

REPORT

**on the achieved share of energy from renewable sources in the
total final energy consumption in Montenegro in 2021**

INTRODUCTION

On the basis of Directive 2009/28/EC of the European Parliament and the Council of April 23, 2009 on encouraging the use of energy from renewable sources and on the amendment and subsequent repeal of directives 2001/77/EC and 2003/30/EC (hereinafter: the Directive), Montenegro undertook to increase the use of energy from renewable sources.

Article 22 of the Directive requires the member state to submit a report on the promotion and use of energy from renewable sources to the Secretariat of the Energy Community. Member state reports are important for comprehensive monitoring of the development of renewable energy policy and compliance of the member state with the measures specified in the Directive.

Pursuant to the provisions of the Law on the Ratification of the Agreement between the European Community and the Republic of Montenegro on the Formation of the Energy Community ("Official Gazette of the Republic of Montenegro", number: 66/06) and the Decision of the Council of Ministers of the Energy Community D/2021/14/MC-EnC dated November 30, 2021 Montenegro has the obligation to prepare a Report on the achieved share of energy from renewable sources in the total final energy consumption in Montenegro in 2021 and submit it to the Secretariat of the Energy Community.

The report on the achieved share of energy from renewable sources in the total final energy consumption in Montenegro in 2021 was prepared according to the Form in accordance with the Directive. The purpose of the Form is to help the Member State so that the reports are complete, include all the requirements specified in Article 22 of the Directive and are comparable with other reports.

The method of calculating the share is determined by the Rulebook on the method of calculating the share of energy from renewable sources in the total final energy consumption, the energy content of fuel and the method of calculating the total energy consumption used in traffic, the method of calculating the amount of electricity produced in hydroelectric and wind power plants and the method of calculation quantities of energy from heat pumps ("Official Gazette of Montenegro" no. 34/17 and 42/21).

The Ministry responsible for energy monitors the use of energy from renewable sources and submits a report on the results to the Government of Montenegro.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding year (2021) (Article 22 (1) a of Directive 2009/28/EC).

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources

	2021
RES-H&C ¹ (%)	57.61
RES-E ² (%)	60.33
RES-T ³ (%)	0.80
Overall RES share ⁴ (%)	39.29
<i>Of which from cooperation mechanism⁵ (%)</i>	-
<i>Surplus for cooperation mechanism⁶ (%)</i>	-

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)

	2021
(A) Gross final consumption of RES for heating and cooling	156.53
(B) Gross final consumption of electricity from RES	186.50
(C) Gross final consumption of energy from RES in transport	2.23
(D) Gross total RES consumption ⁷	345.26
(E) Transfer of RES <u>to</u> other Contracting Parties or Member States	-
(F) Transfer of RES <u>from</u> other Contracting Parties and 3rd countries	-
(G) RES consumption adjusted for target (D)-(E)+(F)	345.26

¹ Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)b and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.

² Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)a and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

³ Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

⁴ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁵ In percentage point of overall RES share.

⁶ In percentage point of overall RES share.

⁷ According to Art.5(1) of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

Table 1.b: Total actual contribution (realized capacity, total electricity production) from each renewable energy technology in Montenegro

	2021	
	MW	GWh
Hydro ⁸ :	699.38	1858.22
non pumped		
<1MW	15.07	
1MW–10 MW	35.314	
>10MW	649	
pumped	-	-
mixed ⁹	-	-
Geothermal	-	-
Solar:	2.57	2.50
photovoltaic	2.57	2.50
concentrated solar power	-	-
Tide, wave, ocean	-	-
Wind:	118.00	314.75
onshore	118.00	314.75
offshore	-	-
Biomass ¹⁰ :	-	-
solid biomass	-	-
biogas	-	-
bioliquids	-	-
TOTAL	819.95	2175.47
of which in CHP	-	-

Table 1c: Total real contribution (gross final energy consumption¹¹) from each renewable energy technology (in the Member State) (ktoe)

	2021
Geothermal (excluding low temperature geothermal heat in heat pump applications)	-
Solar	-
Biomass ¹² :	156.53
solid biomass	156.53
biogas	-
bioliquids	-
Renewable energy from heat pumps:	
- of which aerothermal	-
- of which geothermal	-
- of which hydrothermal	-
TOTAL	156.53
Of which DH ¹³	-
Of which biomass in households ¹⁴	-

⁸ Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

⁹ In accordance with new Eurostat methodology.

¹⁰ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

¹¹ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹² Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹³ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁴ From the total renewable heating and cooling consumption.

