MC-EnC** and Article 3(3), point (d) of Regulation (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**.

(3) Total annual end-use savings achieved in Year X-2, i.e. amount of savings from new actions implemented from 2024 to Year X-3 that continue delivering savings in X-2, taking into account savings lifetimes.

(4) **X-2 shall not apply for the first progress reports in 2025.**

Table 2

Energy savings achieved through Article 7 of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC in year X-3 (1)

PaM number	Unit	Vulnerable households addressed (2)	Final energy savings achieved through national EEOs referred to in Article 7a of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC or alternative measures adopted in application of Article 7b of that Directive (excl. Article 7(4), point (c) of that Directive)		
			Total annual end-use savings achieved in Year X-3 (3)	Thereof, savings achieved in Year X-3 only from new actions that were implemented in Year X-3	Total cumulative end-use savings achieved from 2024 to Year X-3
M		M	M	M	M
PaM 1	ktoe				
PaM 2	ktoe				
Add further rows, as needed	ktoe				

Of which final energy savings achieved by PaMs aimed at alleviation of energy poverty in line with Article 7(11) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC			**Amount of final energy savings achieved in accordance with Article 7(4), point (c) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**		
Total annual end-use savings achieved in Year X-3 (2)	Thereof, savings achieved in Year X-3only from new actions that were implemented in Year X-3	Total cumulative end-use savings achieved from 2024 to Year X-3	Total annual end-use savings achieved in Year X-3 (2)	Thereof, savings achieved in Year X-3 only from new actions that were implemented in Year X-3	Total cumulative end-use savings achieved from 2024 to Year X-3
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}

Notation: Reporting for calendar year X-3, with X = reporting year; M = mandatory; M_{iap} = mandatory if applicable;

Notes:

(1) X-3 shall not apply for the first progress reports in 202**5**.

(2) **Contracting Parties** shall select from the following options whether vulnerable households, including those affected by energy poverty and, where appropriate, in social housing are included: Yes; No. For the definition on vulnerable households, guidance is provided in Article 28 of Directive (EU) 2019/944**, as adapted and adopted by Ministerial Council Decisions 2021/13/MC-EnC and 2022/03/MC-EnC** and Article 3(3), point (d) of Regulation (EU) 2018/1999**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**.

(3) Total annual end-use savings achieved in Year X-3, i.e., amount of savings from new actions implemented from 202**4** to Year X-4 that continue delivering savings in X-3, taking into account savings lifetimes.

ANNEX XII

REPORTING IN ACCORDANCE WITH ARTICLE 5 OF DIRECTIVE 2012/27/EU, ***AS ADAPTED AND ADOPTED BY MINISTERIAL COUNCIL DECISIONS 2015/08/MC-EnC, 2021/14/MC-EnC AND 2022/02/MC-EnC***

Table 1

Total renovated building floor area of heated and/or cooled buildings owned and occupied by the Contracting Parties' central government referred to in Article 5(1) of the Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC [1]

Reporting element	Specification	Unit	Year X-3		Year X-2		Additional information
			Primary Energy Consumption (PEC)	and/or Final Energy Consumption (FEC)	PEC	and/or FEC	
PaM Number	M_{iap}	n/a					
Total building floor area of buildings renovated	M_{iap}	m^2					
Amount of energy savings achieved due to renovation of buildings in Year X-3 and X-2 [2]	V	ktoe					
Sum of new energy savings achieved due to renovation of buildings, over the time period 2021 – Year X-3 (X-2)(i.e. corresponding **to 1% renovation rate until 31 December 2023 and** 3 % renovation rate **from 1 January 2024**)	M_{iap}	ktoe					

Notation: X = reporting year; Miap = mandatory if applicable; V = voluntary

Notes:

(1) **Contracting Parties** shall report on policies and measures referred to in Article 5(1) of the Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC.**

(2) Amount of energy savings can be estimated: deemed, metered, scaled or surveyed savings can be reported.

Table 2

The amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC ([1]) ([2])

Reporting element	Specification	Unit	Year X-3		Year X-2		Additional information
			PEC	and/or FEC	PEC	and/or FEC	
PaM Number	M_{iap}	n/a					
Amount of energy savings achieved in eligible buildings owned and occupied by their central government in Year X-3 and X-2 ([3])	M_{iap}	ktoe					
Sum of energy savings achieved in eligible buildings owned and occupied by their central government, over the time period 2021 – Year X-3 (X-2) (i.e. corresponding to **1% renovation rate until 31 December 2023 and** 3 % renovation **rate from 1 January 2024 in line with Article 5, point 16, of Ministerial Council Decision 2021/14/MC-EnC**)	M_{iap}	ktoe					

Notation: X = reporting year; Miap = mandatory if applicable

Notes:

(1) **Contracting Parties** shall report on policies and measures referred to in Article 5(6) of the Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC.**

(2) Without prejudice to Article 7 of Directive 2010/31/EU, **as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC, Contracting Parties** may opt for an alternative approach to paragraphs 1 to 5 of Article 5 of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC,** whereby they take other cost effective measures, including deep renovations and measures for behavioural change of occupants, to achieve an amount of energy savings in eligible buildings owned and occupied by their central government that is at least equivalent.

