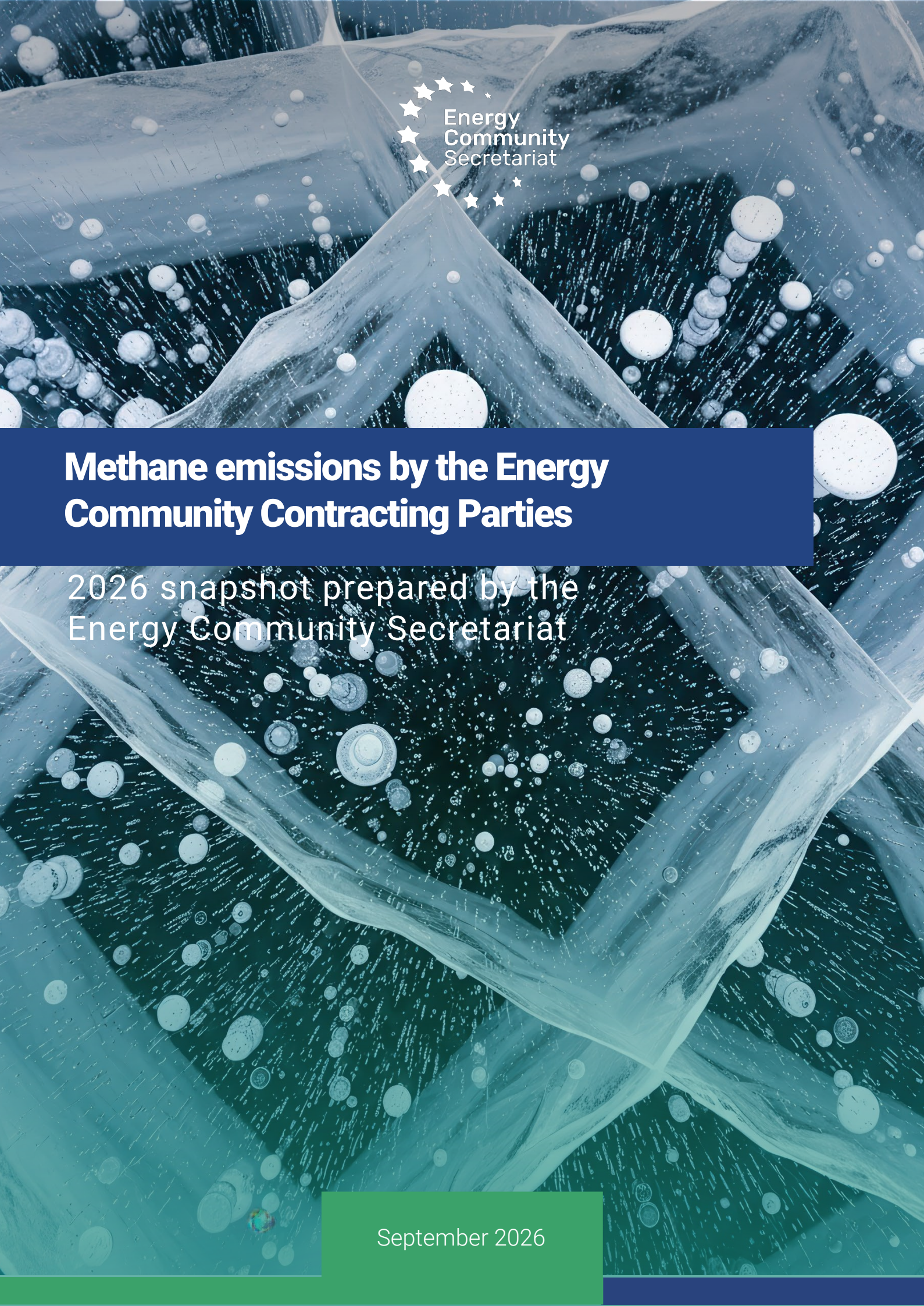

Energy Community Secretariat

Methane emissions by the Energy Community Contracting Parties

2026 snapshot prepared by the Energy Community Secretariat

September 2026

Methane emissions by the EnC CPs

Energy Community Secretariat

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1. Introduction and Background

Establishing the context

Carbon dioxide (CO_2) is the largest contributor to greenhouse gas (GHG) emissions, accounting for approximately 70–78% of total GHG emissions. It also remains in the atmosphere for a very long period, with a significant proportion persisting for centuries. For these reasons, climate policy and mitigation efforts have, for many years, placed a strong emphasis on reducing CO_2 emissions as a key means of limiting long-term global warming.

At the same time, the climate impact of different greenhouse gases is determined by two important characteristics: how long they remain in the atmosphere and their capacity to absorb and retain energy.

Methane (CH_4), for example, has a substantially shorter atmospheric lifetime than CO_2—approximately 12 years, compared with the persistence of CO_2 over centuries. However, methane has a considerably higher warming effect during the period in which it remains in the atmosphere. This impact is commonly expressed through the Global Warming Potential (GWP). Over a 100-year timeframe (GWP100), one tonne of methane has a warming effect broadly equivalent to 25–30 tonnes of CO_2. Over a shorter 20-year timeframe (GWP20), the equivalent is approximately 82–87 tonnes of CO_2.

From a climate-policy perspective, this distinction is important. Measures that reduce methane emissions can contribute to a relatively rapid reduction in the rate of near-term warming, while reductions in CO_2 remain essential for addressing long-term temperature increases. Consequently, methane mitigation can be considered an important complement to sustained efforts to reduce total GHG emissions.

This has increasingly been recognised over the past decade by governments, industry and international organisations, with greater attention being given to policies and measures aimed at reducing methane emissions across major emitting sectors.

Methane is released into the atmosphere through both natural processes and human activities. Since the Industrial Revolution, atmospheric methane concentrations have increased substantially, with human activities estimated to account for around 60% of current methane emissions. These anthropogenic emissions therefore represent an important area for targeted

mitigation. The principal sources include agriculture, fossil fuel production and use, and the decomposition of organic waste in landfills.

A balanced climate policy approach therefore needs to consider both the long-term importance of CO_2 reductions and the potential of methane mitigation to deliver additional near-term climate benefits. Addressing methane emissions, particularly where cost-effective reduction opportunities exist, can complement broader decarbonisation efforts and contribute to achieving climate objectives.

Legal context

The Energy Community Treaty is built around rules governing the energy sectors, with fossil fuels—and consequently activities associated with methane emissions—falling within its direct scope. All activities undertaken within the Energy Community, both by its institutions and by the Contracting Parties, are based on the mandatory acquis and its implementation.

The legal framework addressing methane emissions as part of greenhouse gas emissions currently consists of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action ("the Governance Regulation"), as incorporated and adopted by Ministerial Council Decisions 2021/14/MC-EnC and 2022/02/MC-EnC.

The Governance Regulation "establishes a governance mechanism to implement strategies and measures designed to meet.... the Contracting Parties' long-term greenhouse gas emissions commitments consistent with the Paris Agreement" and "ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of reporting by the Contracting Parties to the UNFCCC and Paris Agreement secretariat".

A key element of this framework is the development of National Energy and Climate Plans (NECPs), in which greenhouse gas emissions are addressed under the Decarbonisation dimension. In particular, "each Contracting Party shall set out in its integrated national energy and climate plan the ... main objectives, targets and contributions" relating to greenhouse gas emissions and removals. These are reflected in binding national targets for net greenhouse gas emissions in 2030 compared with 1990 levels.

At Energy Community level, the common 2030 objective corresponds to a reduction of emissions by 60,9% compared with 1990 levels, or removals of 427,64 $MtCO_{2eq}$[1]. The individual targets of the Contracting Parties are presented later in this document.

[1] Abbreviations used in the entire text: t= tonne; kt=kilo tonne; Mt = mega tonne; CO_2eq = CO_2 equivalent

The current framework does not establish separate, binding methane-emission targets. Nevertheless, the Governance Regulation specifically recognises the importance of methane mitigation. Article 16 states that, "*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 taking 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*".

This provision establishes a clear basis for further consideration of methane-specific policies within the Energy Community. Against this background, the present document aims to support the development of such a strategic approach by providing greater visibility to the current scale and sources of methane emissions, which are often considered primarily as part of overall greenhouse gas emissions rather than assessed separately.

As a further point of context, the relevant EU acquis specifically addressing methane emissions, Regulation (EU) 2024/1787 on the reduction of methane emissions in the energy sector, has not yet been incorporated into the Energy Community acquis. Its potential adoption was identified in the General Policy Guidelines 01/2021/MC-EnC ("Decarbonisation Roadmap for the Contracting Parties of the Energy Community"), approved by the Ministerial Council in 2021 in accordance with Article 47(a) of the Treaty establishing the Energy Community. To date, however, its adoption has not been pursued.

More broadly, alongside the Paris Agreement — which, through the Governance Regulation and its adoption by the Ministerial Council, forms part of the Energy Community framework—the Contracting Parties have also joined several international initiatives aimed at reducing methane emissions. These commitments provide additional context for the growing attention to methane mitigation at both national and international level.

Existing methane initiatives and activities

All Contracting Parties signed the Global Methane Pledge[2] (GMP), launched at COP26 in 2021, and agreed to take voluntary action to collectively reduce global methane emissions at least 30 per cent from 2020 levels by 2030. By joining the GMP, the Contracting Parties commit to take comprehensive domestic action to achieve the global methane reduction target; to use the highest tier IPCC[3] good practice inventory methodologies to quantify methane emissions and

2 www.globalmetahnepledge.org
[3]IPCC = International Panel for Climate Change, www.ipcc.ch

work to continuously improve the accuracy, transparency, consistency, comparability and completeness of national greenhouse gas inventories; to maintain up-to-date, transparent and publicly available information on their policies and commitments; and to support existing international methane emission reduction initiatives to advance technical and policy work that will serve to underpin participants' domestic action.

Six Contracting Parties – Albania, Georgia, Montenegro, North Macedonia, Serbia and Ukraine – are members of the Global Methane Initiative (GMI)[4] launched in 2004 as an international public-private partnership focused on reducing barriers to the recovery and use of methane in three key sectors: Oil and Gas, Biogas, and Coal Mines.

Several companies from the Contracting Parties have joined OGMP 2.0[5][6], the flagship oil and gas methane reporting and mitigation framework of the United Nations Environment Programme (UNEP). Through OGMP 2.0, participating companies are progressively strengthening the evidence base for their methane emissions, moving from Level 1, based on broad estimates, towards Level 5, the "golden standard", which combines source- and site-level measurements with emissions reconciliation. Annual reporting is based on increasingly accurate methods and science-based measurement frameworks, covering both operated and non-operated assets, including joint ventures. Participating companies also commit to establishing methane reduction targets and reporting progress towards them.

Methane emissions assessment has also been advanced through regional cooperation. In 2020, following an initiative of the Energy Community Secretariat, the majority of gas transmission system operators and the largest distribution system operators began voluntarily assessing their methane emissions using the MARCOGAZ methodology, consistent with the approach being applied by EU gas system operators at the time. The initial assessments, covering approximately 90% of transmission networks and 70% of distribution networks, were subsequently consolidated in a report prepared by the Secretariat[7].

The Energy Community Regulatory Board (ECRB) has complemented these efforts by examining methane emissions from a regulatory perspective, including how they are addressed by national regulatory authorities.[8]

More broadly, Contracting Parties and companies participating in international initiatives such as GMP, GMI and OGMP have developed activities across different sectors, including oil and gas, coal, waste and agriculture. While the scope and level of engagement vary, this participation

[4] www.globalmethane.org
[5] www.ogmpartnership.org
[6] Naftogaz, GTSOU (Ukraine), Moldovagaz (Moldova), GA-MA (North Macedonia), TAP (Albanian part included)
[7] https://www.energy-community.org/dam/jcr:e99eb3cb-7733-4eae-b9cd-75f954dafe17/ECS_methane_emissions_052021.pdf
[8] ECRB Report https://www.energy-community.org/dam/jcr:c15b2bcc-5e5d-4e7b-bc94-ae4e7301dd6c/Methane%20emissions%20report-final.pdf

demonstrates growing recognition of methane as an important greenhouse gas and a willingness to contribute to its reduction. This existing engagement provides a useful foundation that can be further developed in the context of a strategic plan on methane at Energy Community level, as envisaged by the Governance Regulation.

For the purposes of this document, National Inventory Reports (NIRs) and National Inventory Documents (NIDs) submitted under the UNFCCC[9] provide the principal basis for assessing methane emissions across the Contracting Parties.

The sectoral profile of methane emissions, as shown by Annex IX, reflects the diverse economic and energy structures of the Contracting Parties. Waste and agriculture are significant sources of anthropogenic methane emissions across the region, while the contribution of the energy sector varies depending on national resources and energy systems. Eight of the nine Contracting Parties have coal deposits[10]. Albania, Serbia and Ukraine have oil and gas production, and several have oil-refining capacity. Gas networks are well developed in Serbia, Ukraine, Moldova and Georgia, while the two first have additional gas infrastructure, namely underground gas storage facilities. The region currently has no LNG terminals.

[9] United Nations Framework Convention on Climate Change (UNFCCC), https://unfccc.int
[10] Moldova does not have coal reserves, Albania closed own production decades ago

2. The Governance Regulation / NECPs – methane emissions findings

As required by the Governance Regulation, the Contracting Parties developed National Energy and Climate Plans which were assessed by the Energy Community Secretariat in August 2026[11] The Assessment Report examines both: the NECPs, which set out pathways towards the 2030 energy and climate targets, and the first national progress reports (NECPRs) measuring their implementation.[12]

The assessment finds that all national 2030 GHG emission targets set out in the seven adopted NECPs are consistent with the Energy Community framework in that they either correspond exactly to (Georgia, Moldova, North Macedonia and Ukraine) or are more ambitious (Albania, Montenegro and Serbia) than Decision 2022/02/MC-EnC.

	2030 target as per Decision 2022/02/MC-EnC		2030 target as per adopted NECP
	Compared to 1990 levels [%]	Net GHG emissions [Mt CO_{2eq}]	Net GHG emissions [Mt CO_{2eq}]
Legend: *NECP not yet adopted*			
Albania	+53,2%	12,00	10,20
Bosnia and Herzegovina	−41,2%	15,65	
Georgia	47,0%	20,50	20,50
Kosovo*	−16,3%	8,95	
Moldova	−68,6%	9,10	9,10
Montenegro	−55,0%	2,42	2,40
North Macedonia	−82,0%	2,20	2,20
Serbia	−40,3%	47,82	47,77
Ukraine	−65,0%	309,00	309,00

Notes: Kosovo*'s target is compared against 2016 GHG emission levels. The target is set for the "administratively controlled territory of the Republic of Moldova" (referred to as "right bank of the Dniester River"). Montenegro's target excludes LULUCF emissions and removals.

Source: ECS NECP Assessment Report, August 2026

[11] New Energy Community report: Southeast and Eastern Europe must turn energy transition plans into implementation and investment - Energy Community Homepage

[12] The deadline to submit NECPs was 30 June 2024, the first cycle of the progress reports was due to 15 March 2025

Methane emissions by the EnC CPs

The Governance Regulation requires Contracting Parties to project GHG emissions up to 2040, which all have fulfilled and some (Georgia, Moldova, Montenegro, Serbia and Ukraine) project GHG emissions up to 2050. Some Contracting Parties foresee that GHG emissions will continue to decline post 2030 (Moldova, Montenegro and Serbia), while some project that they will further increase and reach their peak at a later stage (Albania, Georgia and North Macedonia).

The Governance Regulation does not require separation per type of GHG; thus, methane emissions, their levels, projections and removals are included within the total GHG emissions, as a part of the Decarbonisation Dimension.

The adopted NECPs list approximately 400 policies and measures aimed at enabling achievement of the 2030 GHG emission removal targets, out of which 71% is related to energy sector, 9% to waste and 7% to agriculture.

Across all Contracting Parties, the energy sector is and is expected to remain the largest source of overall GHG emissions, reflecting the legacy of coal-based electricity generation, fossil-fuel-dependent heating and transport systems, and significant untapped energy-efficiency potential. However, this should not be interpreted as meaning that the energy sector is the largest source of methane emissions in every Contracting Party, as methane emissions have a different sectoral profile.

Most of the measures decreasing GHG emissions in the energy sector are related to energy efficiency and renewable energy. Domestic coal mines, active and abandoned, as well as oil and gas production, together with the oil treatment and gas networks, contribute significantly to methane emissions by energy sectors of the Contracting Parties, and yet, they were not considered within NECPs measures.

Only Ukraine defined a measure in a form of Action Plan under the Global Methane Pledge[13], and only Ukraine links NECP' targets and GMP' aim to "reduce methane emissions by 30% by 2030 from 2020 levels" and reports progress towards GMP target of 20,22% in 2022.

Agriculture is the second-highest emitting sector in the most Contracting Parties, but post-2030 trends diverse: ranging from declining (Montenegro), stable over decades (Albania, Moldova and North Macedonia) to increasing (Georgia and Ukraine). The sectorial GHG emissions are addressed equally through existing and additional policies and measures (7% of total measures).

[13] www.ccacoalition.org/resources/national-methane-action-plans

These include livestock and manure management and fertiliser management. Since majority of GHG emissions in agriculture sector contain methane, those measures, as listed few by each Contracting Party, can be considered as tools for methane emissions removals.

GHG emissions from waste are projected to decrease in all Contracting Parties in the post-2025 period, except for stable GHG trends in Georgia. The GHG emissions in the waste sector are addressed by the indicative number of policies and measures (9% of total listed measures). They primarily consist of integrated waste management, including the management of organic waste, and landfill management with methane capture. Same as for the agricultural sector, the GHG emissions by waste consist mainly of methane, and considering its high global warming potential, proposed measures in those two sectors can be highly effective in reducing total emissions in the next decade.

3. The Governance Regulation / UNFCCC Reporting – methane emissions findings

The Governance Regulation, as stipulates by Article 1.1 c), aims to establish mechanisms to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of reporting by the Contracting Parties to the UNFCCC and Paris Agreement secretariat.