(3) Amount of energy savings can be estimated: deemed, metered, scaled or surveyed savings can be reported.

ANNEX XIII

PROGRESS TOWARDS FINANCING

Table 1

Progress towards financing

PaM number(s) the reporting concerns (1)	Eligible technologies/ solutions	Initial investment assumptions (EUR)		Actual investments up to and including year X-2 (EUR)							Actual investments still to be implemented (EUR)	
		Value	Price year	National public funding	Total EU funding	<...>	<...>	Private funding (where available)	Price year	Description of source	Value	Price year
M	V	M		M	M	<...>	<...>	M_{av}	M	M	M	
PaM 1, or a group of PaM						<...>	<...>					
PaM 2, or a group of PaM						<...>	<...>					
Add further rows, as needed						<...>	<...>					

Notation: X = Reporting year; M = mandatory; M_{av} = mandatory if available; V = voluntary

Notes:

(1) Contracting Parties to list all PaM numbers the reporting concerns. Separate rows should be used for reporting on different PaMs or groups of PaMs.

ANNEX XIV

IMPACTS ON AIR QUALITY AND EMISSIONS TO AIR

Table 1

Impacts on air quality and emissions to air ([1])

PaM number(s) the reporting concerns ([2])	Reference year ([3])	Affected pollutant (s) ([4])	Quantified expected emission impacts ([5]) (kt/yr)						Qualitative assessment of expected emission impacts ([6])	Details of the methodologies used for analysis ([7])	Qualitative description of uncertainties (where available)	Documentation/ Source of methodologies	General comments
			t	t+5	t+10	t+15	t+20	t+25					
M	M	M	M_{iav}						V/M	M_{iav}	V	M_{iav}	V
PaM 1, or a group of PaM													
PaM 2, or a group of PaM													
Add further rows, as needed													

Notation: t signifies the first future year ending with 0 or 5 immediately following the reporting year; M = mandatory; M_{iav} = mandatory if available; V = voluntary.

Notes:

(1) Contracting Parties shall report on the quantification of the impact of the policies and measures, or groups of policies and measures, as far as possible.

(2) Contracting Parties to list all PaM numbers the reporting concerns. Separate rows should be used for reporting on different PaMs or groups of PaMs.

(3) Reference year is the base year used to project emissions.

(4) Contracting Parties to select from the following pollutants (additional pollutants may be added and specified under 'other'): SO2, NOx, NMVOC, NH3, PM2.5, other.

(5) Contracting Parties shall report expected increases in emissions as positive numbers or ranges, whereas expected reductions in emissions are shown as negative numbers or ranges.

(6) In case no quantified impacts are available, a qualitative assessment is mandatory (M). If impacts are quantified, the qualitative assessment is voluntary (V).

(7) The description shall include information on the methodology, such as models used, the baseline against which impacts are compared and underlying data.

ANNEX XV

POLICIES AND MEASURES TO PHASE OUT ENERGY SUBSIDIES, IN PARTICULAR FOR FOSSIL FUELS

Table 1

Policies and measures to phase out energy subsidies, in particular for fossil fuels

Subsidy for fossil fuel or for other (1)	**Name of policy (English)**	**Name of policy (Local language)**	**Sector (2)**	**Purpose (3)**	**Carrier (4)**	**Category (5)**	**Implementation period**		**Subsidy volumes**			
							Start (6)	Finish (7)	X-3 (8)	X-2 (8)	Currency (9)	
M	M	M	M	M	M	M	M	M	M_{iav}	M	M	
Subsidy 1												
Subsidy 2												
Add further rows, as needed												

Notation: X = Reporting year; M = mandatory; M_{av} = mandatory if available

Notes:

(1) **Contracting Party** shall select from the following options (additional options may be added and specified under 'Other'): Fossil fuel; Other (including subsidies for electricity, nuclear, renewables, and energy efficiency). In case of subsidies for the generation of electricity from fossil fuel sources, these should be included under the fossil fuel category.

(2) **Contracting Party** shall select from the following options: Energy sector (if possible, select from the following sub-sectors: ENER-Fossil fuel extraction; ENER-Energy crops; ENER-Conversion; ENER-Conversion- Refining; ENER-Conversion-LNG; ENER-Conversion-CHP; ENER-Conversion-Electricity production; ENER-Conversion-Heating & Cooling; ENER-Conversion-Liquid biofuels; ENER-Conversion-Biogas production; ENER-Conversion-Hydrogen production; ENER-Infrastructure; ENER-Infra-Transmission; ENER-Infra-Distribution; ENER-Infra-T&D; ENER-Infra-Storage; ENER-Assets decommissioning; ENER- Waste management; ENER-Retail); Agriculture (if possible, select from the following sub-sectors: AGRI-Crop, animal production, hunting; AGRI-Forestry and logging; AGRI-Fishing and aquaculture); Construction; Mining; Industry (if possible, select from the following sub-sectors: INDU-Energy-intensive industry (industrial sectors that are covered by the EU Emissions Trading System); INDU-Non energy intensive-industry); Transport (TRANS-Air transport; TRANS-Rail transport; TRANS-Road transport; TRANS-Water transport; TRANS-Public transport); Services (tertiary sector); Households (if possible, select from the following sub-sectors: Households; HH-Low income); Public; Cross sectors (multiple sectors); Economic sectors.

(3) **Contracting Party** shall select from the following options (additional options may be added and specified under 'Other'): Support to energy demand; Support to energy efficiency; Support to industry restructuring; Support to infrastructure; Support to production; Other.

(4) **Contracting Party** shall select one or more from the following options: Fossil fuels (if possible, select from the following sub-carriers: FF-All fossil fuels; FF-Several fossil fuels; FF-Coal/Lignite; FF-Natural gas; FF-Mine gas; FF-Shale gas; FF-Crude oil & NGL; FF-Oil & Gas; FF-Petroleum products; FF-PP-Gasoil; FF-PP-Blended gasoil; FF-PP-Gasoline; FF-PP-Leaded Gasoline; FF-PP-Unleaded Gasoline; FF-PP-Blended gasoline; FF-PP-LPG; FF-PP-Kerosene; FF-PP-Fossil-based marine fuels; FF-PP-Heavy fuel oil (HFO); FF-Peat; All energies; Heat; Electricity; Nuclear; Bioenergy (if possible, select from the following sub-carriers:

RES-Biogas; RES-Biomass & biogas; RES-Biomass (solid); RES-Biomass MSW; RES-Liquid biofuels; RES-Liquid biofuels-Biodiesel; RES-Liquid biofuels-Bioethanol); RES (if possible, select from the following sub- carriers: RES-All; RES-Several; RES-Geothermal; RES-Heat; RES-Hydro; RES-Marine energy; RES-Solar; RES-Wind; RES-Wind offshore; RES-Wind onshore); Hydrogen (if possible, select from the following sub- carriers: FF-All fossil fuels; RES-Biogas).

(5) **Contracting Party** shall select from the following options (additional options may be added and specified under 'Others'): Direct transfers (if possible, select from the following sub-categories: Soft loans; Grants; Others); Tax expenditures (Tax reduction; Tax exemption; Tax refund; Tax credits; Tax allowance; Others); Under-pricing of goods/services (if possible, select from the following sub-categories: Under-pricing of government-owned resources or land; Under-pricing of government-owned infrastructure; Under-pricing of other government-provided goods or services); Income or price supports (if possible, select from the following sub-categories: Capacity payments (electricity capacity mechanisms); Biofuels blending mandate; RES quotas with tradable certificates; Differentiated grid connection charges; Energy efficiency obligations; Interruptible load schemes; Contract for Difference (CfD); Feed-in premiums; Feed-in tariffs; Consumer price guarantees (cost support); Consumer price guarantees (price regulation); Producer price guarantees (price regulation); Others

(6) Year policy enabling subsidy was first implemented.

(7) Year when the enabling policy ends (is no longer in effect or implementation), at which time subsidies can no longer be paid.

(8) Subsidy volumes paid in nominal currency values.

(9) **Contracting Party** shall **<…> report** in EUR **<…>**.

ANNEX XVI

ADDITIONAL REPORTING OBLIGATIONS IN THE AREA OF RENEWABLE ENERGY

Table 1

Functioning of the system of guarantees of origin for electricity, gas and heating & cooling from RES

Reporting element	Specification	Unit	Year	
			X-3	X-2
Electricity				
Guarantees of origin – issued ([1])	M_{iap}	Number		
Guarantees of origin – canceled ([2])	M_{iap}	Number		
Guarantees of origin – resulting annual national renewable energy consumption ([3])	M_{iap}	GWh		
Gas				
Guarantees of origin – issued	M_{iap}	Number		
Guarantees of origin – canceled	M_{iap}	Number		
Guarantees of origin – resulting annual national renewable energy consumption ([4])	M_{iap}	GWh		
Heating/cooling				
Guarantees of origin – issued	M_{iap}	Number		
Guarantees of origin – canceled	M_{iap}	Number		
Guarantees of origin – resulting annual national renewable energy consumption ([4])	M_{iap}	GWh		
Measures taken to ensure reliability	M_{iap}	n/a		
Measures taken to protect against fraud of the system	M_{iap}	n/a		

Notation: X = reporting year; M_{iap} = mandatory if applicable

Notes:

(1) The number of guarantees of origin issued for energy that is produced from renewable energy sources in the **Contracting Party** during the reporting period, based on the time of production of the energy.