All but one[14] Contracting Parties are signatories to the Paris Agreement[15] and commit to report their GHG emissions according to UNFCCC.

The GHG emissions National Inventory Report/Document (NIR/NID) is structured in several sectors: Energy; Industrial Processes and Product Use (IPPU); Agriculture; Land Use, Land Use Change and Forestry (LULUCF); and Waste.

Methane provides biggest emissions' shares in Energy, Agriculture and Waste. It is important to note that reporting in Energy is divided to: Fuel Combustion (where CO_2 is the main result of combustion in energy production; all types of transport, including international aviation and navigation; feedstock and non-energy use of fuels; manufacturing industries and construction) and Fugitive emissions from fuels (where CH_4 is main emitted greenhouse gas resulting from the extraction, processing and delivery of fossil fuels to the point of final use, covering coal, oil and natural gas over entire chains, including abandoned mines and wells).

Methane is in the focus of this report, that is why it will look further in Fugitive emissions from fuels, Agriculture and Waste chapters of the latest NIRs[16] submitted by the Energy Community Contracting Parties to the UNFCCC.

GWP(100) is used in all NIRs, i.e. 1 t of CH_4 translates to 28[17] t of CO_{2eq}, over 100 years.

The emissions' assessments are done by using the IPCC Guidelines and mainly taking Tier 1 approach, in some cases Tier 2 and Tier 3 approach, whereas Tier 3 would be the most accurate and thus aimed approach.

Tier 1 means using a default emission factor and global or national average data. It is the simplest method, requiring minimal local data, and is often applied when local measurements are unavailable. Tier 2 approach incorporates country- or technology-specific data for activity and emission factors. It improves accuracy by using local activity data while still relying on some

[14] Kosovo*
[15] Ukraine is Annex I country, all others Contracting Parties are classified as non-Annex I countries
[16] https://unfccc.int/reports
[17] Except for Montenegro NIR, where 25 is used as multiplying factor

default parameters. Tier 3: Relies on site-specific measurements or detailed models, using both local activity data and locally derived emission factors. This tier provides the highest accuracy but requires the most effort and data.

3.1. Albania

The coal reserves, accounting for 130 million tonnes, are mainly located in the Tirana area (86%) followed by some deposits the Korça-Pogradeci area (10%) and in Memaliaj (4%). Coals are generally of the lignite type, exploited in surface mines.

The mining industry after 1990 was hit hard by the rapid political-social and socio-economic transformations; it suffered a drastic decrease in the volume of production and investments. The lignite production stopped after 2013, and from 2015 on there is only bituminous coal production.

Fugitive emissions' assessment is based on statistical data on coal production, while the country specific CH_4 emission factor (0,3 m^3/t) is used for mining activities, based on the genesis of Albanian lignite and for post mining activities, the IPCC average (0,1 m^3/t) is applied. Total methane emissions from coal in 2022 amount for 0,05 kt which is decrease of 91,31% compared to 1990, a reference Paris Agreement year, but increase of 25% compared to 2020, GMP reference year.

Estimated recoverable oil reserves are 120 million barrels, and natural gas reserves of 5.7 billion m^3 gas. Various international companies are involved in onshore and offshore oil production. Albania has two refineries and two costal terminals to store petroleum products. Natural gas production is very limited, without transmission or distribution gas network except transit pipeline (Trans Adriatic Pipeline) crossing Albania and bringing Azeri gas to Italy.

The emissions are estimated per sub-sector: exploration, production, gathering and upgrading, transmission, refining and storage, venting and flaring but not distribution and abandoned wells. Total methane emissions in 2022 from oil and gas reached 1,55 kt, decrease for 65,4% from 1990, and respectively 17% compared to 2020.

Agriculture methane emissions, accumulated by enteric fermentation, manure management and residues burning, were estimated for 2022 at the level of 40,41 kt, 1/3 of 1990 volumes, and slightly decreased from 46,94 kt in 2020.

Methane emissions caused by waste doubled from 15,84 kt in 1990, to 30,15 kt in 2022. This reflects huge increase in solid waste disposal while emissions from wastewater treatment and discharge reduced by half and contribution by open burning waste came to the minimum.

Methane emissions from three main contributing sectors cumulatively went down by 11% from 1990 to 2022, amounting to 72,16 kt (approximately 2 Mt CO_{2eq})

Methane emissions of Albania for period 1990 to 2022, as submitted by NIR, can be seen in Annex I.

3.2. Bosnia and Herzegovina

The latest submitted NIR contains data for the period 2014-2022, and assessments are given only on sectorial levels, not providing details on sub-sectors' estimations.

Coal production has been declining since 2020. Surface coal mining is dominant exploration form, and its share grown to 92% in 2022 when only 1,3 million t was produced from underground mines. The emissions are estimated during and after coal mining, but not after closure. The assessment is based on statistical data on production and by using IPCC standard emissions factors (1,2 m^3/t for surface mines, 18 m^3/t for underground mines, and after mining 0,1 m^3/t and 2,5 m^3/t respectively). Coal methane emissions are estimated at the level of 30 kt in 2022.

There is no oil and gas reserves nor production in Bosnia and Herzegovina, thus all methane emissions from oil and natural gas are coming from their refining, transport and distribution. Simple estimation methodology is implemented – imported volumes of oil and gas multiplied by IPCC 2006 emission factors which brings estimated value as of 0,09 kt emitted methane in 2022. The oil refinery stopped in 2020.

Methane emissions in agriculture are estimated as 35,71 kt in 2022, steaming from livestock, manure management and enteric fermentation

Methane emissions by waste are stable in the given period, at the level of 50 kt. Contribution by solid waste disposal is slightly decreasing, in line with the decrease of waste on disposals, compensated by the increase of wastewater treatment share in overall methane emissions.

In total, for 2022, methane emissions from three crucial sectors are estimated as 115,8 kt (cca 3,2 Mt CO_{2eq})

More details on the methane emissions by Bosnia and Herzegovina for period 2014 to 2022, as submitted by NIR, can be seen in Annex II.

3.3. Georgia

Coal exploitation in Georgia started in 19th century, and two underground mines are still operational. The reserves are situated in three regions, out of which one, with surface mines, is not under Georgia' control (no data about production or emissions). The emissions are estimated for operational mining, post-mining and abandoned mines, in line with IPCC methodology. In 2022 they went to 3,33 kt of methane, 10 times less than in 1990.

Oil and natural gas are extracted on very small scale; thus, all emissions come from transport and distribution, as well as from venting and flaring at storage facilities. From 1990 to 2022, they downsized by 3,6 times and still account for 70,35 kt of methane, out of which is more than a half contribution by gas distribution networks, and 30% by transmission networks. Estimation is done by using Tier 2 approach.

In agricultural sector, methane emissions fell 47% from 1990 to 2022, to 63,2 kt. It is assessed as emitted by enteric fermentation mainly and by manure management and very small contribution by biomass burning in cropland.

Methane emissions by waste increased 1,7 times from 1990 to 2022, reaching 70,05 kt. This increase is proportional to increase in solid waste disposal, while contribution by wastewater treatment slightly decreased since 1990.

Cumulating coal, oil, natural gas, agriculture and waste, Georgia assessed its methane emissions in 2022 at the level of 206,93 kt (which is close to 5,8 Mt CO_{2eq}).

More details are shown by Annex III, as compiled in Georgia' NIR.

3.4. Moldova

There are no coal, oil and natural gas deposits in the country, there is also no oil refinery facility. All assessed fugitive emissions come from the oil and gas networks, and very scarce oil and gas production was not considered (some 15 oil wells and less than 10 gas wells). Methane emissions by oil and natural gas sector went down four times from 1990 to 2022, reflecting stop of huge transit via Trans Balkan Pipeline towards south, and accounted for 8,33 kt.

Methane emissions by agriculture are also downsized significantly. In 2022, it amounts to 15% of the emissions in 1990, i.e. 16,47 kt of methane. It comes mainly from enteric fermentation and by small share of manure management.

Waste methane emissions show as well declining trend between 1990 and 2022, but not so significantly as oil and gas and agriculture. The decrease goes from 8-9% in solid waste disposal

and biological treatment to above 30% in open burning and wastewater treatment respectively. In 2022, waste sector emitted 49,43 kt of methane.

The assessment of emitted methane for all three sectors in 2022 accounts as 74,23 kt (approximately 2 Mt CO_{2eq}).

More details are shown by Annex IV, taken from NIR submitted by Moldova to UNFCCC.

3.5. Montenegro

Coal reserves are assessed at the level of 158 million tonnes. Lignite is produced only in surface mines, slightly decreasing from 1,7 mil t in 1990 to 1,5 mil t in 2021. The emission factor for mining activity is country specific, it counts for 0,3 m^3 CH_4 /t, while IPCC average as of 0,1 m^3 CH_4 /t is taken for post-mining activities. Only those two activities, mining and post mining, are considered for methane fugitive emissions, whereas uncontrolled combustion, charcoal production and abandoned mines are not included in the emissions estimation. Decrease in methane emissions from 1990 to 2021 reflects slight decrease in production, coming from 0,441 kt to 0,405 kt emitted at the end of the period.

Oil and natural gas are not produced in Montenegro. As can be seen in Annex V, ME-2 table, there would be possible emissions by exploration, abandoned wells, distribution of oil products, but methane emissions are not estimated.

Like in other Contracting Parties, methane emissions from agriculture downsized significantly, 3 times, coming to 6,01 kt of methane in 2021. Enteric fermentation contributes by ¾ while manure management provides for the rest, with almost neglectable contribution by burning residues.

Methane emissions by waste passed the opposite direction – reflecting the economic growth, increased by 48% since 1990 and reached 0,49 kt of methane in 2021. This is mainly due to increase of solid waste disposal, while wastewater treatment and discharge keep the stabile level for entire period.

Accumulated by coal, agriculture and waste, methane emissions in 2021 are estimated at the level of 6,9 kt. If GWP (100) used as value of 25, as Montenegro did in NIR, it will count as 172,565 kt CO_{2eq}. If we use GWP (100) = 28, to make it equal to the other Contracting Parties, it will represent 193,2 kt CO_{2eq}.

More details can be found in Annex V, where tables from Montenegro' NIR are shown.

3.6. North Macedonia

As briefly elaborated by NID, fugitive emissions by fuels in North Macedonia are coming mainly from coal mining – 5,46 kt of methane in 2022. Estimation of emissions by natural gas show less than 0,0035 kt, reflecting non developed gas network, mainly transmission. For entire energy sector this is decrease of 27,5% in comparison to 1990. There is a refinery in North Macedonia, as well as distribution of oil products, possible abandoned mines, but emissions by those activities were not estimated.

In agriculture, methane has a dominant share of total emissions (75% to 55%). Absolute emissions decline for 23% in the given period which can be read as 43,37 kt of methane in 1990 and 23,09 kt in 2022 respectively. The largest decline is observed in methane emissions after 2017 (Annex VI, diagram MK-3), which is associated with a reduction in the number of livestock, but also the application of Tier 2 methodology for more accurate calculation of direct and indirect N2O emissions.

Waste emissions increased from 1990 to 2022 for 62%, reflecting economic growth, as in other Contracting Parties. Methane is by far the biggest contributor and its emissions increased from 17 kt in 1990 to 28,2 kt in 2022. This increase happened due to continuous growth of solid waste disposals on the account of wastewater treatment shares while incineration and open burning keep stabile share through entire period (which means increase in total numbers from 0,369 kt to 0,89 kt in 2022).

When estimations for all three sectors are summarised, methane emissions in 2022 account for 56,75 kt or close to 1,6 Mt CO_{2eq}.

More details are shown by Annex VI, according to NID submitted by North Macedonia.

3.7. Serbia

Coal production, mainly from surface mines, is in decline from 45 to 35 mil t, in the period 1990-2022. Crude oil production is at the level of 1 million t for all 32 reported years, while its transport fluctuated trough the period, in the range 2-6 mil m^3 annually. Natural gas production decreased in 2022 at only 10% of 1 Bcm[18] production in 1990. Gas transmission experiences fluctuation, similarly, to crude oil transport, between 3 and 6,5 Bcm/y. Serbia also has an oil refinery facility. Thus, estimation of fugitive emissions from fuels comprises of: coal mining and post mining activities in underground and surface mines, as well as from abandoned mines and charcoal

[18] Bcm=billion cubic meter

production, oil production, upgrading and transport and gas production, processing, transmission, storage and distribution, as well as from venting and flaring in gas and oil systems.

The methane emissions of the energy sector decreased by 16% between 1990 and 2023, mostly due to the drop in coal and oil production. For 2023, they are estimated as cca 32 kt by coal and 39 kt by oil and gas[19].

Methane emissions from agriculture declines by half from 1990, proportionally to livestock decrease. Enteric fermentation and manure management, two main activities emitting methane, contributed in 2023 with approximately 107 kt.

There is no incineration of waste or biogas production in Serbia, and all estimation of methane emissions consider solid waste disposal and wastewater treatment as emitting sources. Contributions by burning waste which may occur in rural areas is not estimated. Three distinct phases can be observed in methane emissions coming from solid waste: a gradual emission reduction from 1991 to 2007 (-31%), a stagnation between 2008 and 2017, before a gradual increase from 2018 to 2023 (+14%) accounting at the end approximately 90 kt of methane. The emissions form wastewater treatment and discharge decreased by 40% since 1990, reaching some 28,5 kt in 2023. In total, methane emissions from Waste have been reduced by one quarter over the entire time, amounting for some 118 kt of methane in 2023.

It can be stated, according to the interpretation of the diagrams submitted in NID by Serbia, that total methane emissions in 2023, coming from three moss methane contributing sectors, are estimated at the level of 296 kt, i.e. 8,3 Mt CO_{2eq}.

The diagrams taken from Serbia's NID are shown by Annex VII.

3.8. Ukraine

Ukraine has huge natural resources and related production, transmission, storage and usage of all fossil fuels – coal, oil, natural gas - which is reflected to the fugitive emissions. They contribute by 24% to all energy related emissions, i.e. by 15% to all GHG emissions in 2021, a bit less than agriculture and waste combined (14% and 4% respectively).

Reflecting the decline in fossil fuels production and transmission, fugitive emissions decreased two times from 1990 to 2021, reaching 1,8 Mt of methane, out of which coal brings 0,4 Mt and oil and natural gas lion share of 1,4 Mt.

[19] Numbers for all categories (coal, oil & natural gas, agriculture, waste) are approximate, results of readings from diagrams in Annex VII, not having available exact values

Methane emissions by the EnC CPs

Entire coal chain was taken into emissions estimation – underground and surface mines, post mining activities, abandoned underground mines. Standard IPCC emission factors were used – 1,2 m^3/t for surface mining and 0,1 m^3/t for relevant post mining activities.

Most of the chain was covered for oil: oil production and handling, without transport and product distribution and entire chain for natural gas – production, transmission, distribution, storage, venting and flaring. For all those estimations, standard emission factors are used.

The economic decline caused even sharper decline in agriculture sector and consequently to related methane emissions – downsize by four times from 1990 to 2021, leading to 319,85 kt of methane, contributed mainly by cattle enteric fermentation.

Methane emissions in waste sector show different trends by different categories since 1990, like the trends in other Contracting Parties. Methane resulting from solid waste disposal increased by 17,8%, while those caused by wastewater treatment decreased by 24,4% by 2021, accumulating to 394,84 kt of methane for entire Waste sector.

In total for energy, agriculture and waste, methane emissions in 2021 were estimated at the level of 2,5 Mt of methane, i.e. 70 Mt of CO_{2eq}.

More details taken from Ukraine' NIR, relevant for methane emissions are shown by Annex VIII.

4. Summary

A summary of methane emissions in the last year[20] reported by the latest submitted NIR is shown by the Table:

	Coal	Oil & Natural gas	Energy / Fugitive emissions	Agriculture	Waste	total CH_4	total $CO_{2\,eq}$ GWP (100); 28
	kt	kt	kt	kt	kt	kt	Mt
Albania	0.05	1.55	1.60	40.41	30.15	72.16	2.02
Bosnia and Herzegovina	30.00	0.09	30.09	35.71	50.00	115.80	3.24
Georgia	3.33	70.35	73.68	63.20	70.05	206.93	5.79
Moldova	0.00	8.33	8.33	16.47	49.43	74.23	2.08
Montenegro	0.41	0.00	0.41	6.01	0.49	6.91	0.19
North Macedonia	5.46	0.00	5.46	23.09	28.20	56.75	1.59
Serbia	32.00	39.00	71.00	107.00	118.00	296.00	8.29
Ukraine	400.00	1400.00	1800.00	319.85	394.84	2514.69	70.41

Agriculture is main source of methane emissions in Albania and Montenegro. For Bosnia and Herzegovina, Moldova and North Macedonia this is waste, and those two sectors contribute almost equally to methane emissions in Serbia, leaving energy fugitive emissions on the third place. Georgia and Ukraine show different structure in methane emissions: equalised shares by all three sectors in Georgia, and by far dominant share by fugitive emissions from fuels in Ukraine.

[20] 2021 for Montenegro and Ukraine, 2023 for Serbia, 2022 for others

5. Conclusions

Methane emissions snapshot and sectoral profile

Based on publicly available National Inventory Reports and National Inventory Documents submitted to the UNFCCC, this document provides a snapshot of methane emissions across the Contracting Parties, focusing on three principal source categories: agriculture, waste, and fugitive emissions from fuels reported within the energy sector. The sectorial profile overview is shown by Annex IX.