(2) The number of guarantees of origin from renewable energy sources cancelled for energy that is consumed in the **Contracting Party** during the reporting period.

(3) The quantity of energy consumption for which the origin has proven to originate from renewable energy sources, being determined as the cancelled guarantees of origin for energy consumption from renewable energy sources in the reporting period + the renewable share of the residual mix multiplied by the total energy consumption for the reporting period that is not covered with guarantees of origin cancellation.

(4) The quantity of energy consumption for which the origin has proven to originate from renewable energy sources, being determined as the cancelled guarantees of origin for energy consumption from renewable energy sources in the reporting period + the energy consumption from renewable energy sources through other reliable tracking mechanisms that avoid double counting (which may include "the renewable share of the residual mix multiplied by the total energy consumption for the reporting period that is not covered with guarantees of origin cancellation nor other reliable tracking mechanisms").

Table 2

Changes in commodity prices and land use associated with use of biomass and other forms of energy from renewable sources

Please report changes in commodity prices and land use within the **Contracting Party** associated with its increased use of biomass and other forms of energy from renewable sources (1) (2)	M_{iap}	

Miap = mandatory if applicable

(1) Changes in commodity prices to be reported at national level (or subnational if applicable). These include any shifts in prices related to food and feed crops. (increased price for food/feed product due to increased energy use of the same feedstock). These also include shifts in prices related to increased demand for forest biomass for energy use – i.e., shifts in prices for material products made from waste and residue due to increased energy use and competition for feedstock.

(2) For land use change, please report only the actual change in land used for biomass consumed for energy, not all agricultural land.

Table 3

Estimated excess production of energy from renewable sources compared to the national trajectory towards the 2030 target

Reporting element	Specification	Unit	2022	2023	2024	2025	2026	2027	2028	2029	2030
Estimated excess production resulting from domestic renewable sources (A)	M_{iap}	ktoe									
Estimated production resulting from joint projects between **Contracting Parties or Contracting Parties and Member States or** joint projects between **Contracting Parties** and third countries which counts toward the national contribution towards the 2030 target (B)	M_{iap}	ktoe									
Estimated production resulting from joint support schemes which counts toward the national contribution towards the 2030 target (C)	M_{iap}	ktoe									
Estimated excess production overall (excluding future statistical transfers) (= A+B+C)	M_{iap}	ktoe									
Estimated deficit production resulting from domestic renewable sources (D)	M_{iap}	ktoe									

M_{iap} = mandatory if applicable

Table 4

Technological development and deployment of biofuels made from feedstocks listed in Annex IX to Directive 2018/2001, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC

Please report technological development and deployment of biofuels in your country made from feedstocks listed in Annex IX to Directive 2018/2001, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC** (1)	M	

Notes:

M = mandatory

(1) Deployment can be reported in installed capacities and actual production of different advanced biofuels based on different technologies. As well as the number of installations and feedstock type. Development could list the different technology pathways and give a brief description of their status in a qualitative manner (development phase, how close to market uptake, recent developments, investments).

Table 5

Estimated impact of the production or use of biofuels, bioliquids and biomass fuels on biodiversity, water resources, water availability and quality, soils and air quality

Reporting element	**Production of biofuels, bioliquids, biomass**				**Use of biofuels, bioliquids, biomass**			
	Estimated impact of production of biofuels, bioliquids, biomass (1)	Unit	Time period	Description of methods to estimate the impact (1)	Estimated impact of use of biofuels, bioliquids, biomass (1)	Unit	Time period	Description of methods to estimate the impact (1)
	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}	M_{iav}
Biodiversity								
Water stock (ground water, surface water) & water availability								
Soils								
Air quality								

Notes:

M_{iav} = mandatory if available

(1) Estimated impacts and the methods used can be described in quantitative and qualitative manner. If quantitative impacts are described, please do specify the unit and the time period they relate to.

Table 6

Observed cases of fraud in the chain of custody of biofuels, bioliquids and biomass fuels

Please report observed cases of fraud in the chain of custody of biofuels, bioliquids and biomass fuels	M_{iap}	

M_{iap} = mandatory if applicable

Table 7

Share of biodegradable waste in waste-to-energy plants used for producing energy

		Year	
		X-3	X-2
Are waste-to-energy plants operated? (1)	M_{iap}		
If yes			
Share of biodegradable waste used (%)	M_{iap}		
Methodology for estimating the share	M_{iap}		
Steps taken to improve and verify the estimates	M_{iap}		

Notation: X = reporting year; M_{iap} = mandatory if applicable

Notes:

(1) Contracting Parties shall select from the following options: Yes; No.

Table 8

Electricity and heat generation from renewable energy in buildings, including, where available, disaggregated data on energy produced, consumed and injected into the grid (1)

Reporting element	**Specification**	**Unit**	**Year**	
			X-3	X-2
Total final energy consumption from renewables in buildings for heating purposes	M_{iav}	ktoe		
Solar thermal systems	M_{iav}	ktoe		
Biomass (2)	M_{iav}	ktoe		
Heat pumps	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		

Other decentralised renewable sources	M_{iav}	ktoe		
Total renewable heat consumed in buildings	M_{iav}	ktoe		
Solar thermal systems	M_{iav}	ktoe		
Biomass ([2])	M_{iav}	ktoe		
Heat pumps	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		
Other decentralised renewable sources	M_{iav}	ktoe		
Total renewable heat produced and fed into the grid (district heating)	M_{iav}	ktoe		
Solar thermal systems	M_{iav}	ktoe		
Biomass ([2])	M_{iav}	ktoe		
Heat pumps	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		
Other decentralised renewable sources	M_{iav}	ktoe		
Total renewable electricity production in buildings	M_{iav}	ktoe		
Solar PV systems	M_{iav}	ktoe		
Biomass ([2])	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		
Other decentralised renewable sources	M_{iav}	ktoe		
Total renewable electricity consumption in buildings	M_{iav}	ktoe		
Solar PV systems	M_{iav}	ktoe		
Biomass ([2])	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		
Other decentralised renewable sources	M_{iav}	ktoe		
Total renewable electricity fed into grid	M_{iav}	ktoe		
Solar PV systems	M_{iav}	ktoe		
Biomass ([2])	M_{iav}	ktoe		
Geothermal systems	M_{iav}	ktoe		
Other decentralised renewable sources	M_{iav}	ktoe		

Notation: X = reporting year; M_{iav} = mandatory if available.

Notes:

(1) Building' means a roofed construction having walls, for which energy is used to condition the indoor climate (Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**, Article 2(1)) whereas Annex I of that Directive defines, for the purpose of the calculation of energy performance of buildings, the following classification of categories: (a) single-family houses of different types; (b) apartment blocks; (c) offices; (d) educational buildings; (e) hospitals; (f) hotels and restaurants; (g) sports facilities; (h) wholesale and retail trade services buildings; (i) other types of energy-consuming buildings (Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**, point 5 of Annex I).

(2) Biomass produced in accordance with the sustainability criteria for biofuels, bioliquids and biomass fuels, laid down in Article 29 of Directive (EU) 2018/2001**, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC**.

Table 9

The amount of solid biomass used for energy production

Reporting element	Specification	Unit	Year	
			X-3	X-2
1) Energy sector (total) (1)	M	TJ NCV		
a) Electricity (1)	M	TJ NCV		
b) Combined heat and power (1)	M	TJ NCV		
c) Heat (1)	M	TJ NCV		
2) Transformation sector (except for energy) (1)	M	TJ NCV		
3) Industry sector internal (consumed and autoproduced electricity, CHP and heat) (1)	M	TJ NCV		
4) Direct final consumption residential (1)	M	TJ NCV		
5) Other (1) (2)	M	TJ NCV		

Notation: X = reporting year; M = mandatory

Notes:

(1) Amounts of biomass used in the related sector, covering also transformation losses.

(2) This includes among others, agriculture, forestry and commerce, trade and services.

ANNEX XVII

ADDITIONAL REPORTING OBLIGATIONS IN THE AREA OF ENERGY EFFICIENCY

Table 1

Progress in each sector and reasons why energy consumption remained stable or was growing in final energy consumption sectors

Sector	Specification	Reasons for growth/ stable final energy consumption in year X-3 (3)	Reasons for growth/ stable final energy consumption in year X-2
Industry	M	Choose (an) item(s) (1)	Choose (an) item(s) (1)
Transport	M	Choose (an) item(s) (1)	Choose (an) item(s) (1)
Households	M	Choose (an) item(s) (1)	Choose (an) item(s) (1)
Services	M	Choose (an) item(s) (1)	Choose (an) item(s) (1)
Agriculture	M	Choose (an) item(s) (1)	Choose (an) item(s) (1)
Other (2)	M_{iap}		

Notation: X = reporting year; M = mandatory; M_{iap} = mandatory if applicable.