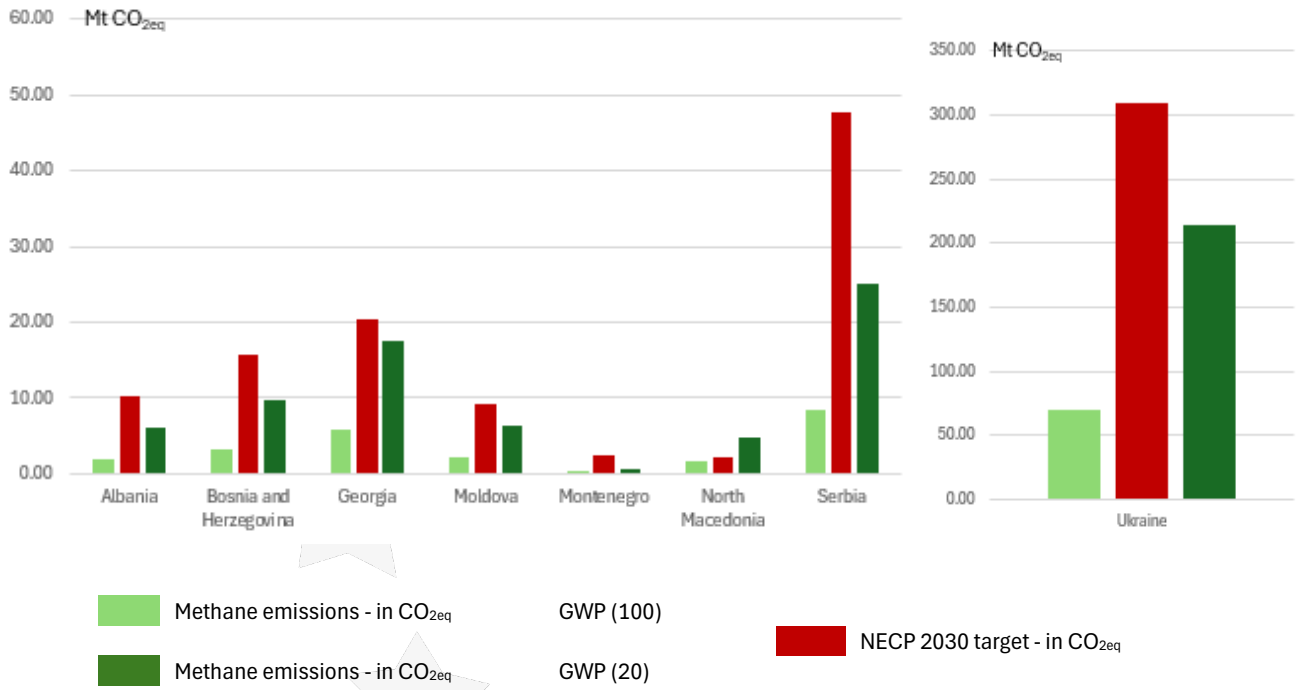
The assessment highlights an important aspect of the methane profile in the Energy Community: in almost all Contracting Parties, except Ukraine, agriculture and waste together account for more methane emissions than the energy sector. In Georgia, the energy and non-energy sectors emissions stand at comparable level. This is an important distinction from the overall GHG emissions profile, where the energy sector remains the dominant source. Methane therefore requires a more differentiated sectoral approach, rather than being addressed solely through the lens of the energy sector or overall GHG emissions.

The purpose of this assessment is to bring greater visibility to methane, a highly potent greenhouse gas whose contribution is often less visible in climate policy discussions because of the much larger share of CO_2 in total GHG emissions. With CO_2 accounting for approximately 70–78% of total GHG emissions, mitigation policies and measures have understandably placed a strong emphasis on CO_2 reduction. This focus is also reflected in the measures identified in the Contracting Parties' NECPs.

At the same time, the relatively short atmospheric lifetime and high warming potential of methane make its reduction particularly relevant to near- and medium-term climate objectives. Using the 20-year Global Warming Potential (GWP20) as an illustrative measure, one tone of methane has a warming effect equivalent to approximately 82–87 tons of CO_2 over a 20-year period. In this sense, reducing one tone of methane can deliver a near-term climate benefit comparable, on a GWP20 basis, to reducing 82–87 tons of CO_2.

This is particularly relevant in the context of the 2030, 2040 and 2050 climate targets. Methane mitigation does not replace the need for sustained CO_2 reductions, which remain essential for limiting long-term warming. Rather, the scale and distribution of methane emissions indicate an opportunity to complement decarbonisation efforts with targeted action across agriculture, waste and the energy sector, with the potential to deliver additional near-term climate benefits.

Methane emissions by the EnC CPs



In comparison to the NECP 2030 targets, methane emissions, as estimated by NIRs, represent 8% to 72% of the target, depending on the GHG emissions structure. In average, methane emissions are 27% of the target, which is not neglectable.

But real power of methane, as GHG and consequently of its removal, is shown when it has been observed in 20 years' time horizon (and 2030 is just 4 years ahead!). Then, removal of all estimated methane would contribute to 53-86% of target fulfilment, at least by 24% for Montenegro or overpassing the target significantly by North Macedonia.

Recommendations

A) Improving methane emissions quantification

One of aims of the Governance Regulation is to establish a mechanism which shall "ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of reporting by the Contracting Parties to the UNFCCC and Paris Agreement secretariat".

Global Methane Pledge obliges the signatories to "move towards using the highest tier IPCC good practice inventory methodologies to quantify methane emissions and work to continuously improve the accuracy, transparency, consistency, comparability and completeness of national greenhouse gas inventories".

Governance Regulation is mandatory to all Contracting Parties, and all Contracting Parties joined the Global Methane Pledge. Thus, moving from Tier 1 to Tier 3, to have more accurate estimations, would be ultimate next step. This must go in parallel with widening the scope of the assessed elements currently omitted by some Contracting Parties, such as abandoned mines and wells, processing, distribution of products, uncontrolled burnings, biological treatments and others.

There are well developed guidelines, methodologies and measurement practices available, provided by IPCC, OGMP, IGU, to mention just some of industrial associations and scientific institutions.

B) Joining to international methane mitigation initiatives

Quite many initiatives already accumulated impressive knowledge and practices on methane mitigation. Searching for best practices and implementing them materialise one of commitment within GMP, which says that the signatories will support existing international methane emission reduction initiatives to advance technical and policy work that will serve to underpin domestic action.

C) Developing circular economy

Methane emissions in agriculture and waste are valuable inputs for biomethane production. Manure, agriculture residues, landfill waste used for energy answer to many issues: remove methane from atmosphere, increase shares of renewable energy, increase security of supply.

A strategic plan for methane at Energy Community level, as required by the Governance Regulation, could be built further on those recommendations. And as required by the Regulation, the Secretariat is obliged and ready to assist in the Plan development.

Annex I

ALBANIA – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 31 December 2024

AL -1 Methane emissions from solid fuels (Energy/ Fugitive Emissions /Coal)

CH4 emissions	1.B.1	1.B.1.a.i	1.B.1.a.ii		1.B.1.c	1.B.1.c
	Total	Underground Mines	Surface Mines		Uncontrolled combustion and burning coal dumps	Charcoal
		All	Mining	Post-mining		
	kt					
1990	0.58	NO	0.416	0.159	NE	NE
1991	0.30	NO	0.218	0.086	NE	NE
1992	0.10	NO	0.074	0.028	NE	NE
1993	0.06	NO	0.043	0.014	NE	NE
1994	0.05	NO	0.034	0.011	NE	NE
1995	0.02	NO	0.016	0.005	NE	NE
1996	0.03	NO	0.023	0.008	NE	NE
1997	0.01	NO	0.008	0.003	NE	NE
1998	0.01	NO	0.010	0.003	NE	NE
1999	0.02	NO	0.010	0.008	NE	NE
2000	0.01	NO	0.006	0.005	NE	NE
2001	0.01	NO	0.004	0.006	NE	NE
2002	0.01	NO	0.003	0.004	NE	NE
2003	0.02	NO	0.012	0.004	NE	NE
2004	0.02	NO	0.012	0.004	NE	NE
2005	0.01	NO	0.009	0.004	NE	NE
2006	0.01	NO	0.009	0.004	NE	NE
2007	0.01	NO	0.009	0.004	NE	NE
2008	0.02	NO	0.012	0.005	NE	NE
2009	0.01	NO	0.002	0.011	NE	NE
2010	0.01	NO	0.002	0.012	NE	NE
2011	0.02	NO	0.001	0.015	NE	NE
2012	0.01	NO	0.001	0.008	NE	NE
2013	0.01	NO	0.001	0.007	NE	NE
2014	0.01	NO	NO	0.009	NE	NE
2015	0.02	NO	0.010	0.010	NE	NE
2016	0.01	NO	0.001	0.006	NE	NE
2017	0.04	NO	0.023	0.013	NE	NE
2018	0.08	NO	0.050	0.025	NE	NE
2019	0.03	NO	0.016	0.013	NE	NE
2020	0.04	NO	0.021	0.016	NE	NE
2021	0.06	NO	0.041	0.024	NE	NE
2022	0.05	NO	0.033	0.017	NE	NE
Trend						
1990 - 2022	*-91.31%*	*NA*	*-92.1%*	*-89.4%*	*NA*	*NA*
2005 - 2022	*294.65%*	*NA*	*265.7%*	*367.0%*	*NA*	*NA*
2021 - 2022	*-23.03%*	*NA*	*-18.4%*	*-30.7%*	*NA*	*NA*

Methane emissions by the EnC CPs

AL -2 Methane emissions from solid fuels (Energy/ Fugitive Emissions /Oil & Natural Gas)

CH_4	1.B.2	1.B.2.a	1.B.2.b	1.B.2.c	1.B.2.d
	Oil and natural gas	Oil	Natural gas	Venting and flaring	Other
	kt	kt	kt	kt	kt
1990	4.49	0.16	1.95	2.38	NO
1991	2.99	0.13	1.14	1.73	NO
1992	2.12	0.09	0.82	1.21	NO
1993	1.87	0.09	0.66	1.12	NO
1994	1.48	0.08	0.42	0.98	NO
1995	1.19	0.08	0.22	0.89	NO
1996	1.08	0.07	0.18	0.82	NO
1997	0.81	0.05	0.15	0.61	NO
1998	0.80	0.05	0.13	0.61	NO
1999	0.73	0.05	0.13	0.55	NO
2000	0.65	0.05	0.09	0.52	NO
2001	0.61	0.05	0.07	0.50	NO
2002	0.78	0.06	0.11	0.61	NO
2003	0.75	0.05	0.10	0.59	NO
2004	0.86	0.07	0.08	0.71	NO
2005	0.83	0.06	0.09	0.68	NO
2006	0.97	0.08	0.09	0.80	NO
2007	1.15	0.08	0.14	0.92	NO
2008	1.07	0.09	0.07	0.92	NO
2009	1.07	0.09	0.07	0.92	NO
2010	1.41	0.11	0.11	1.19	NO
2011	1.68	0.13	0.12	1.43	NO
2012	1.93	0.15	0.13	1.64	NO
2013	2.25	0.18	0.15	1.92	NO
2014	2.67	0.21	0.26	2.21	NO
2015	2.59	0.19	0.31	2.09	NO
2016	2.32	0.16	0.39	1.78	NO
2017	2.20	0.14	0.42	1.64	NO
2018	2.04	0.14	0.36	1.54	NO
2019	2.59	0.15	0.64	1.79	NO
2020	1.87	0.11	0.43	1.33	NO
2021	1.72	0.11	0.34	1.27	NO
2022	1.55	0.10	0.29	1.16	NO
Trend					
1990 – 2022	-65.4%	-38.4%	-85.0%	-51.1%	NA
2010 – 2022	87.9%	57.3%	238.4%	71.6%	NA
2021 - 2022	-9.6%	-7.7%	-14.2%	-8.6%	NA

Methane emissions by the EnC CPs

AL -3 Methane emissions from Agriculture

CH4 emissions	3 Agriculture	3.A Enteric Fermentation	3.B Manure Management	3.C Rice Cultivation	3.D Agricultural soils	3.E Prescribed burning of savannas	3.F Field burning of agricultural residues	3. Liming	3.H Urea application	3.I Other carbon-containing	3.J Other
	kt										
1990	60.30	48.91	11.25	NO	NA	NO	0.1404	NA	NA	NA	NO
1991	60.53	49.36	11.08	NO	NA	NO	0.0919	NA	NA	NA	NO
1992	59.69	49.17	10.44	NO	NA	NO	0.0754	NA	NA	NA	NO
1993	63.85	52.64	11.11	NO	NA	NO	0.1012	NA	NA	NA	NO
1994	78.87	64.97	13.79	NO	NA	NO	0.1062	NA	NA	NA	NO
1995	81.52	67.29	14.14	NO	NA	NO	0.0896	NA	NA	NA	NO
1996	75.76	62.10	13.59	NO	NA	NO	0.0800	NA	NA	NA	NO
1997	71.35	58.25	13.01	NO	NA	NO	0.0861	NA	NA	NA	NO
1998	66.38	54.42	11.88	NO	NA	NO	0.0874	NA	NA	NA	NO
1999	68.57	56.37	12.12	NO	NA	NO	0.0705	NA	NA	NA	NO
2000	69.22	56.81	12.34	NO	NA	NO	0.0727	NA	NA	NA	NO
2001	68.01	55.91	12.03	NO	NA	NO	0.0662	NA	NA	NA	NO
2002	66.67	54.78	11.82	NO	NA	NO	0.0637	NA	NA	NA	NO
2003	66.36	54.58	11.72	NO	NA	NO	0.0618	NA	NA	NA	NO
2004	64.40	52.92	11.43	NO	NA	NO	0.0585	NA	NA	NA	NO
2005	64.08	52.63	11.39	NO	NA	NO	0.0603	NA	NA	NA	NO
2006	63.36	52.21	11.09	NO	NA	NO	0.0561	NA	NA	NA	NO
2007	59.12	48.79	10.28	NO	NA	NO	0.0530	NA	NA	NA	NO
2008	55.98	46.31	9.61	NO	NA	NO	0.0608	NA	NA	NA	NO
2009	53.49	44.33	9.09	NO	NA	NO	0.0597	NA	NA	NA	NO
2010	54.11	44.94	9.12	NO	NA	NO	0.0564	NA	NA	NA	NO
2011	53.99	44.85	9.08	NO	NA	NO	0.0529	NA	NA	NA	NO
2012	54.91	45.69	9.17	NO	NA	NO	0.0543	NA	NA	NA	NO
2013	55.39	46.22	9.12	NO	NA	NO	0.0545	NA	NA	NA	NO
2014	57.10	47.81	9.23	NO	NA	NO	0.0545	NA	NA	NA	NO
2015	56.39	47.04	9.30	NO	NA	NO	0.0547	NA	NA	NA	NO
2016	56.01	46.76	9.19	NO	NA	NO	0.0557	NA	NA	NA	NO
2017	56.37	47.41	8.91	NO	NA	NO	0.0550	NA	NA	NA	NO
2018	55.45	46.61	8.79	NO	NA	NO	0.0548	NA	NA	NA	NO
2019	51.74	43.66	8.03	NO	NA	NO	0.0495	NA	NA	NA	NO
2020	46.94	39.74	7.15	NO	NA	NO	0.0480	NA	NA	NA	NO
2021	43.96	37.12	6.79	NO	NA	NO	0.0485	NA	NA	NA	NO
2022	40.41	34.18	6.18	NO	NA	NO	0.0486	NA	NA	NA	NO
Trend											
1990 - 2022	*-33.0%*	*-30.1%*	*-45.1%*	*NA*	*NA*	*NA*	*-65.4%*	*NA*	*NA*	*NA*	*NA*
2005 - 2022	*-36.9%*	*-35.1%*	*-45.7%*	*NA*	*NA*	*NA*	*-19.4%*	*NA*	*NA*	*NA*	*NA*
2021 - 2022	*-8.1%*	*-7.9%*	*-9.0%*	*NA*	*NA*	*NA*	*0.1%*	*NA*	*NA*	*NA*	*NA*