Notes:

(1) **Contracting Parties** to choose from the following reasons (more than one reason can be selected, additional reasons can be specified under 'other'): Economic growth; Decline of fuel prices; Increase of value added; Increase of employment; Increase of transport of goods; Increase of transport of passengers; Increase of population and/or households; Increase of disposable income of households; Worsening of winter climatic conditions; Worsening of summer climatic conditions; Exceptional event; Change in the methodology of measurement or calculation of energy consumptions; other.

(1) Additional sectors may be added and specified under 'other'.

(2) X-3 shall not apply for the first progress reports in 202**5**.

Table 2

Total building floor area of the buildings with a total useful floor area over 250 m² owned and occupied by the Contracting Parties' central government that, on 1 January in year X-2 and X-1, which did not meet the energy performance requirements referred to in Article 5(1) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC

Reporting element	Specification	Unit	Indicators 1 January of Year X-2 (1)	Indicators 1 January of Year X-1	Additional information
Total building floor area of the buildings with a total useful floor area over 250 m² owned and occupied by the **Contracting Parties**' central government	V	m²			
Total building floor area of the buildings which did not meet the energy performance requirements	M	m²			

Notation: X = reporting year; M = mandatory; V = voluntary.

Notes:

(1) X-2 shall not apply for the first progress reports in 2025.

Table 3

Number of energy audits carried out in in year X-3 and X-2. In addition, the total estimated number of large companies in their territory to which Article 8(4) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC is applicable and the number of energy audits carried out in those enterprises in the year X-3 and X-2

Reporting element	Specification	Unit	Year	
			X-3 (2)	X-2
Total number of energy audits carried out	M	number		
Number of large companies (1) to which Article 8(4) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** applies	M	number		
Number of energy audits carried out in large companies to which Article 8(4) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** is applicable	M	number		

Notation: X = reporting year; M = mandatory.

Notes:

(1) The definition for the enterprises in scope of Article 8(4) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC** follows the Commission's definition for small and medium-sized enterprises (SMEs), as included in Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (OJ L 124, 20.5.2003, p. 36).

(2) X-3 shall not apply for the first progress reports in 202**5**.

Table 4

Applied national primary energy factor for electricity and a justification, if this is different from the default coefficient referred to in footnote (3) of Annex IV to Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC

National primary energy factor for electricity (number)	M	
Justification, if factor is different from default coefficient referred to in footnote (3) of Annex IV to Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**	M	

M = mandatory

Table 5

Number and floor area of new and renovated nearly zero-energy buildings (1) in year X-2 and X-1, as provided in Article 9 of Directive 2010/31/EU, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC, where necessary based on statistical sampling

Reporting element	**Specification**	**Number**		**Total floor area (m^2)**	
		1 January of X-2	1 January of X-1	1 January of X-2	1 January of X-1
Residential sector: Total	M_{iav}				
Residential sector: New NZEBs	V				
Residential sector: Renovation	V				
Non-residential (private): Total	M_{iav}				
Non-residential (private): New NZEBs	V				
Non-residential (private): Renovation	V				
Non-residential (public (2)): Total	M_{iav}				
Non-residential (public): New NZEBs	V				
Non-residential (public): Renovation	V				
Definition of nearly zero-energy buildings (3)	V				

Notation: X = reporting year; M_{iav} = mandatory if available; V = voluntary.

Notes:

(1) The definition of nearly zero-energy buildings is according to official national NZEB definitions transposing Article 9 of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**, following the framework definition in Article 2 of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC**: "Nearly zero-energy building means a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby".

(2) The COMMISSION RECOMMENDATION (EU) 2019/786 on building renovation, clarifies that Article 2a(1)(e) of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** concerns all public buildings (and not just public bodies buildings' that are owned and occupied by central government). Policies and actions under Article 2a(1)(e) of Directive 2010/31/EU**, as adapted and adopted by Ministerial Council Decision 2010/02/MC-EnC** should include, for example, buildings that are occupied (e.g. leased or rented) by local or regional authorities and buildings that are owned by central government and regional or local authorities, but not necessarily occupied by them.

(3) Contracting Parties may provide a reference to or a short description of their national NZEB definitions.

Table 6

Internet link to the website where the list or the interface of energy services providers referred to in Article 18(1), point (c) of Directive 2012/27/EU, as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC can be accessible

Internet link to the website of the list or the interface of energy services providers referred to in Article 18(1), point (c) of Directive 2012/27/EU, **as adapted and adopted by Ministerial Council Decisions 2015/08/MC-EnC, 2021/14/MC-EnC and 2022/02/MC-EnC**	M	
Further details or comments on data	V	

M = mandatory; V = voluntary

ANNEX XVIII

ENERGY POVERTY

Table 1

Information on progress towards national indicative objectives to reduce the number of households in energy poverty

Name of national target/ objective	Descrip-tion	Target year	Progress towards target/ objective (1)	Progress Indicator(s) (if applicable)						Details concern-ing the monitor-ing strat-egy	Reference to assess-ments and under-pinning technical reports
				Name of indicator to monitor progress	Base year	Value in base year	Unit	X-3	X-2		
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
National target/ objective 1											
National target/ objective 2											
National target/ objective 3											
Add further rows, as needed											

Notation: X = reporting year; M_{iap} = mandatory if applicable

Notes:

(1) Contracting Parties shall explain the progress towards national indicative objective/target to reduce the number of households in energy poverty. Where relevant, **Contracting Parties** shall include information on general trends or effects from other programmes/policies, which might have an effect on the progress.

ANNEX XIX

ENERGY POVERTY

Table 1

Quantitative information on the number of households in energy poverty

Number of households in energy poverty	**Unit (1)**	**Reference year (2)**	**Year of publication**	**Methodology to determine the number of households in energy poverty**	**Criteria and data (including source) underpinning the assessment of the number of households in energy poverty**
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}

Notes:

M_{iap} = mandatory if applicable

(1) **Contracting Parties** shall select from the following options (additional units may be added and specified under 'other'): absolute numbers; %; other.

(2) **Contracting Parties** may choose to report a reference period (e.g. average of three years).

Table 2

Reporting on indicators in relation to energy poverty

Reporting element	Specification	Unit	X-3	X-2
Share of population at risk of poverty not able to keep home adequately warm	V	Population below 60 % of median equivalised income (%)		
Share of total population not able to keep home adequately warm	V	Population (%)		
Share of population at risk of poverty with arrears on utility bills	V	Population below 60 % of median equivalised income (%)		
Share of total population with arrears on utility bills	V	Population (%)		
Share of population at risk of poverty with leak, damp or rot in dwelling (1)	V	Population below 60 % of median equivalised income (%)		
Share of total population with leak, damp, rot in dwelling (1)	V	Population (%)		

Notes:

V = voluntary

(1) These data are not part of yearly Eurostat surveys but may be available on national level.

Reporting element	Specification	Unit	X-3 1st half	X-3 2nd half	X-2 1st half	X-2 2nd half
Household electricity prices	V	ct/kWh				
Household gas prices	V	ct/kWh				
Household electricity prices, lowest consumption band	V	ct/kWh				
Household gas prices, lowest consumption band	V	ct/kWh				

Table 3

Reporting on national indicators in relation to energy poverty

Name of indicator (1)	Data source	Unit	Year		Data collection period (2)	Short description
			X-3	X-2		
V	V	V	V	V	V	V
Indicator 1						
Indicator 2						
Add further rows, as needed						

Notation: X = reporting year; V = voluntary Notes:

(1) **Contracting Parties** may report national indicators that complement the indicators in Table 2. These may include income of households, the affordability of energy services, housing situations and equipment and complementary/indirect indicators useful to deepen the analysis of potential drivers of energy poverty. **<…>**

(2) **Contracting Parties** may report the data collection period and whether data is collected regularly.

Table 4

Information on national definition of energy poverty

National definition of energy poverty	Year of publication	Year of last amendment	General comments (1)
V	V	V	V

Notes:

V = voluntary

(1) **Contracting Parties** may include information on the status, e.g., whether it is a legal definition or a working definition (which has no legal status but creates a common knowledge on the characteristics of energy poverty and supports setting of targets, implementing measures and monitoring trends) and information on supporting indicators.

ANNEX XX

INFORMATION ON HOW THE IMPLEMENTATION OF THE INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN CONTRIBUTES TO JUST TRANSITION, THE PROMOTION OF BOTH HUMAN RIGHTS AND GENDER EQUALITY, AND ADDRESSING INEQUALITIES IN ENERGY POVERTY

Table 1

Impact of the implementation of the national energy and climate plan on jobs, workers and regions

Expected impacts on jobs, labour markets and skills ([1])	V	
Expected distributional impacts amongst population ([2])	V	
Expected impact for most affected regions ([3])	V	
Expected impact on quality of life, well-being ([4])	V	
Expected impacts on costs ([5])	V	
Inclusiveness and participatory processes ([6])	V	

Notes:

V = voluntary

(1) **Contracting Parties** may provide quantitative elements on the expected evolution of labour market as a result of policies (e.g. sectors that will grow, others that will shrink, and by how much) and describe measures adopted/to be adopted to accompany this transition, including as regards education and training policies as well as social protection.

(2) **Contracting Parties** may describe expected impacts of policies on overall population as well as specific groups, especially the most vulnerable, reflecting as well whether some groups will benefit more than others, and describe measures aimed to ensure fairness and equal burden sharing in that respect.