Methane emissions by the EnC CPs

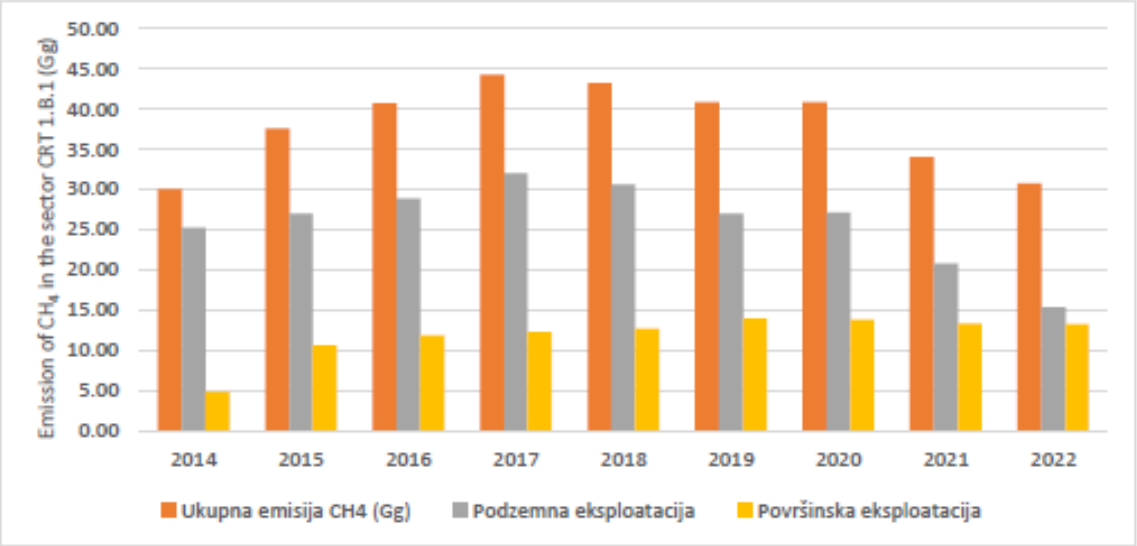
AL 4 Methane emissions from Waste

CH_4 emissions	5	5.A	5.B	5.C	5.D	5.E
	TOTAL Waste	Solid Waste Disposal	Biological Treatment of Solid Waste	Incineration and Open Burning of Waste	Wastewater Treatment and Discharge	Other
	kt					
1990	15.84	8.92	NE	0.013	6.91	NO
1991	16.04	9.17	NE	0.013	6.85	NO
1992	16.12	9.40	NE	0.013	6.71	NO
1993	16.25	9.58	NE	0.013	6.66	NO
1994	16.53	9.75	NE	0.013	6.77	NO
1995	16.78	9.94	NE	0.013	6.83	NO
1996	17.04	10.13	NE	0.013	6.90	NO
1997	17.33	10.33	NE	0.013	6.99	NO
1998	17.55	10.49	NE	0.012	7.05	NO
1999	17.70	10.60	NE	0.012	7.09	NO
2000	17.11	10.67	NE	0.011	6.43	NO
2001	17.05	10.56	NE	0.011	6.48	NO
2002	16.95	10.48	NE	0.011	6.47	NO
2003	16.89	10.40	NE	0.011	6.48	NO
2004	16.81	10.32	NE	0.010	6.48	NO
2005	16.60	10.25	NE	0.010	6.34	NO
2006	16.46	10.26	NE	0.010	6.20	NO
2007	16.31	10.26	NE	0.010	6.03	NO
2008	16.17	10.28	NE	0.011	5.87	NO
2009	16.27	10.53	NE	0.011	5.73	NO
2010	16.58	10.98	NE	0.012	5.59	NO
2011	17.09	11.61	NE	0.012	5.48	NO
2012	17.58	12.20	NE	0.012	5.37	NO
2013	18.14	12.86	NE	0.010	5.27	NO
2014	17.53	13.23	NE	0.005	4.30	NO
2015	19.57	15.27	NE	0.004	4.29	NO
2016	22.38	18.07	NE	0.005	4.30	NO
2017	24.54	20.37	NE	0.002	4.17	NO
2018	25.69	21.92	NE	0.003	3.77	NO
2019	28.30	24.59	NE	<0.001	3.71	NO
2020	29.36	25.78	NE	<0.001	3.58	NO
2021	30.19	26.69	NE	<0.001	3.49	NO
2022	30.15	26.72	NE	<0.001	3.43	NO
Trend						
1990 - 2022	*90.3%*	*199.4%*	*NA*	*-99.8%*	*-50.3%*	*NA*
2005 - 2022	*81.7%*	*160.7%*	*NA*	*-99.8%*	*-45.9%*	*NA*
2021 - 2022	*-0.1%*	*0.1%*	*NA*	*21.9%*	*-1.7%*	*NA*

Annex II

BOSNIA AND HERZEGOVINA – methane emissions in Energy, Agriculture, Waste *As shown by NIR/NID submitted under UNFCCC as of 13 August 2026*

BA -1 Methane emissions by Energy / Fugitive emissions / Coal



(LEGEND: Ukupnma emisija CH_4 – total emission of CH4; Podzemna eksploatacija – underground mining; Površinska eksploatacija – surface mining.)

BA -2 Methane emissions / Energy / Fugitive emissions / Oil & Natural gas

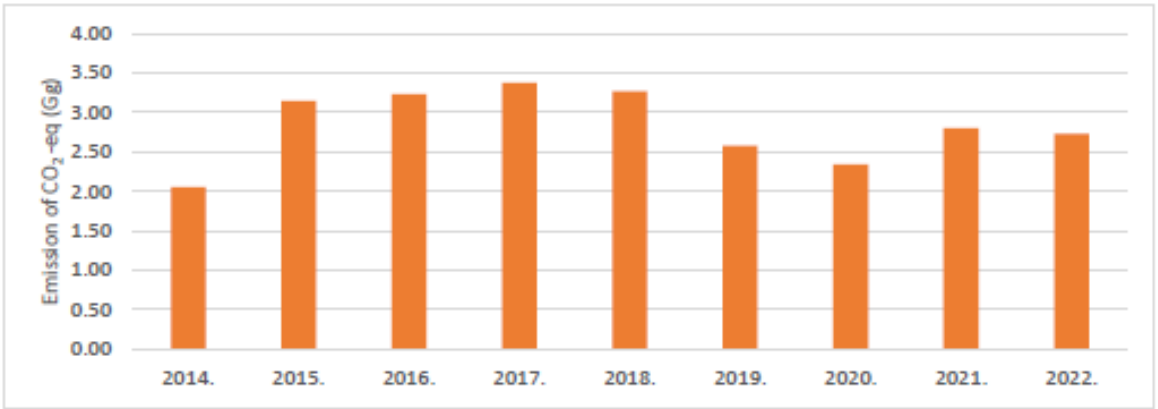


Chart 33: CO_2 - eq emissions in the CRT sector 1.B.2 Liquid fuels and natural gas in the period 2014 – 2022

BA -3 Methane emissions / Agriculture

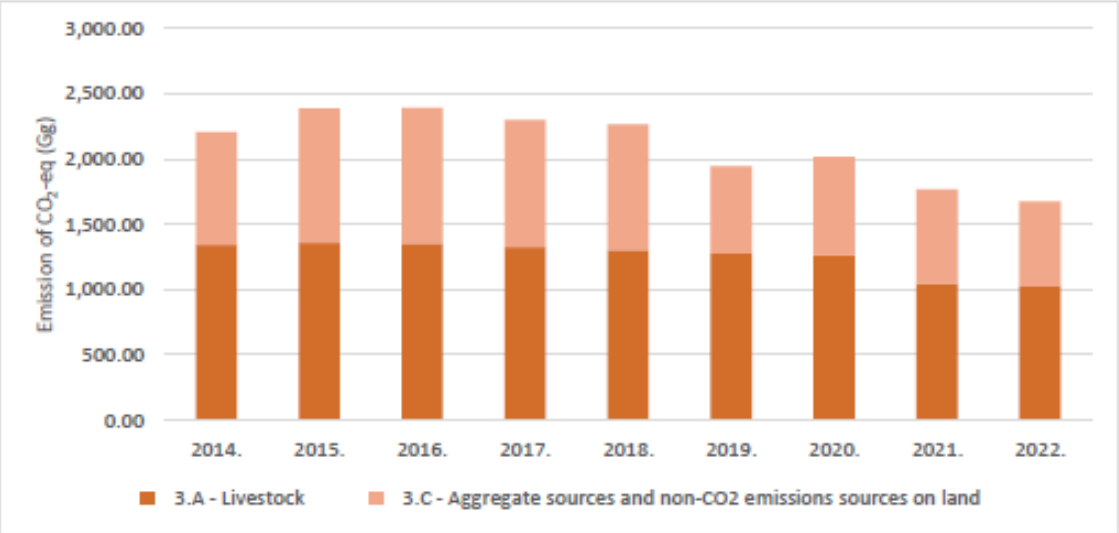
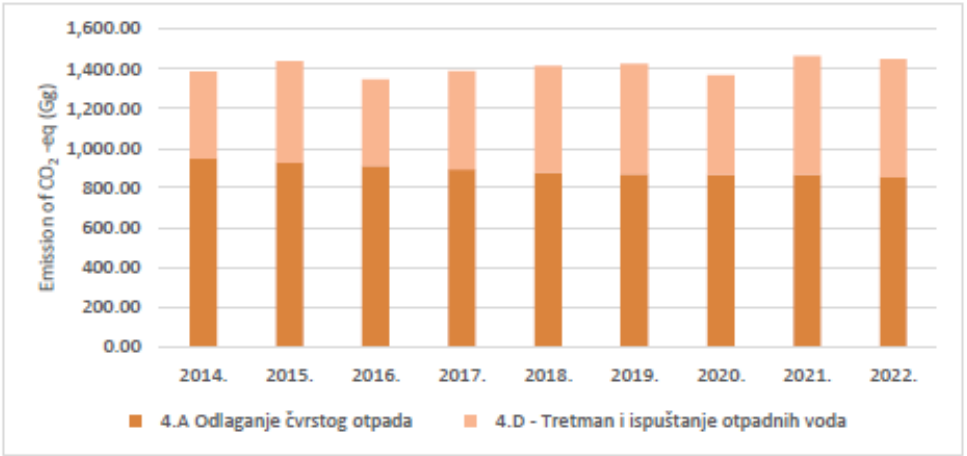


Chart 51: CO_2 emissions - eq of all categories in sector 3 Agriculture, forestry and other land use in the period 2014 – 2022

BA -4 Methane emissions / Waste



(LEGEND: Odlaganje čvrstog otpada – solid waste disposal; Tretman i ispuštanje otpadnih voda – treatment and discharge of waste waters.)

Chart 83: CO_2 - eq emissions of all categories in the CRT 4 Waste sector in the period 2014 – 2022

Annex III

GEORGIA– methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 7 May 2025

GE-1 Methane emissions / Energy / Fugitive emissions / Coal (in Gg which is equal kt)

Source	1.B.1. Solid fuel total CO_{2eq}	1.B.1.a.I.1 Mining Total CO_{2eq}	1.B.1.a.I.2 Post-mining seam gas emissions total CO_{2eq}	1.B.1.a.I.3 Abandoned underground mines total CO_{2eq}
1990	1,009.64	832.51	124.42	52.71
1991	409.68	317.23	47.41	45.05
1992	168.42	111.77	16.70	39.95
1993	128.12	79.97	11.95	36.20
1994	139.56	92.39	13.81	33.36
1995	51.40	17.66	2.64	31.10
1996	38.78	8.33	1.24	29.21
1997	30.61	2.60	0.39	27.62
1998	35.23	7.80	1.17	26.27
1999	34.66	8.33	1.24	25.09
2000	30.43	5.52	0.83	24.08
2001	26.15	2.60	0.39	23.16
2002	25.92	3.13	0.47	22.32
2003	26.36	4.16	0.62	21.58
2004	25.72	4.16	0.62	20.94
2005	23.18	2.51	0.38	20.29
2006	25.12	4.67	0.70	19.75
2007	32.96	11.96	1.79	19.21
2008	37.86	16.63	2.49	18.74
2009	91.81	63.95	9.56	18.30
2010	172.37	134.42	20.09	17.86
2011	221.17	177.200	26.48	17.49
2012	260.57	211.79	31.65	17.12
2013	250.04	202.96	30.33	16.75
2014	189.20	150.29	22.46	16.45
2015	192.68	153.58	22.95	16.14
2016	186.97	148.88	22.25	15.84
2017	169.56	134.62	20.12	14.82
2018	94.18	69.24	10.35	14.59
2019	23.18	7.68	1.15	14.35
2020	71.46	49.86	7.45	14.15
2021	99.31	74.26	11.10	13.95
2022	98.22	73.46	10.98	13.78

Methane emissions by the EnC CPs

GE-2 Methane emissions / Energy / Fugitive emissions / Oil & natural gas

(in Gg which is equal kt)

Year	1B2 Oil and natural gas total CO_{2eq}	1B2ai Oil venting total CO_{2eq}	1B2aii Flaring of oil, total CO_{2eq}	1B2aii2 Oil production and upgrading total CO_{2eq}	1B2aii3 Oil transport total CO_{2eq}	1B2aii4 Oil refining total CO_{2eq}	1B2bi Natural gas venting total CO_{2eq}	1B2bii Natural gas flaring total CO_{2eq}	1B2biii2 Natural gas production total CO_{2eq}	1B2biii4 Natural gas transmission and storage total CO_{2eq}	1B2biii5 Natural gas distribution total CO_{2eq}
1990	7,124	5.580	11.129	189.812	NO	1.764	59.824	0.084	20.130	1,968	4,868
1991	7,487	5.644	11.249	191.976	NO	1.406	55.822	0.084	20.133	1,341	5,860
1992	6,697	3.950	7.908	134.366	NO	0.328	55.119	0.070	16.630	1,326	5,153
1993	5,623	1.247	2.499	42.428	NO	0.236	44.408	0.070	16.630	1,080	4,435
1994	1,926	1.380	2.760	46.942	NO	0.138	21.312	0.004	0.877	701	1,151
1995	1,653	1.485	2.970	50.520	NO	0.037	13.058	0.015	3.503	926	655
1996	2,223	3.802	2.760	129.331	NO	0.017	11.437	0.005	1.103	376	1,699
1997	2,040	3.980	7.968	135.377	NO	0.029	9.8270	0.032	7.613	323	1,552
1998	2,039	3.535	7.075	120.229	NO	0.023	10.020	0.059	14.123	330	1,555
1999	1,102	2.703	5.409	91.938	NO	0.031	9.654	0.086	20.633	318	654
2000	1,463	3.300	6.603	112.255	NO	0.016	12.658	0.114	27.143	416	884
2001	1,075	2.941	5.880	100.030	NO	0.018	10.670	0.057	13.489	351	591
2002	2,811	2.198	4.395	74.770	NO	0.021	8.925	0.024	5.705	294	2,421
2003	3,529	4.159	8.319	141.456	NO	0.026	10.132	0.026	6.251	333	3,026
2004	3,588	2.911	5.820	99.028	NO	0.027	11.870	0.017	4.049	391	3,074
2005	1,694	2.010	4.024	68.370	NO	0.015	13.939	0.026	6.251	459	1,141
2006	3,460	1.901	3.803	64.666	NO	0.014	18.100	0.026	6.251	596	2,770
2007	3,093	1.693	3.392	57.584	5.128	0.031	53.347	0.023	5.510	599	2,367
2008	1,907	1.574	3.141	53.543	6.085	0.042	86.686	0.018	4.408	467	1,284
2009	1,405	1.515	3.031	51.530	7.650	0.011	84.550	0.011	2.574	469	785
2010	2,100	1.543	3.091	52.499	7.657	0.009	80.539	0.012	2.765	393	1,559
2011	2,694	1.498	3.00	50.966	6.916	0.007	78.095	0.008	1.980	612	1,940
2012	2,896	1.323	2.649	45.005	6.664	0.004	77.213	0.008	1.844	647	2,114
2013	1,862	1.436	2.875	48.844	6.682	0.002	88.262	0.008	1.810	73	1,639
2014	1,774	1.279	2.559	43.506	7.007	0.000	110.55	0.014	3.448	307	1,299
2015	2,488	1.206	2.413	41.022	7.061	0.005	114.86	0.016	3.824	480	1,837
2016	2,586	1.157	2.314	39.347	6.862	0.047	114.97	0.009	2.219	423	1,996
2017	1,860	0.965	1.920	32.644	6.790	0.018	117.68	0.012	2.868	619	1,078
2018	2,131	0.907	1.814	30.834	6.790	0.018	125.64	0.014	3.414	524	1,438
2019	1,776	1.053	2.107	35.819	6.302	0.028	155.49	0.014	3.278	560	1,012
2020	1,837	0.939	1.879	31.945	5.743	0.028	176.33	0.013	3.039	452	1,165
2021	1,871	1.064	2.130	36.206	5.526	0.037	240.02	0.023	5.463	452	1,129
2022	1,972	1.098	2.197	37.351	5.562	0.032	282.55	0.021	4.985	596	1,042

Methane emissions by the EnC CPs

GE-3 Methane emissions / Agriculture / (in Gg which is equal kt)

Year	3.A.1 Enteric fermentation	3.A.2 Manure management	3.C.1.b Biomass burning in cropland	Total Gg CH_4	3.A.2 Direct N_2O emissions from manure management	3.C.6 Indirect N_2O emissions from manure management	3.C.4 Direct emissions from managed soils	3.C.5 Indirect emissions from managed soils	3.C.1.b Biomass burning in cropland	Total Gg N_2O	3.C.3 Urea application	Total Gg CO_2
1990	106.44	12.27	0.08	**118.79**	0.42	0.26	2.28	0.65	0.002	**3.62**	0.0	**0.0**
1991	96.63	10.87	0.07	**107.57**	0.37	0.24	2.00	0.57	0.002	**3.17**	0.0	**0.0**
1992	77.36	7.94	0.06	**85.36**	0.28	0.18	1.56	0.44	0.001	**2.46**	0.0	**0.0**
1993	68.44	6.59	0.05	**75.08**	0.24	0.17	1.36	0.38	0.001	**2.16**	0.0	**0.0**
1994	66.11	6.11	0.04	**72.26**	0.24	0.17	1.27	0.35	0.001	**2.02**	0.0	**0.0**
1995	64.99	5.66	0.03	**70.68**	0.23	0.17	1.33	0.36	0.001	**2.10**	0.0	**0.0**
1996	63.93	5.16	0.04	**69.12**	0.23	0.18	1.65	0.45	0.001	**2.50**	0.0	**0.0**
1997	63.84	5.10	0.05	**68.99**	0.23	0.18	1.78	0.47	0.001	**2.66**	0.0	**0.0**
1998	64.38	5.01	0.03	**69.42**	0.23	0.17	1.56	0.41	0.001	**2.37**	0.0	**0.0**
1999	67.80	5.26	0.06	**73.12**	0.25	0.18	1.81	0.48	0.001	**2.72**	0.0	**0.0**
2000	69.86	5.37	0.02	**75.26**	0.26	0.18	1.68	0.45	0.001	**2.56**	0.0	**0.0**
2001	69.53	5.35	0.08	**74.96**	0.26	0.18	1.80	0.47	0.002	**2.71**	0.0	**0.0**
2002	71.12	5.43	0.05	**76.60**	0.26	0.19	1.93	0.51	0.001	**2.89**	0.0	**0.0**
2003	72.22	5.59	0.05	**77.86**	0.27	0.19	2.01	0.53	0.001	**3.00**	0.0	**0.0**
2004	68.64	5.42	0.05	**74.11**	0.26	0.18	1.73	0.46	0.001	**2.63**	0.0	**0.0**
2005	68.85	5.31	0.06	**74.22**	0.26	0.18	1.75	0.46	0.002	**2.64**	0.1	**0.1**
2006	62.18	4.57	0.03	**66.78**	0.22	0.15	1.55	0.43	0.001	**2.36**	0.1	**0.1**
2007	59.95	3.79	0.05	**63.79**	0.19	0.14	1.36	0.37	0.001	**2.06**	0.1	**0.1**
2008	59.08	3.68	0.05	**62.80**	0.18	0.14	1.38	0.37	0.001	**2.07**	0.1	**0.1**
2009	56.81	3.75	0.08	**60.59**	0.18	0.14	1.33	0.37	0.001	**2.01**	0.3	**0.3**
2010	57.88	3.71	0.03	**61.63**	0.18	0.14	1.29	0.36	0.001	**1.96**	0.8	**0.8**
2011	59.22	3.78	0.06	**63.07**	0.18	0.14	1.32	0.35	0.002	**2.00**	0.2	**0.2**
2012	61.53	4.21	0.05	**65.78**	0.20	0.15	1.45	0.40	0.001	**2.19**	0.4	**0.4**
2013	66.55	4.45	0.05	**71.05**	0.21	0.16	1.73	0.47	0.001	**2.57**	0.5	**0.5**
2014	68.76	4.52	0.04	**73.32**	0.21	0.16	1.71	0.47	0.001	**2.55**	1.7	**1.7**
2015	70.76	4.71	0.07	**75.54**	0.22	0.17	1.79	0.48	0.002	**2.66**	2.7	**2.7**
2016	68.06	4.61	0.07	**72.74**	0.21	0.16	1.70	0.46	0.002	**2.53**	1.7	**1.7**
2017	63.97	4.35	0.06	**68.39**	0.20	0.15	1.48	0.41	0.002	**2.24**	1.9	**1.9**
2018	61.26	4.18	0.07	**65.51**	0.19	0.15	1.43	0.39	0.002	**2.16**	2.5	**2.5**
2019	61.04	4.32	0.07	**65.43**	0.19	0.15	1.34	0.37	0.002	**2.05**	2.7	**2.7**
2020	64.41	4.58	0.06	**69.05**	0.20	0.16	1.51	0.41	0.002	**2.28**	4.8	**4.8**
2021	64.17	4.53	0.08	**68.78**	0.20	0.15	1.51	0.41	0.002	**2.27**	3.1	**3.1**
2022	58.90	4.22	0.08	**63.20**	0.18	0.14	1.34	0.36	0.002	**2.02**	3.9	**3.9**