(3) **Contracting Parties** may describe expected impacts of policies on regions that are to be most affected by the transition, especially coal, peat or oil shale regions or carbon-intensive regions, and mitigating measures to address socioeconomic consequences in such areas. **Contracting Parties** are encouraged to provide quantitative indicators such as jobs, economic output and local tax revenue.

(4) **Contracting Parties** may describe expected impacts on reducing environmental hazards, degradation and pollution, improving the access to safer products, intact ecosystems and their services (food, clean air, water, climate stability etc.), secure livelihoods and benefit health and well-being, including healthier working condition, e.g., limiting emission and improving air quality standards of workplaces.

(5) **Contracting Parties** may describe the expected impacts on costs introduced as a result of climate, energy and environmental policies for both business and consumers (e.g., energy savings lower energy cost; more durable products lower costs for replacement; lower costs for environmental clean-up and public health).

(6) **Contracting Parties** may describe the expected impacts of measures to ensure inclusiveness of climate, energy and environmental policies, in particular as regards low-income households and communities directly affected by the transition, for instance in most affected regions, through e.g. the implementation of green infrastructure and public services, participatory processes, etc.

Table 2

Impact of the implementation of the national energy and climate plan on the promotion of human rights and gender equality and addressing inequalities in energy poverty

Promotion of human rights ([1])	V	
Promotion of gender equality ([2])	V	
Addressing inequalities in energy poverty	V	

Notes:

V = voluntary

(1) Climate justice and just transition also address the sharing of benefits and burdens of climate change from a human rights perspective. Climate change threatens the effective enjoyment of a range of human rights including those to life, water and sanitation, food, health, housing, self-determination, culture and development. **Contracting Parties** may describe how the implementation of their integrated national energy and climate plans contributes to their obligation to prevent the foreseeable adverse effects of climate change and ensure that those affected by it, particularly those in vulnerable situations, have access to effective remedies and means of adaptation to enjoy lives of human dignity.

(2) **Contracting Parties** may describe how their integrated national energy and climate plans are implementing the just transition considering the different impacts on opportunities for men, women and gender diverse people in transitioning regions, what obstacles exist, and what plans they have planned and implemented to move forward.

ANNEX XXI

IMPLEMENTATION OF REGIONAL COOPERATION

Table 1

Reporting on information on the implementation of regional cooperation

Name of regional cooperation initiative with other Contracting Parties or Member States in implementing the objectives and policies	**Relevant Union dimension(s) affected (1)**	**Implementation period**	**Description**	**Member States or Contracting Parties involved**	**Expected contribution to implementing the objectives and policies**	**Progress towards regional cooperation**
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Cooperation 1						
Cooperation 2						
Add further rows, as needed						

Miap = mandatory if applicable

(1) **Contracting Parties** shall select one or more of following: Decarbonisation – GHG emissions and removals; Decarbonisation – Renewable energy; Energy efficiency; Energy security; Internal energy market – Electricity interconnectivity; Internal energy market – Energy transmission infrastructure; Internal energy market – Market integration; Research, innovation and competitiveness; Phase out of energy subsidies

ANNEX XXII

*REPORTING ON IMPLEMENTATION OF RECOMMENDATIONS REFERRED TO IN ARTICLE 32(1) OR (2) OF REGULATION (EU) 2018/1999, **as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC***

Table 1

Reporting on implementation of recommendations

Recommendation	**Category of recommendation (1)**	**Policies and measures adopted, or intended to be adopted and implemented, to address the recommendation**	**Detailed timetable for implementation**	**Reasons for not addressing the recommendation or a substantial part thereof**
M_{iap}	M_{iap}	M_{iap}	M_{iap}	M_{iap}
Recommendation 1				
Recommendation 2				
Add further rows, as needed				

Miap = mandatory if applicable

Notes:

(1) Contracting Parties shall select from a list of categories provided in the electronic version of the tabular format

ANNEX XXIII

REPORTING ON MULTILEVEL CLIMATE AND ENERGY DIALOGUE REFERRED TO IN ARTICLE 11 OF REGULATION (EU) 2018/1999, ***as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC***

Table 1

Progress in establishing multilevel climate and energy dialogue referred to in Article 11 of Regulation (EU) 2018/1999, as adapted and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC [1]

Details on multilevel climate and energy dialogue	M	
Progress in establishing the multilevel climate and energy dialogue	M_{iap}	

Notes:

M = mandatory; M_{iap} = mandatory if applicable

(1) **Contracting Parties** to provide details of multilevel climate and energy dialogue pursuant to national rules, in which local authorities, civil society organisations, business community, investors and other relevant stakeholders and the general public engaging and discussing the different scenarios envisaged for energy and climate policies, including for the long term