Methane emissions by the EnC CPs

GE-4 Methane emissions / Waste / (in Gg which is equal kt)

Year	Gg CH_4					Gg N_2O			Gg CO_2
	4A Solid waste disposal	4.D.1 Domestic wastewater	4.D.2 Industrial wastewater	4.B.1 Composting	Total	4.D.1 Domestic wastewater	4.B.1 Composting	Total	4.C.1 Incineration
1990	28.12	10.14	3.72		**41.98**	0.19		**0.192**	
1991	30.19	10.18	1.80		**42.18**	0.19		**0.193**	
1992	32.18	10.18	1.39		**43.75**	0.19		**0.193**	
1993	34.09	9.95	2.40		**46.45**	0.20		**0.202**	
1994	35.88	9.13	0.49		**45.51**	0.20		**0.202**	
1995	37.62	8.87	0.23		**46.72**	0.21		**0.209**	
1996	39.21	8.62	0.28		**48.12**	0.20		**0.204**	
1997	40.65	8.40	0.53		**49.59**	0.20		**0.198**	
1998	41.97	8.28	0.26		**50.51**	0.20		**0.199**	
1999	43.20	8.21	0.95		**52.36**	0.20		**0.200**	
2000	44.49	8.13	0.92		**53.53**	0.20		**0.201**	
2001	45.72	8.06	1.09		**54.87**	0.20		**0.200**	
2002	46.83	8.00	0.32		**55.15**	0.20		**0.198**	
2003	47.70	7.88	0.29		**55.86**	0.20		**0.199**	
2004	48.48	7.76	0.95		**57.18**	0.20		**0.201**	
2005	49.28	7.63	1.25		**58.16**	0.20		**0.199**	
2006	50.10	7.51	1.69		**59.30**	0.20		**0.195**	
2007	50.90	7.39	1.53		**59.82**	0.19		**0.191**	
2008	51.65	7.27	1.79		**60.72**	0.19		**0.189**	
2009	52.36	7.24	1.64		**61.24**	0.19		**0.191**	
2010	53.01	7.18	1.59		**61.78**	0.19		**0.192**	
2011	54.28	7.13	1.91		**63.32**	0.19		**0.193**	
2012	55.12	7.07	1.95	0.002	**64.14**	0.19	0.000	**0.194**	
2013	55.81	7.03	1.43	0.012	**64.29**	0.19	0.001	**0.196**	
2014	56.40	7.03	1.49	0.023	**64.94**	0.20	0.002	**0.199**	
2015	56.83	7.04	1.08	0.037	**64.98**	0.19	0.003	**0.198**	
2016	57.18	7.05	0.85	0.047	**65.13**	0.20	0.004	**0.199**	
2017	57.47	7.04	1.01	0.055	**65.58**	0.20	0.004	**0.202**	0.73
2018	57.57	7.48	1.19	0.062	**66.30**	0.20	0.005	**0.203**	0.85
2019	58.09	7.86	1.39	0.064	**67.42**	0.20	0.005	**0.206**	1.01
2020	58.55	8.26	1.54	0.064	**68.41**	0.20	0.005	**0.207**	1.51
2021	58.98	8.69	1.84	0.064	**69.57**	0.21	0.005	**0.210**	2.14
2022	59.37	9.00	1.62	0.066	**70.05**	0.20	0.005	**0.202**	2.02

Annex IV

MOLDOVA – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 30 December 2024

MD-2 Methane emissions / Energy / Fugitive emissions / Oil & Natural gas

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
CO_2, kt	0.66	0.64	0.54	0.46	0.43	0.44	0.50	0.49	0.45	0.41	0.39
CH_4, kt	36.43	34.46	31.13	27.97	26.96	29.54	32.33	27.41	25.54	25.33	26.56
N_2O, kt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total, kt CO_2 equivalent	**1,020.70**	**965.59**	**872.04**	**783.70**	**755.27**	**827.44**	**905.78**	**767.99**	**715.61**	**709.73**	**744.21**
NMVOC	0.66	0.62	0.56	0.50	0.49	0.53	0.58	0.49	0.46	0.46	0.48
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
CO_2, kt	0.43	0.41	1.08	1.12	1.14	1.24	1.28	1.29	1.29	1.30	1.33
CH_4, kt	26.62	28.36	29.74	32.12	33.91	29.86	31.84	31.69	26.97	26.45	29.59
N_2O, kt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total, kt CO_2 equivalent	**745.82**	**794.56**	**833.76**	**900.60**	**950.54**	**837.45**	**892.70**	**888.68**	**756.49**	**741.85**	**829.95**
NMVOC	0.48	0.52	0.58	0.91	0.82	0.71	0.90	1.18	1.17	0.92	1.06
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
CO_2, kt	1.33	1.66	1.69	1.68	1.69	1.68	1.69	1.63	1.58	1.58	1.52
CH_4, kt	29.19	27.24	26.71	25.66	27.47	28.75	27.11	18.80	9.71	9.87	8.33
N_2O, kt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total, kt CO_2 equivalent	**818.70**	**764.49**	**749.49**	**720.25**	**770.95**	**806.57**	**760.78**	**528.10**	**273.49**	**278.04**	**234.70**
NMVOC	0.97	0.90	0.81	0.75	0.74	0.73	0.69	0.54	0.40	0.36	0.34

Methane emissions by the EnC CPs

MD-3 Methane emissions / Agriculture (in kt)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
3H Urea Application	0.58	0.52	0.39	0.13	0.05	0.06	0.09	1.10	0.27	0.00	0.44
Total CO_2 emissions from Sector 3 'Agriculture'	**0.58**	**0.52**	**0.39**	**0.13**	**0.05**	**0.06**	**0.09**	**1.10**	**0.27**	**0.00**	**0.44**
3A Enteric Fermentation	87.58	81.15	79.87	74.92	72.91	64.72	59.67	51.30	49.81	46.07	43.43
3B Manure Management	19.80	16.60	14.92	11.00	10.61	8.25	7.49	6.09	5.62	4.89	3.84
Total CH_4 emissions from Sector 3 'Agriculture'	**107.38**	**97.76**	**94.80**	**85.91**	**83.52**	**72.97**	**67.17**	**57.39**	**55.43**	**50.97**	**47.28**
3B Manure Management	2.90	2.71	2.41	2.03	1.96	1.73	1.49	1.35	1.33	1.20	1.09
3D Agricultural Soils	5.00	4.80	4.03	3.37	2.73	2.71	2.43	2.50	2.43	2.23	2.13
Total N_2O emissions from Sector 3 'Agriculture'	**7.90**	**7.52**	**6.44**	**5.40**	**4.69**	**4.44**	**3.93**	**3.84**	**3.75**	**3.43**	**3.22**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
3H Urea Application	0.15	0.05	0.24	0.37	0.17	0.15	0.26	0.85	0.59	1.74	3.68
Total CO_2 emissions from Sector 3 'Agriculture'	**0.15**	**0.05**	**0.24**	**0.37**	**0.17**	**0.15**	**0.26**	**0.85**	**0.59**	**1.74**	**3.68**
3A Enteric Fermentation	44.13	45.02	41.14	38.46	36.96	36.14	29.20	28.08	28.90	28.67	26.93
3B Manure Management	3.86	4.02	3.73	3.50	3.70	3.80	2.66	2.58	2.92	3.14	2.97
Total CH_4 emissions from Sector 3 'Agriculture'	**47.99**	**49.04**	**44.87**	**41.96**	**40.66**	**39.94**	**31.86**	**30.66**	**31.82**	**31.81**	**29.90**
3B Manure Management	1.10	1.11	1.07	1.03	1.10	1.15	0.88	0.88	0.99	1.02	0.93
3D Agricultural Soils	2.36	2.49	2.12	2.39	2.42	2.30	1.96	2.34	2.21	2.42	2.44
Total N_2O emissions from Sector 3 'Agriculture'	**3.46**	**3.60**	**3.18**	**3.42**	**3.52**	**3.45**	**2.85**	**3.22**	**3.19**	**3.44**	**3.37**
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
3H Urea Application	5.59	4.18	10.21	11.24	12.27	26.39	44.16	39.12	42.50	18.61	22.66
Total CO_2 emissions from Sector 3 'Agriculture'	**5.59**	**4.18**	**10.21**	**11.24**	**12.27**	**26.39**	**44.16**	**39.12**	**42.50**	**18.61**	**22.66**
3A Enteric Fermentation	25.55	25.76	26.36	24.80	24.14	23.38	20.88	17.48	15.50	15.32	14.82
3B Manure Management	2.76	2.69	2.84	2.76	2.54	2.43	2.16	2.05	1.85	1.68	1.65
Total CH_4 emissions from Sector 3 'Agriculture'	**28.31**	**28.46**	**29.20**	**27.56**	**26.68**	**25.81**	**23.04**	**19.53**	**17.35**	**17.00**	**16.47**
3B Manure Management	0.86	0.81	0.88	0.81	0.82	0.83	0.80	0.63	0.56	0.56	0.51
3D Agricultural Soils	2.33	2.82	3.32	2.48	2.89	3.27	3.41	3.59	3.03	3.91	2.79
Total N_2O emissions from Sector 3 'Agriculture'	**3.19**	**3.63**	**4.20**	**3.29**	**3.71**	**4.09**	**4.21**	**4.22**	**3.59**	**4.47**	**3.30**

Methane emissions by the EnC CPs

Energy Community Secretariat

MD-4 Methane emissions / Waste

Year	5A, CH_4 emissions, kt CO_2 eq.	5B, CH_4 emissions, kt CO_2 eq.	5B, N_2O emissions, kt CO_2 eq.	5C, CO_2 emissions, kt CO_2 eq.	5C, CH_4 emissions, kt CO_2 eq.	5C, N_2O emissions, kt CO_2 eq.	5D, CH_4 emissions, kt CO_2 eq.	5D, N_2O emissions, kt CO_2 eq.	5. Total emissions, kt CO_2 eq.
1990	1,228.0895	1.5229	0.8648	14.9667	8.6101	1.4298	356.5846	78.2105	1,690.2788
1991	1,277.4955	1.5432	0.8763	14.9994	8.6251	1.4325	345.9170	72.1809	1,723.0700
1992	1,331.6340	1.6100	0.9143	15.0476	8.6493	1.4368	327.5649	66.1383	1,752.9952
1993	1,384.6265	0.8057	0.4575	15.0447	8.6444	1.4362	328.0245	62.0396	1,801.0793
1994	1,390.8445	0.7510	0.4264	15.0947	8.6700	1.4406	313.1718	60.2194	1,790.6184
1995	1,388.0667	0.7080	0.4021	15.0979	8.6683	1.4406	315.7944	60.9671	1,791.1450
1996	1,385.6710	0.7299	0.4145	15.0960	8.6639	1.4401	313.5987	60.0470	1,785.6612
1997	1,373.8362	0.6866	0.3899	15.0456	8.6328	1.4351	318.5703	61.1459	1,779.7423
1998	1,357.4411	0.6932	0.3936	15.0794	8.6502	1.4381	309.4460	62.0745	1,755.2161
1999	1,349.6788	0.6504	0.3694	15.0071	8.6153	1.4318	300.9779	60.7346	1,737.4653
2000	1,318.2688	0.5867	0.3331	14.9965	8.6036	1.4303	301.7489	62.1804	1,708.1482
2001	1,280.3988	0.5326	0.3024	14.9689	8.5885	1.4277	306.1775	62.8757	1,675.2722
2002	1,242.3374	0.5847	0.3320	14.9402	8.5658	1.4244	328.0738	64.5038	1,660.7621
2003	1,204.2917	0.6138	0.3486	14.9100	8.5413	1.4208	333.5034	62.2991	1,625.9289
2004	1,191.1814	0.6445	0.3660	14.8621	8.5080	1.4156	337.1894	59.3042	1,613.4712
2005	1,195.7876	0.6737	0.3826	14.3313	8.2026	1.3649	332.3447	54.3579	1,607.4454
2006	1,185.9875	0.7297	0.4144	14.0179	8.0233	1.3351	319.2939	56.0136	1,585.8154
2007	1,180.6812	0.8458	0.4803	13.7054	7.8446	1.3053	308.1750	51.9619	1,564.9995
2008	1,182.0113	0.9986	0.5671	13.4037	7.6663	1.2761	309.3803	47.6673	1,562.9707
2009	1,191.4146	1.0408	0.5910	13.1228	7.4994	1.2487	291.4873	48.6341	1,555.0386
2010	1,196.0452	1.0947	0.6217	12.8395	7.3312	1.2211	297.3144	47.0680	1,563.5358
2011	1,194.2747	1.1589	0.6581	12.5690	7.1686	1.1946	290.1132	47.2977	1,554.4348
2012	1,179.5443	1.1392	0.6469	12.2745	6.9957	1.1661	286.3747	47.6782	1,535.8195
2013	1,109.3989	1.2331	0.7002	11.9268	6.8011	1.1334	287.6922	47.8973	1,466.7830
2014	1,101.0747	1.3421	0.7621	11.5760	6.6060	1.1006	278.0681	47.3891	1,447.9188
2015	1,098.5478	1.3446	0.7636	11.3821	6.5070	1.0833	271.7799	48.2143	1,439.6225
2016	1,106.5936	1.3351	0.7582	11.1405	6.3766	1.0611	270.7899	48.7957	1,446.8507
2017	1,191.5422	1.2913	0.7333	10.8683	6.2293	1.0360	265.5271	50.2953	1,527.5228
2018	1,180.1724	1.2513	0.7105	10.5805	6.0724	1.0093	266.6533	51.7941	1,518.2439
2019	1,168.0946	1.2817	0.7278	10.2841	5.9138	0.9822	256.6320	52.0099	1,495.9262
2020	1,156.7049	1.3985	0.7941	10.4735	6.0115	0.9992	247.0621	51.9943	1,475.4381
2021	1,144.5600	1.3255	0.7527	10.0573	5.7718	0.9594	256.9871	51.0604	1,471.4742
2022	1,130.3853	1.3783	0.7827	9.8895	5.6807	0.9439	246.6845	49.3425	1,445.0875
1990-2022, %	**-8.0**	**-9.5**	**-9.5**	**-33.9**	**-34.0**	**-34.0**	**-30.8**	**-36.9**	**-14.5**

Annex V

MONTENEGRO – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 5 September 2023

MN-1 Methane emissions / Energy / Fugitive emissions / Coal

CH4 emissions	1.B.1	1.B.1.a.i	1.B.1.a.ii		1.B.1.c	1.B.1.c
	Total	Underground Mines	Surface Mines		Uncontrolled combustion and burning coal dumps	Charcoal
		All	Mining	Post-mining		
	kt					
1990	0.441	NO	0.353	0.089	NE	NE
1991	0.439	NO	0.349	0.090	NE	NE
1992	0.416	NO	0.340	0.076	NE	NE
1993	0.359	NO	0.288	0.071	NE	NE
1994	0.308	NO	0.251	0.057	NE	NE
1995	0.178	NO	0.168	0.010	NE	NE
1996	0.362	NO	0.283	0.080	NE	NE
1997	0.336	NO	0.259	0.077	NE	NE
1998	0.418	NO	0.320	0.098	NE	NE
1999	0.399	NO	0.303	0.096	NE	NE
2000	0.415	NO	0.315	0.101	NE	NE
2001	0.318	NO	0.239	0.079	NE	NE
2002	0.479	NO	0.363	0.116	NE	NE
2003	0.432	NO	0.325	0.107	NE	NE
2004	0.406	NO	0.306	0.100	NE	NE
2005	0.347	NO	0.261	0.086	NE	NE
2006	0.402	NO	0.304	0.098	NE	NE
2007	0.317	NO	0.242	0.076	NE	NE
2008	0.464	NO	0.350	0.114	NE	NE
2009	0.255	NO	0.192	0.063	NE	NE
2010	0.517	NO	0.390	0.128	NE	NE
2011	0.526	NO	0.397	0.129	NE	NE
2012	0.475	NO	0.359	0.116	NE	NE
2013	0.452	NO	0.340	0.112	NE	NE
2014	0.442	NO	0.333	0.109	NE	NE
2015	0.472	NO	0.356	0.115	NE	NE
2016	0.372	NO	0.281	0.091	NE	NE
2017	0.389	NO	0.296	0.093	NE	NE
2018	0.426	NO	0.321	0.105	NE	NE
2019	0.423	NO	0.323	0.100	NE	NE
2020	0.442	NO	0.335	0.107	NE	NE
2021	0.405	NO	0.311	0.094	NE	NE
Trend						
1990 - 2021	*-8.2%*	*NA*	*-11.8%*	*6.2%*	*NA*	*NA*
2005 - 2021	*16.8%*	*NA*	*19.4%*	*9.0%*	*NA*	*NA*
2020 - 2021	*-8.2%*	*NA*	*-7.0%*	*-11.9%*	*NA*	*NA*

MN-2 Methane emissions / Energy / Fugitive emissions / Oil & Natural gas

IPCC code	Description		CH_4		CO_2		NMVOC		N_2O	
			Estimated	Key Category	Estimated	Key Category	Estimated	Key Category	Estimated	Key Category
1.B.2.a	Oil									
1.B.2.a.i	Exploration	Leaks	NA		NA		NA		NA	
		Venting	NO							
		Flaring	NO							
1.B.2.a.ii	Production and upgrading	Leaks	NO		NA		NO		NA	
		Venting	NO							
		Flaring	NO							
1.B.2.a.iii	Transport	All	NO		NO		NO		NA	
1.B.2.a.iv	Refining/storage	Leaks	NO		NO		NO		NO	
		Venting	NO							
		Flaring	NO							
1.B.2.a.v	Distribution of oil products	All	NA		NA		✓		NA	
1.B.2.a.vi	Other									
1.B.2.a.vi.1	Abandoned wells	All	NO		NO		NO		NO	
1.B.2.a.vi.2	Other	All	NO		NO		NO		NO	

IPCC code	Description		CH_4		CO_2		NMVOC		N_2O	
			Estimated	Key Category	Estimated	Key Category	Estimated	Key Category	Estimated	Key Category
1.B.2.b	Natural gas									
1.B.2.b.i	Exploration	Leaks	NA		NA		NA		NA	
		Venting	NO							
		Flaring	NO							
1.B.2.b.ii	Production and gathering	All	NO		NO		NO		NO	
1.B.2.b.iii	Processing	All	NO		NO		NO		NO	
1.B.2.b.iv	Transmission and storage	All	NO		NO		NO		NA	
1.B.2.b.v	Distribution	All	NO		NO		NO		NA	
1.B.2.b.vi	Other									
1.B.2.b.vi.1	Gas post-meter	All	NE		NE		NE		NE	
1.B.2.b.vi.2	Abandoned wells	All	NE		NE		NE		NE	
1.B.2.b.vi.3	Other	All	NE		NE		NE		NE	
1.B.2.c.	Venting and flaring									
1.B.2.c.i.	Venting									
1.B.2.c.i.1.	Oil		NO		NO		NO		NO	
1.B.2.c.i.2.	Gas		NO		NO		NO		NO	
1.B.2.c.i.3.	Combined		NO		NO		NO		NO	
1.B.2.c.ii.	Flaring									
1.B.2.c.ii.1.	Oil		NO		NO		NO		9-*9+6666666	
1.B.2.c.ii.2.	Gas		NO		NO		NO		NO	
1.B.2.c.ii.3.	Combined		NO		NO		NO		NO	
1.B.2.d.	Other									
1.B.2.d.	Other	All	NO		NO		NO		NO	

All: sum of leak, venting and flaring	A '✓' indicates: emissions from this category have been estimated. Notation keys: IE -included elsewhere, NO – not occurrent, NE -not estimated, NA -not applicable, C – confidential
LA – Level Assessment (in year) without LULUCF; TA – Trend Assessment without LULUCF	

MN-3 Methane emissions / Agriculture

CH4 emissions	3 Agriculture	3.A Enteric Fermentation	3.B Manure Management	3.C Rice Cultivation	3.D Agricultural soils	3.E Prescribed burning of savannas	3.F Field burning of agricultural residues	3. Liming	3.H Urea application	3.I Other carbon-containing fertilizers	3.J Other
	kt										
1990	18.79	14.80	3.99	NO	NA	NO	0.0015	NA	NA	NO	NO
1991	18.74	14.76	3.98	NO	NA	NO	0.0015	NA	NA	NO	NO
1992	17.58	13.84	3.74	NO	NA	NO	0.0015	NA	NA	NO	NO
1993	16.94	13.34	3.60	NO	NA	NO	0.0016	NA	NA	NO	NO
1994	17.23	13.56	3.67	NO	NA	NO	0.0017	NA	NA	NO	NO
1995	17.73	13.96	3.77	NO	NA	NO	0.0017	NA	NA	NO	NO
1996	17.65	13.89	3.76	NO	NA	NO	0.0016	NA	NA	NO	NO
1997	17.08	13.43	3.65	NO	NA	NO	0.0017	NA	NA	NO	NO
1998	16.72	13.14	3.58	NO	NA	NO	0.0017	NA	NA	NO	NO
1999	16.74	13.14	3.59	NO	NA	NO	0.0014	NA	NA	NO	NO
2000	16.22	12.74	3.48	NO	NA	NO	0.0014	NA	NA	NO	NO
2001	15.73	12.34	3.39	NO	NA	NO	0.0015	NA	NA	NO	NO
2002	16.06	12.59	3.47	NO	NA	NO	0.0015	NA	NA	NO	NO
2003	15.95	12.49	3.46	NO	NA	NO	0.0014	NA	NA	NO	NO
2004	15.67	12.26	3.41	NO	NA	NO	0.0013	NA	NA	NO	NO
2005	11.67	9.17	2.50	NO	NA	NO	0.0012	NA	NA	NO	NO
2006	10.88	8.55	2.33	NO	NA	NO	0.0011	NA	NA	NO	NO
2007	10.13	7.96	2.17	NO	NA	NO	0.0005	NA	NA	NO	NO
2008	9.98	7.83	2.15	NO	NA	NO	0.0005	NA	NA	NO	NO
2009	9.53	7.46	2.06	NO	NA	NO	0.0005	NA	NA	NO	NO
2010	9.11	7.13	1.98	NO	NA	NO	0.0004	NA	NA	NO	NO
2011	9.01	7.16	1.84	NO	NA	NO	0.0007	NA	NA	NO	NO
2012	8.53	6.71	1.82	NO	NA	NO	0.0007	NA	NA	NO	NO
2013	8.92	7.05	1.87	NO	NA	NO	0.0008	NA	NA	NO	NO
2014	9.35	7.39	1.96	NO	NA	NO	0.0009	NA	NA	NO	NO
2015	9.18	7.24	1.94	NO	NA	NO	0.0008	NA	NA	NO	NO
2016	8.83	6.94	1.90	NO	NA	NO	0.0008	NA	NA	NO	NO
2017	8.91	7.06	1.85	NO	NA	NO	0.0009	NA	NA	NO	NO
2018	8.63	6.82	1.80	NO	NA	NO	0.0009	NA	NA	NO	NO
2019	8.29	6.54	1.75	NO	NA	NO	0.0009	NA	NA	NO	NO
2020	6.54	4.85	1.69	NO	NA	NO	0.0008	NA	NA	NO	NO
2021	6.01	4.46	1.55	NO	NA	NO	0.0009	NA	NA	NO	NO
Trend											
1990 - 2021	*-68.0%*	*-69.8%*	*-61.2%*	*NA*	*NA*	*NA*	*-43.5%*	*NA*	*NA*	*NA*	*NA*
2005 - 2021	*-48.5%*	*-51.3%*	*-38.1%*	*NA*	*NA*	*NA*	*-29.4%*	*NA*	*NA*	*NA*	*NA*
2020 - 2021	*-8.1%*	*-8.0%*	*-8.2%*	*NA*	*NA*	*NA*	*3.6%*	*NA*	*NA*	*NA*	*NA*

Methane emissions by the EnC CPs

MN-4 Methane emissions / Waste

CH_4 emissions	5 TOTAL Waste	5.A Solid Waste Disposal	5.B Biological Treatment of Solid Waste	5.C Incineration and Open Burning of Waste	5.D Wastewater Treatment and Discharge
	kt CO_2 equivalent	kt CO_2 equivalent	kt CO_2 equivalent	kt CO_2 equivalent	kt CO_2 equivalent
1990	8.19	6.14	NE	NE	2.05
1991	8.38	6.31	NE	NE	2.07
1992	8.55	6.48	NE	NE	2.07
1993	8.73	6.65	NE	NE	2.08
1994	8.91	6.83	NE	NE	2.08
1995	9.13	7.04	NE	NE	2.09
1996	9.36	7.27	NE	NE	2.09
1997	9.62	7.53	NE	NE	2.09
1998	9.87	7.79	NE	NE	2.08
1999	10.12	8.05	NE	NE	2.07
2000	10.39	8.33	NE	NE	2.07
2001	10.63	8.56	NE	NE	2.07
2002	10.84	8.76	NE	NE	2.08
2003	11.03	8.93	NE	NE	2.10
2004	11.18	9.07	NE	NE	2.11
2005	11.29	9.18	NE	NE	2.12
2006	11.39	9.26	NE	NE	2.13
2007	11.55	9.41	NE	NE	2.14
2008	11.78	9.62	NE	NE	2.16
2009	11.93	9.76	NE	NE	2.17
2010	12.07	9.89	NE	NE	2.17
2011	12.21	10.03	NE	NE	2.18
2012	12.05	9.87	NE	NE	2.18
2013	12.05	9.87	NE	NE	2.19
2014	12.02	9.83	NE	NE	2.19
2015	11.93	9.74	NE	NE	2.19
2016	11.97	9.75	NE	NE	2.22
2017	11.92	9.67	NE	NE	2.24
2018	12.01	9.74	NE	NE	2.27
2019	12.07	9.78	NE	NE	2.29
2020	12.20	9.89	NE	NE	2.32
2021	12.19	9.88	NE	NE	2.31
Trend					
1990 - 2021	*48.7%*	*60.9%*	*NA*	*NA*	*12.4%*
2005 - 2021	*7.9%*	*7.7%*	*NA*	*NA*	*8.9%*
2020 - 2021	*-0.1%*	*0.0%*	*NA*	*NA*	*-0.5%*

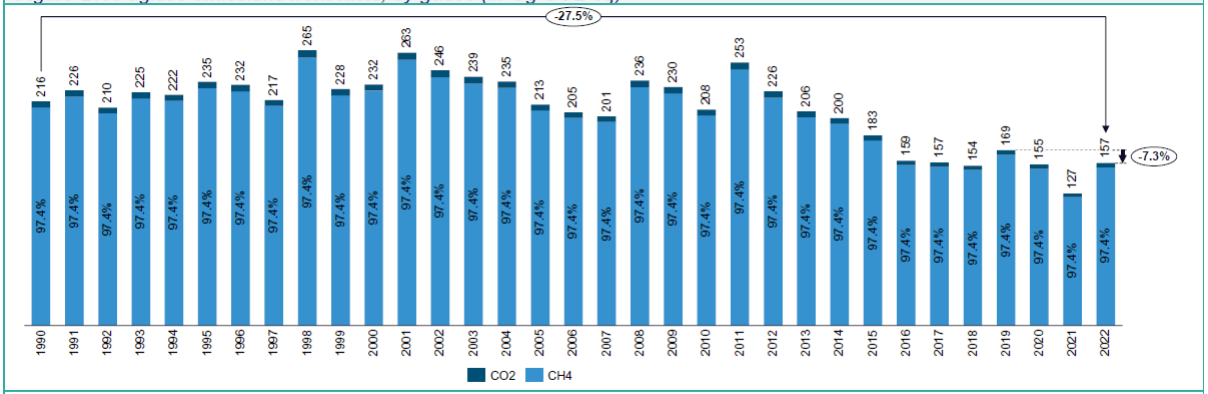
Annex VI

NORTH MACEDONIA – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 29 July 2026

MK-1&2 Methane emissions / Energy / Fugitive emissions / Coal, Oil & Natural gas

Figure 27. Fugitive emissions from fuels, by gases (in Gg CO2-eq)



Source: IPCC software, team analysis

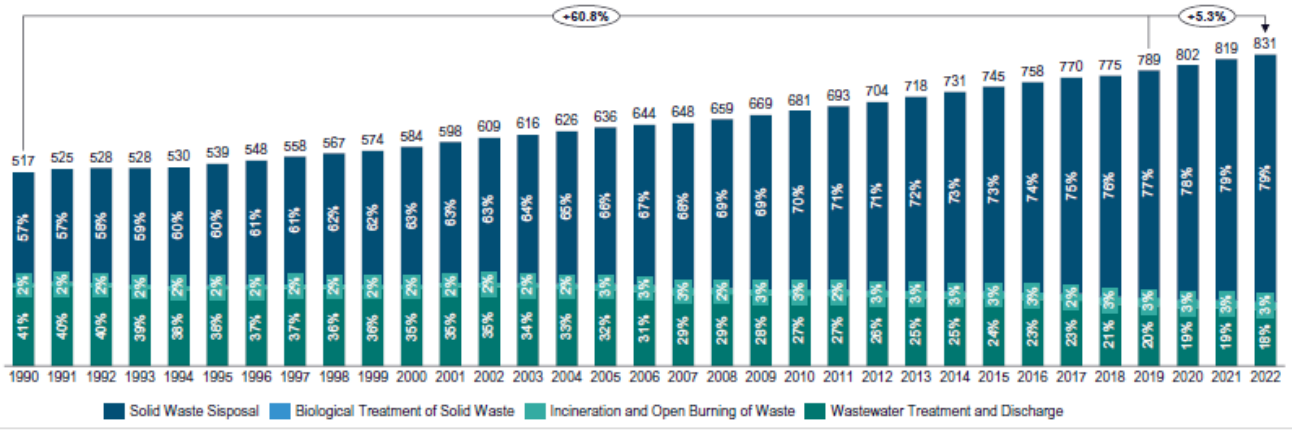
MK-3 Methane emissions / Agriculture

Figure 39. Greenhouse gas emissions from the Agriculture sector by gas (in Gg CO2-eq)

Source: IPCC software, team analysis

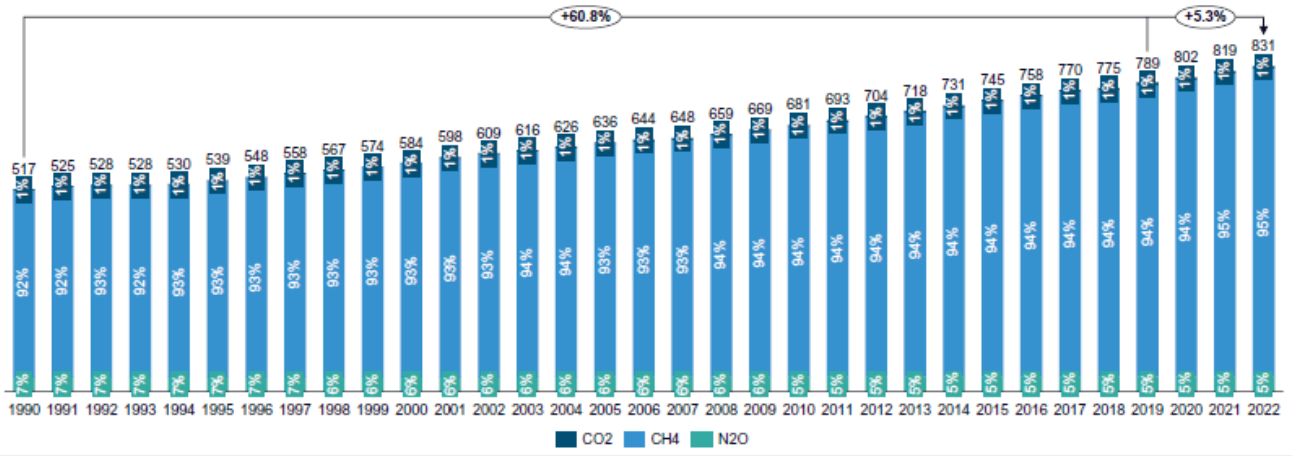
MK-4 Methane emissions / Waste

Figure 75. Greenhouse gas emissions by subsectors of the Waste sector, by category (in Gg CO2-eq)



Source: IPCC software, team analysis

Figure 76. Greenhouse gas emissions by gases from the Waste sector, by gases (in Gg CO2-eq)



Source: IPCC software, team analysis

Annex VII

SERBIA – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 15 April 2025

RS-1a Methane emissions / Energy / Fugitive emissions / Coal / Underground mines

Figure 28 : GHG emissions from mining in underground mines – COAL (CRT 1B1a1i) (kt CO_2e)

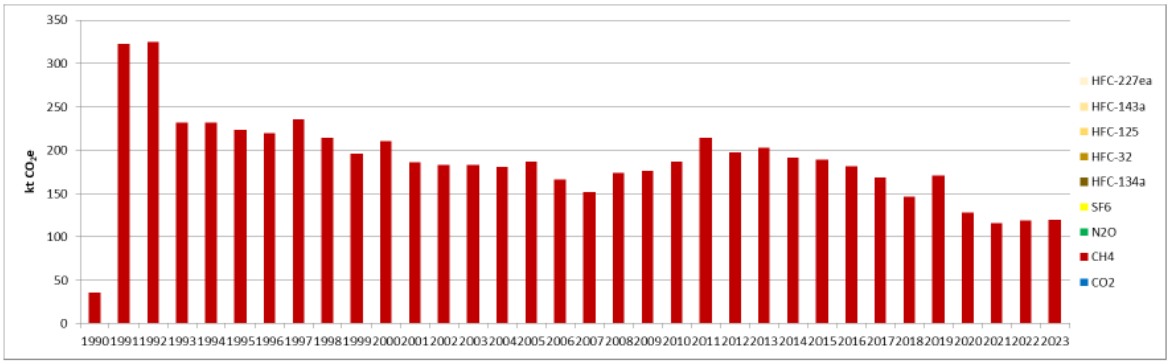


Figure 29 : GHG emissions from post-mining in underground mines - COAL (CRT 1B1a1ii) (kt CO_2e)

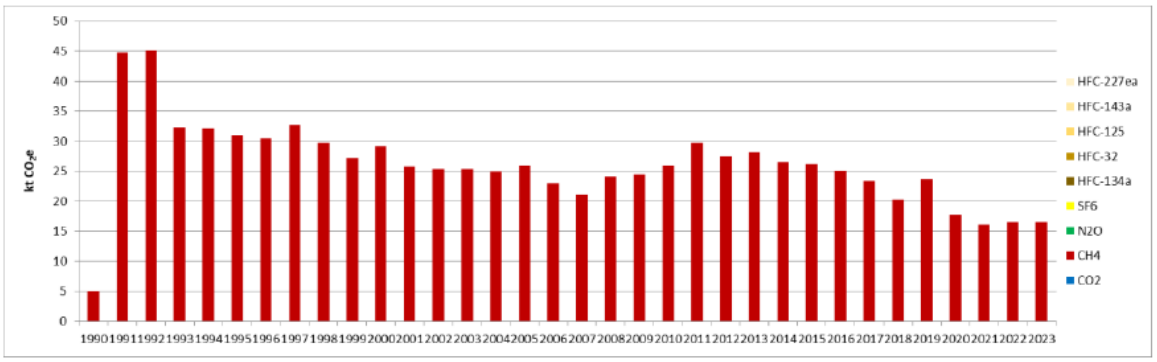
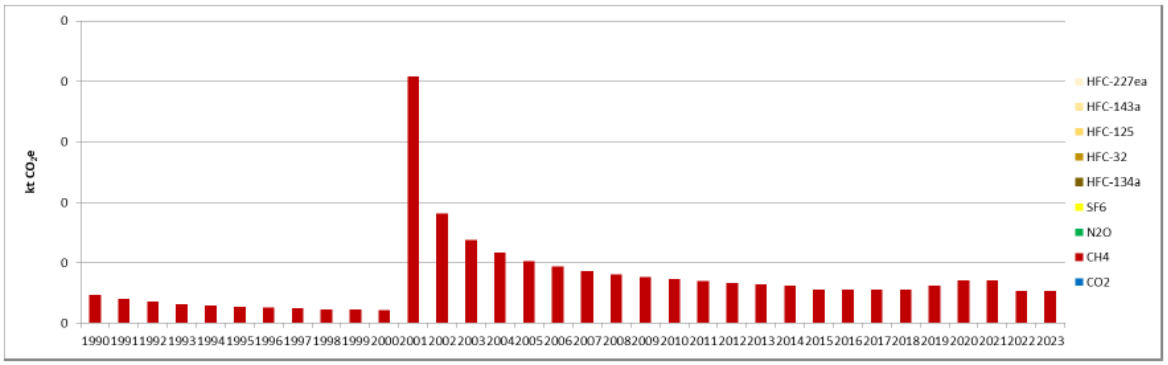


Figure 30 : GHG emissions from abandoned underground mines - COAL (CRT 1B1a1iii) (kt CO_2e)



RS-1b Methane emissions / Energy / Fugitive emissions / Coal / Surface mines

Figure 31 : GHG emissions from mining in surface mines - COAL (CRT 1B1a2i) (kt CO_2e)

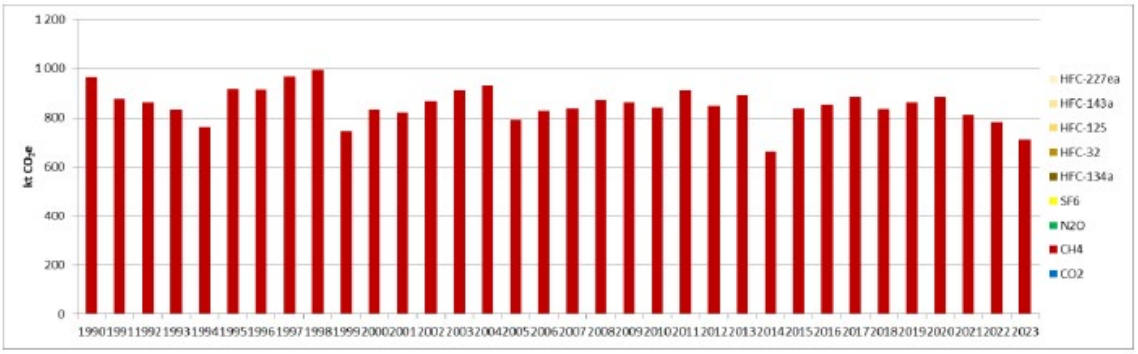


Figure 32 : GHG emissions from post-mining in surface mines - COAL (CRT 1B1a2ii) (kt CO_2e)

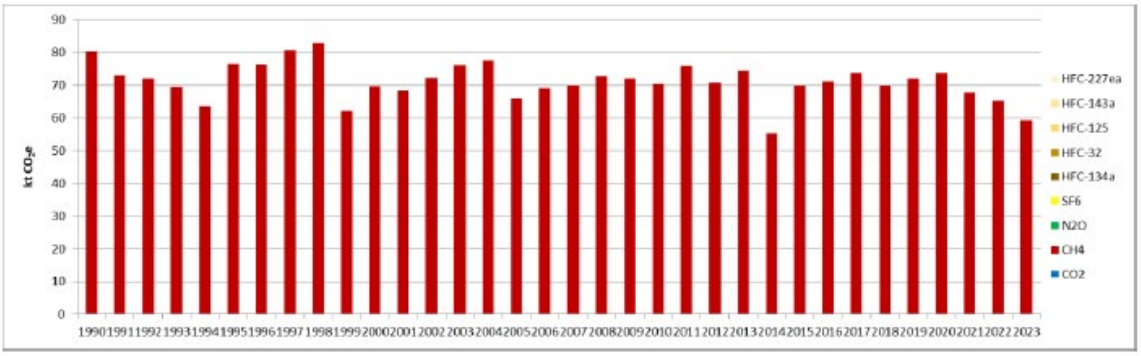
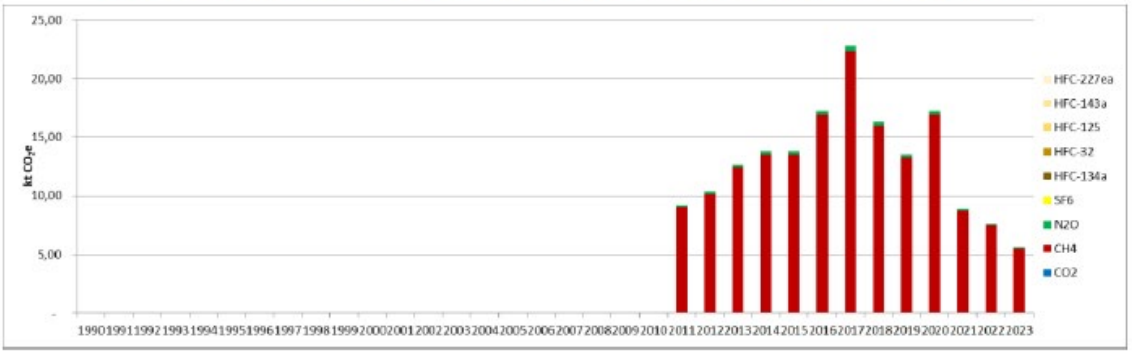


Figure 33 : GHG emissions from solid fuel transformation – charcoal production (CRT 1B1b) (kt CO_2e)



RS-2a Methane emissions / Energy / Fugitive emissions / Oil

Figure 34 : GHG emissions from production and upgrading of OIL (CRT 1B2a2) (kt CO_2e)

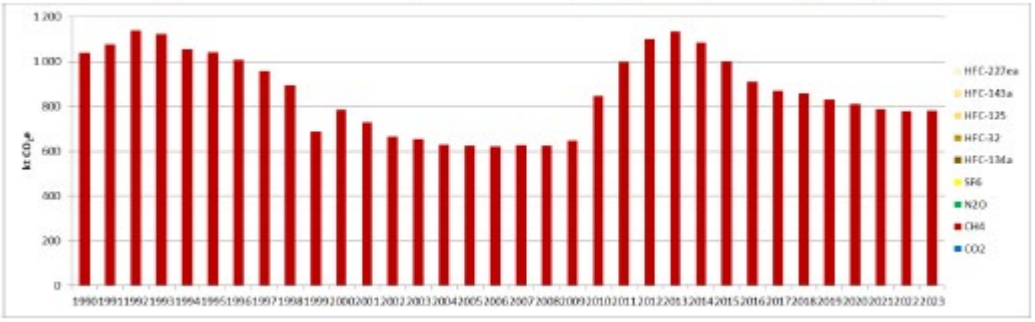


Figure 35 : GHG emissions from transport of OIL (CRT 1B2a3) (kt CO_2e)

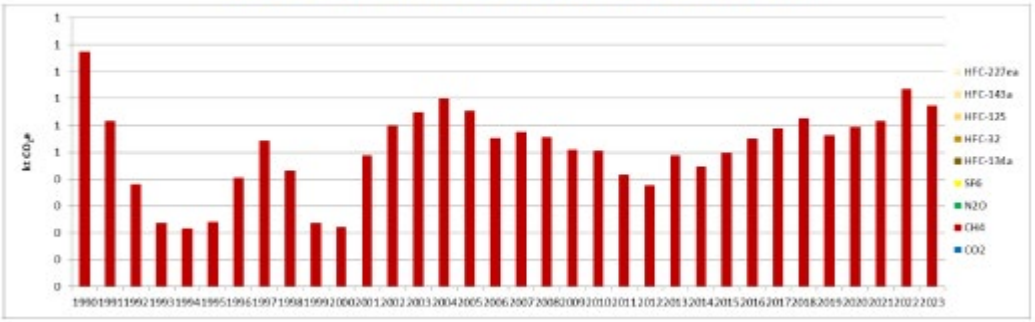


Figure 40 : GHG emissions from venting in OIL systems (CRT 1B2c1i) (kt CO_2e)

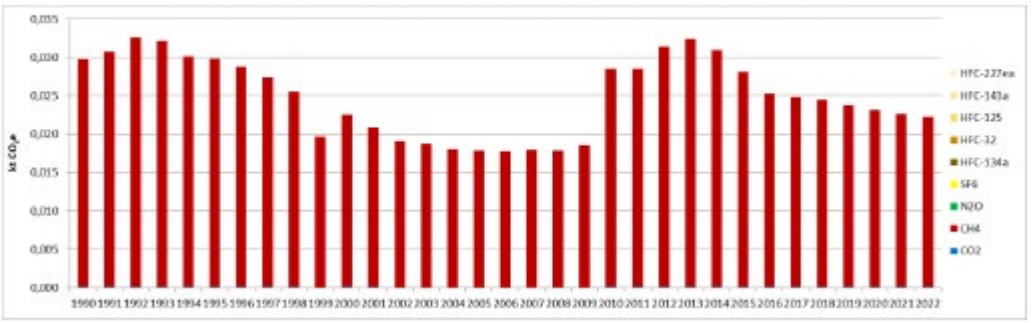
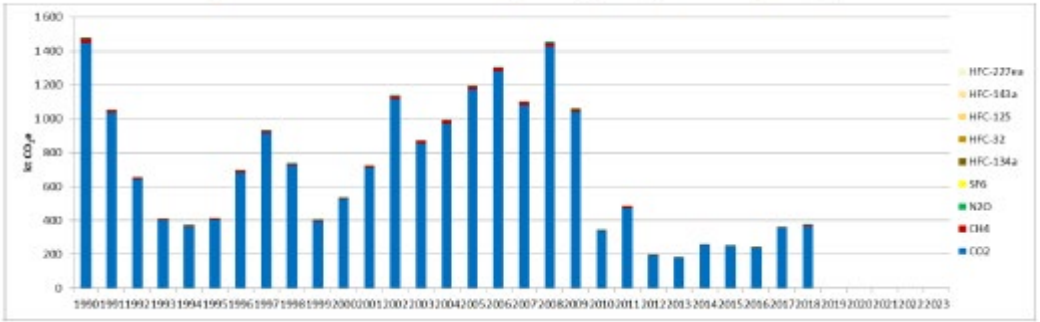


Figure 42 : GHG emissions from flaring in OIL systems (CRT 1B2c2i) (kt CO_2e)



RS-2b Methane emissions / Energy / Fugitive emissions / Natural gas

Figure 36 : GHG emissions from production of NATURAL GAS (CRT 1B2b2) (kt CO_2e)

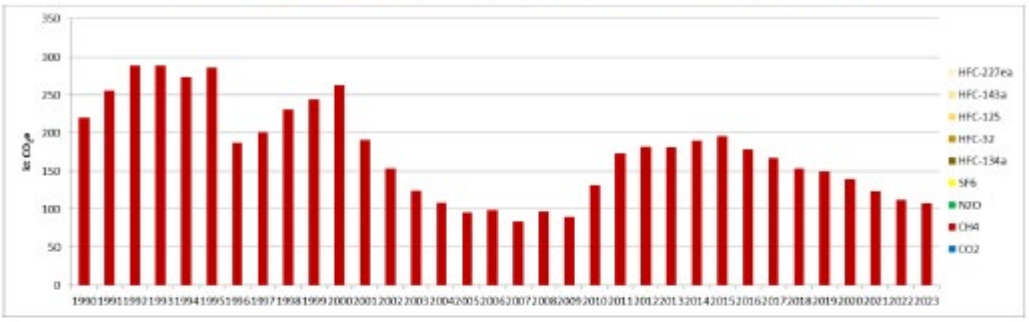


Figure 37 : GHG emissions from processing of NATURAL GAS (CRT 1B2b3) (kt CO_2e)

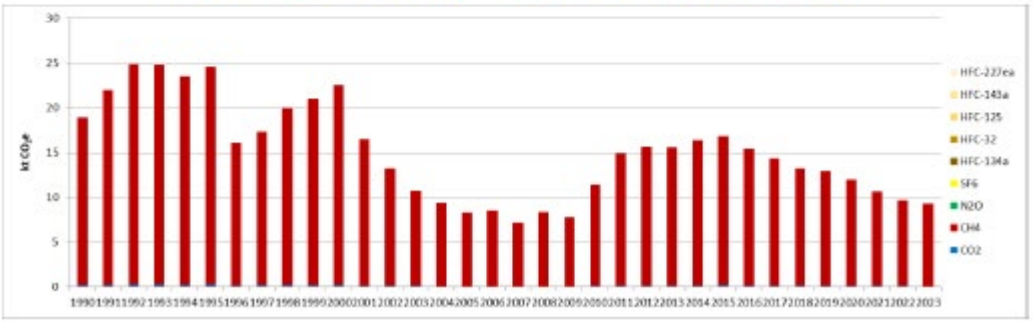


Figure 38 : GHG emissions from transmission and storage of NATURAL GAS (CRT 1B2b4) (kt CO_2e)

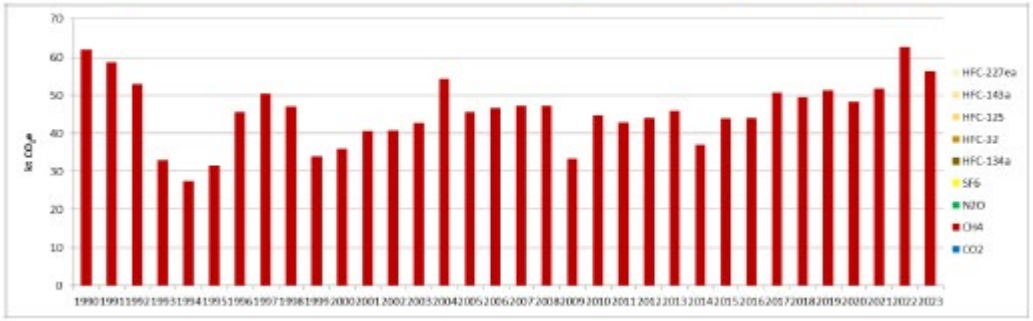
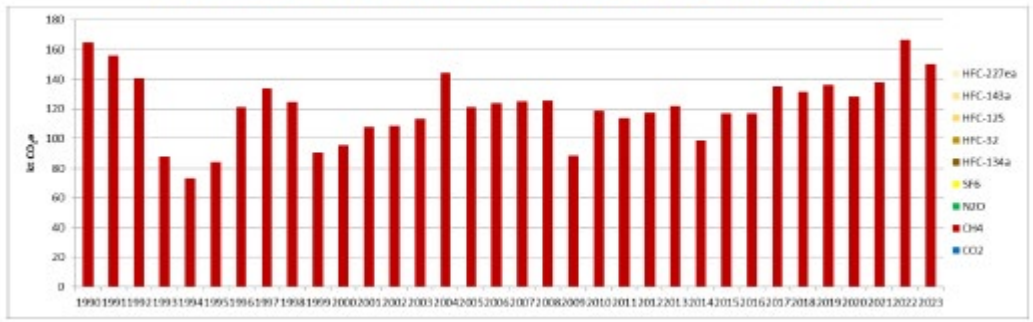
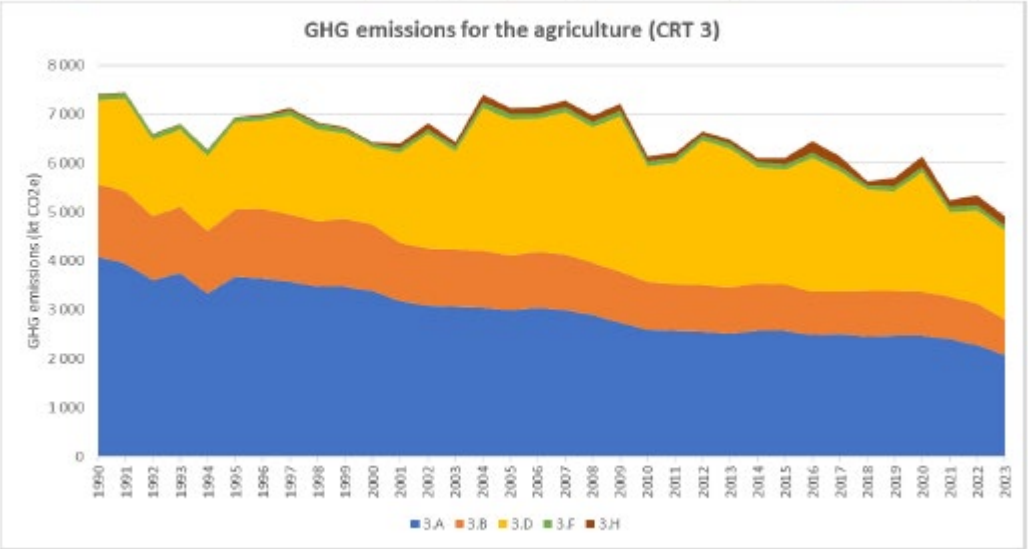


Figure 39 : GHG emissions from distribution of NATURAL GAS (CRT 1B2b5) (kt CO_2e)



RS -3 Methane emissions / Agriculture

Figure 79: GHG emission trends for agriculture (CRT 3), for the period 1990-2023, per subcategory (in kt CO_2e)



3A – enteric fermentation

3B – manure management

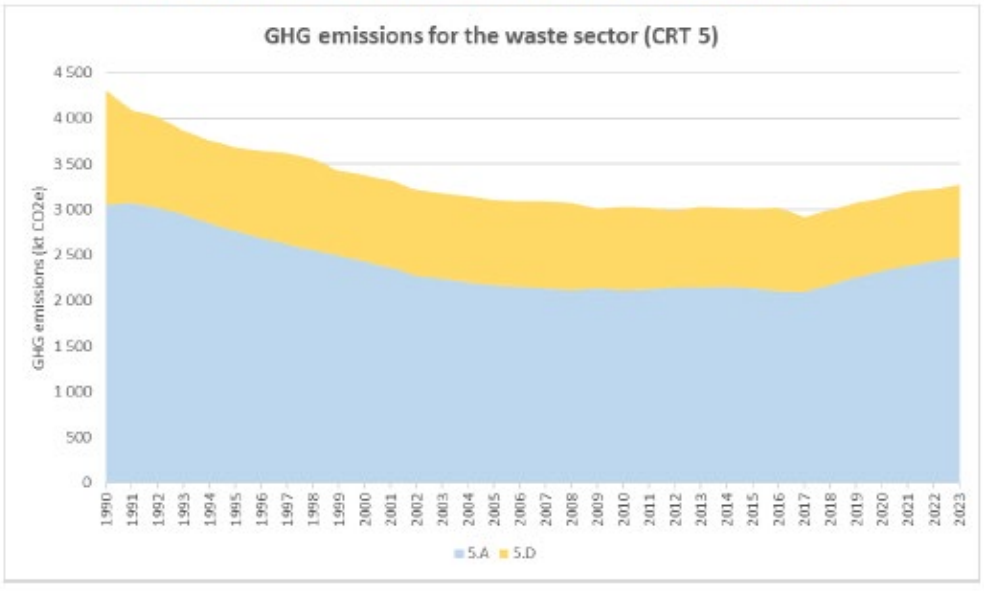
3F – burning residues in the field

3D – agricultural soils

3H – urea application

RS -4 Methane emissions / Waste

Figure 150: GHG emission trends for waste (CRT 5), for the period 1990-2023 (in kt CO_2e)



5A – solid waste disposal

5D – wastewater treatment

Annex VIII

UKRAINE – methane emissions in Energy, Agriculture, Waste

As shown by NIR/NID submitted under UNFCCC as of 14 April 2026

UA – 1&2 Methane emissions / Energy /Fugitive emissions / Coal, Oil & Gas

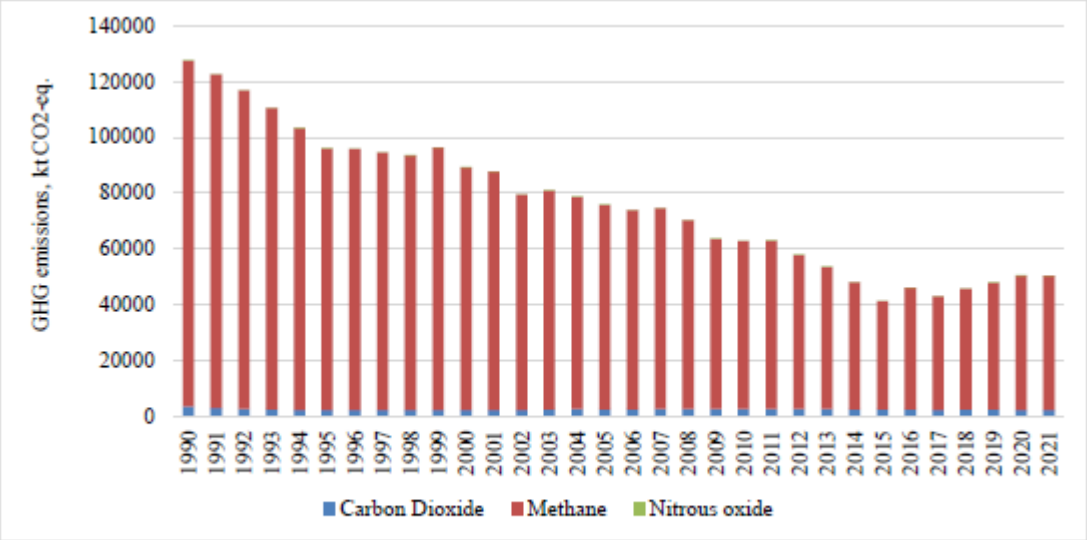


Fig. 3.14. Greenhouse gas emissions in category 1.B "Fugitive Emissions from Fuels" (sectoral approach)

Emission category	1990	1995	2000	2005	2011	2012	2014	2016	2017	2018	2019	2020	2021
1.B Fugitive Emissions from fuels (total), including:	127.47	96.02	89.22	75.70	62.99	57.69	47.98	45.96	43.00	45.71	47.93	50.42	50.36
1.B.1 Solid fuels	62.38	38.26	32.96	25.94	23.74	24.05	18.69	16.62	13.00	13.13	12.68	10.93	11.17
1.B.2 Oil and Natural Gas	65.09	57.77	56.26	49.76	39.25	33.64	29.29	29.34	30.00	32.58	35.26	39.49	39.19

in Mt CO2eq

UA-3 Methane emissions / Agriculture

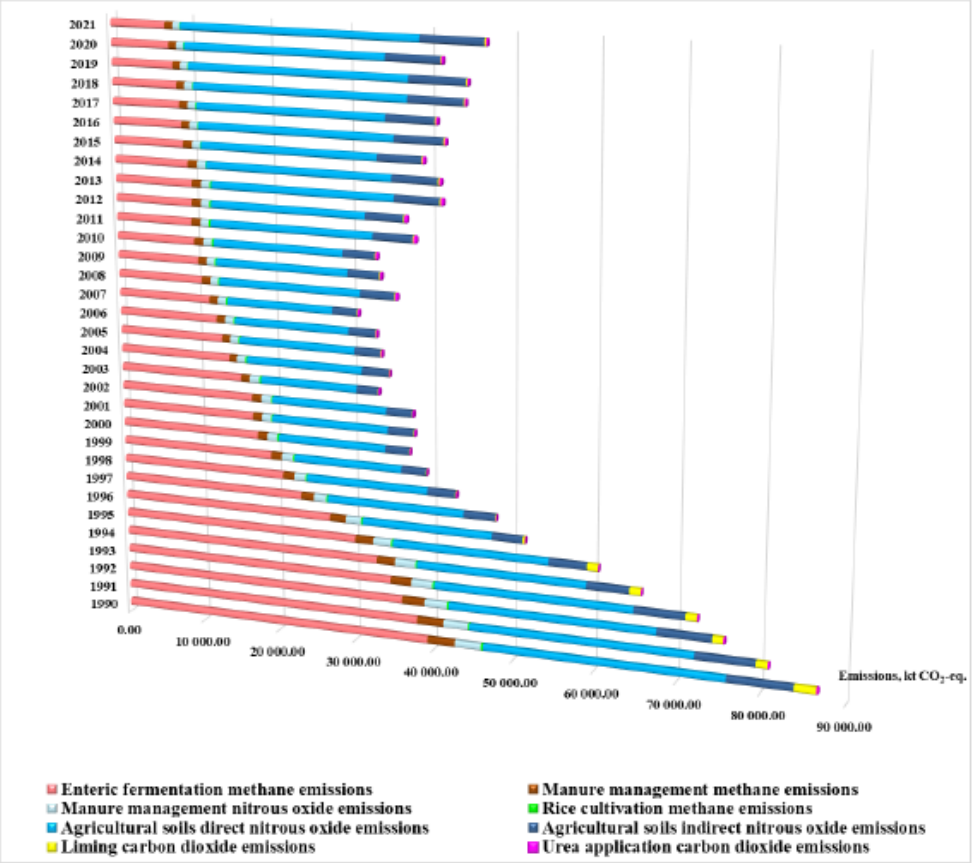


Fig. 5.1. GHG emissions by categories of the Agriculture sector, kt CO_2-eq.

Category	Emissions, kt CO_2-eq.			Trend, %	
	1990	*2020*	*2021*	*by 1990*	*by 2020*
3.A Enteric Fermentation	39 311.34	7 447.05	7 047.92	-82.07	-5.36
3.B Manure Management	6 774.76	1 944.66	1 907.75	-71.84	-1.90
3.C Rice Cultivation	216.43	82.99	74.84	-65.42	-9.82
3.D Agricultural Soils	37 678.18	31 845.55	37 575.04	-0.27	17.99
3.E Prescribed Burning of Savannas *	NO	NO	NO	–	–
3.F Field Burning of Agricultural Residues **	NO	NO	NO	–	–
3.G Liming	2 592.08	131.35	176.23	-93.20	34.17
3.H Urea Application	270.14	235.51	235.60	-12.79	0.04
Total for the sector	**86 842.92**	**41 687.10**	**47 017.37**	**-45.86**	**12.79**

** – the emissions not estimated;*

*** – field burning of crop residues prohibited by the Ukrainian legislation.*

UA -4 Methane emissions / Waste

Table 7.1. GHG emissions in "Waste" sector according to the gases and categories in particular years

Year	CO_2	CH_4	N_2O	5.A	5.B	5.C	5.D	Total GHG
				kt CO_2-eq				
1990	28.66	10689.63	1721.09	6534.47	34.36	34.66	5835.89	12439.38
1995	26.65	10627.08	1312.69	7278.37	23.23	30.59	4634.23	11966.41
2000	34.53	10585.13	1168.97	7376.24	9.71	38.96	4363.72	11788.63
2005	49.48	11134.88	1239.96	7638.93	5.10	55.89	4724.39	12424.32
2010	52.88	11449.66	1223.04	8034.90	3.03	59.21	4628.44	12725.58
2011	45.08	11441.06	1227.55	8058.04	5.49	52.97	4597.19	12713.69
2012	34.68	11367.18	1237.13	8000.68	6.41	38.52	4593.21	12638.99
2013	3.31	11593.47	1246.51	8079.44	7.33	4.54	4751.98	12843.29
2014	11.01	11401.09	1199.23	8092.25	12.98	17.15	4488.95	12611.32
2015	8.24	11407.66	1132.54	8232.11	39.48	10.71	4266.14	12548.44
2016	5.06	11587.32	1133.28	8234.57	34.98	9.09	4447.02	12725.67
2017	5.64	11535.71	1117.78	8117.50	25.80	9.34	4506.48	12659.13
2018	5.18	11482.39	1119.22	7974.50	28.52	9.42	4594.36	12606.79
2019	3.53	11469.82	1104.90	7880.72	8.40	8.05	4681.09	12578.26
2020	3.79	11255.88	1097.64	7704.87	7.49	9.11	4635.83	12357.30
2021	5.06	11055.59	1077.10	7699.74	17.29	12.36	4408.36	12137.75

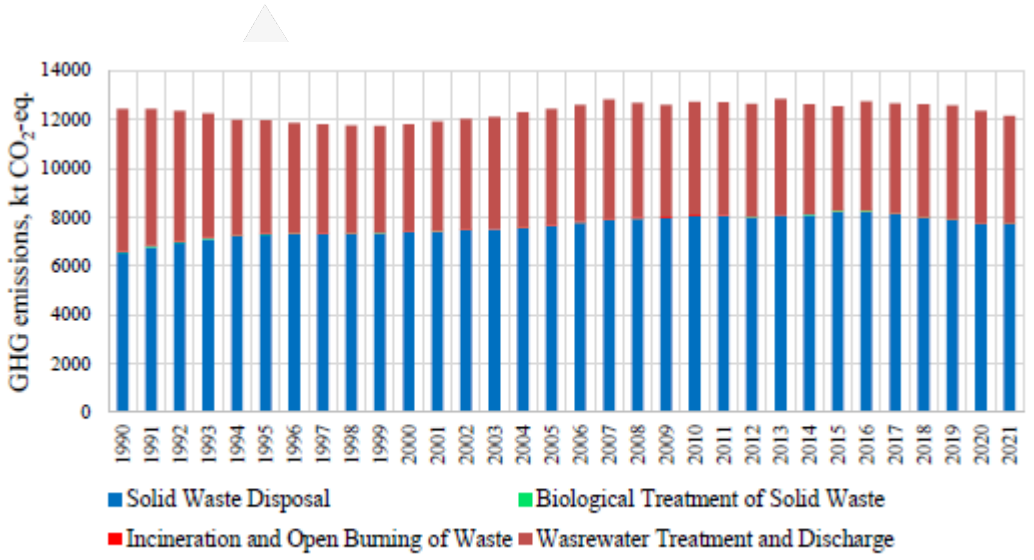
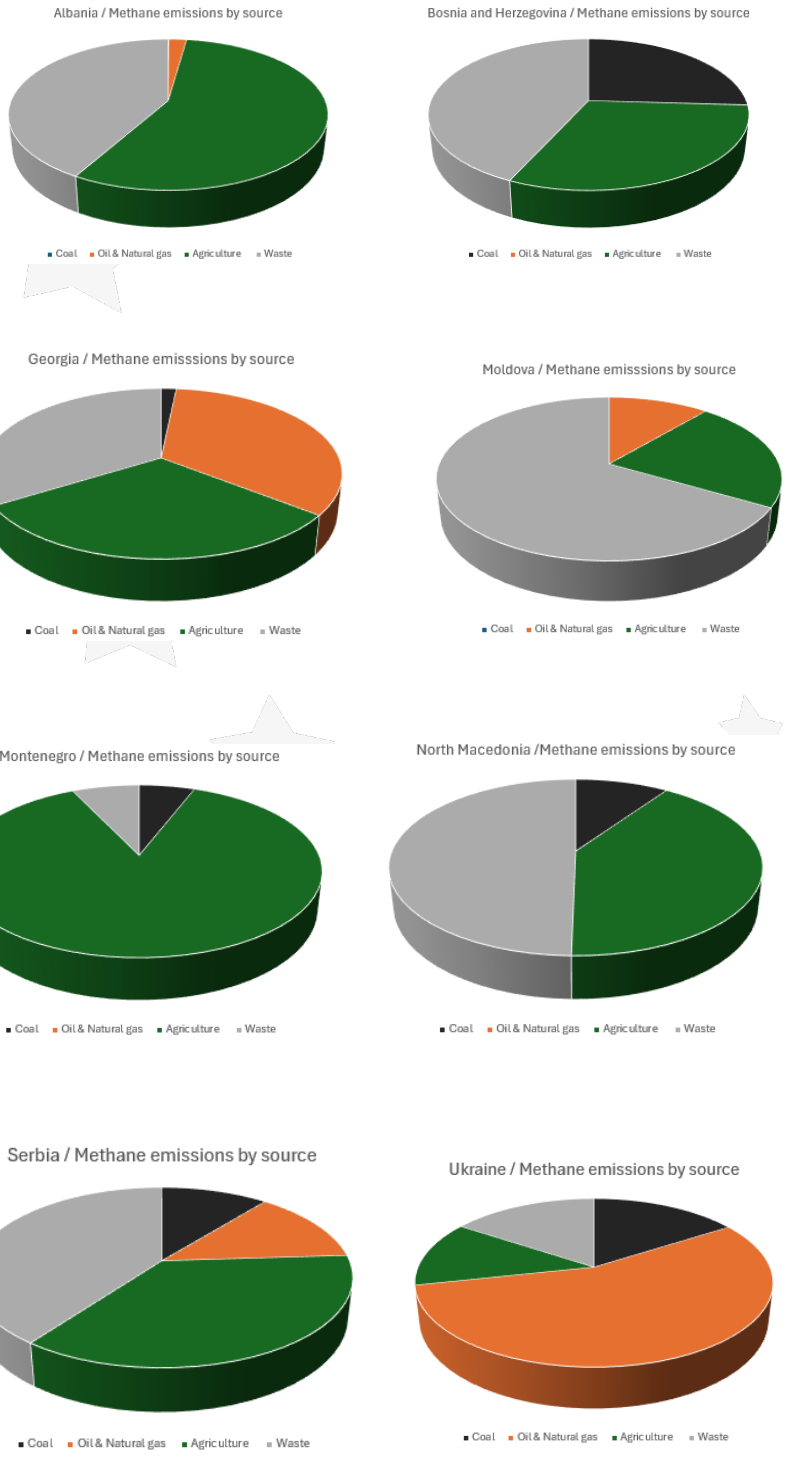


Fig. 7.1. GHG emissions in the "Waste" sector, 1990-2021

Annex IX

Overview – Contracting Parties' methane emissions shares by source



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