Table 1d: Total real contribution of each renewable energy technology (in Member State) to (ktoe)

	2021
Bioethanol/ bio-ETBE	-
<i>Of which Biofuels¹⁵ Article 21.2</i>	-
<i>Of which imported¹⁶</i>	-
Biodiesel	-
<i>Of which Biofuels¹⁷ Article 21.2</i>	-
<i>Of which imported¹⁸</i>	-
Hydrogen from renewables	-
Renewable electricity	2.23
<i>Of which road transport</i>	-
<i>Of which non-road transport</i>	2.23
Others (as biogas, vegetable oils, etc.) – please specify	-
<i>Of which Biofuels¹⁹ Article 21.2</i>	-
TOTAL	-

¹⁵ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

¹⁶ From the whole amount of bioethanol / bio-ETBE.

¹⁷ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

¹⁸ From the whole amount of biodiesel.

¹⁹ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

2. Measures undertaken at the national level to promote the use of energy from renewable sources, taking into account the framework guidelines for achieving the goals of renewable energy sources as indicated in the National Action Plan for the use of energy from renewable sources (Article 22(1)a) of Directive 2009/28/EC)

Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure	Expected result	Targeted group and or activity	Existing or planned	Start and end dates of the measure
1. Feed-in tariffs for electricity produced in power plants using renewable energy sources and power plants for high efficiency cogeneration (plants of privileged producers)	Financial	51.4 % of electricity from RES in gross final electricity consumption in 2020	Investors - Privileged producers	Existing	2010-
2. Priority in delivery of total electricity generated in power plants of privileged producers into the transmission or distribution system	Regulatory				
3. Exemption of charges for imbalances by the system operator for privileged producers	Regulatory				
4. Compulsory minimal share of electricity from renewable energy sources in the total electricity supply that shall be procured by each supplier of electricity	Regulatory		Suppliers of electricity and self-producers	Existing	2010-
5. Guarantees of origin	Regulatory	Evidencing the origin of energy generated from RES	RES and cogeneration producers	Existing	2010-

6. Policy and support schemes for promoting use of renewable energy sources in heating and cooling	Regulatory / Financial	Greater use of national RES potential for heating and cooling	Investors	Existing	2015-
7. Implementation of regular energy audits of heating systems and air conditioning systems			Ministry of Capital Investment, owners of buildings /heating and air conditioning system		
8. Obligation for new buildings in certain climate zones to cover a quota of their energy needs for domestic hot water with renewable sources (solar thermal systems)	Regulatory	Increased use of RES in buildings	Investors; HVAC designers	Existing	2013-
9. Progress in energy efficiency in the construction of public sector buildings: GIZ Open Regional Fund for Southeast Europe - Energy Efficiency (ORF-EE) - Establishment of a platform for integrated monitoring and verification of the implementation of national action plans for energy efficiency Development of sustainable energy use in Montenegro (DSEU) - development and implementation of the relevant regulatory framework in order to improve sustainable energy use with a focus on the transport sector			Ministry of Capital Investment; Ministry of Finance; state authorities		
10. Establishment and implementation of EE criteria in public procurement of goods and services, as well as in purchase and rental of buildings	Regulatory	Increase of energy efficacy	Ministry of Capital Investment, Ministry of Finance, authorities responsible for implementation of public procurement	Existing	2013

<p>11. Programmes of support for using RES in households and other sectors:</p> <p>Energy Efficiency in Montenegro (MEEP) - Implementation of energy efficiency measures in six health and nine educational facilities</p> <p>Improvement of energy efficiency in public buildings (PEEPB) - Improvement of energy efficiency and improvement of living and working conditions in selected educational institutions (preschools, primary and secondary schools and student dormitories)</p> <p>Energy efficient home 2020 - which provides for:</p> <ul style="list-style-type: none"> - purchase and installation of heating systems based on modern forms of biomass (pellets, briquettes); - purchase and installation of highly efficient heat pumps for heating the building, - purchase and installation of a multisplit system for heating/cooling the building, - installation of thermal insulation on the facade of the residential building, i - installation of energy-efficient facade joinery. 	Financial	Energy and economic savings; Increased use of RES in buildings; Creation of a market for utilization of solar/bio- mass energy	Investors – households; Eligible dealers and installers; Banks	Existing and planned	2011-
12. Program of subsidies in some municipalities for the installation of solar systems in new buildings by reducing utility costs (fees for utility lands)	Financial	Increased use of RES in buildings	Investors	Existing	2009-
13. Incentive program related to the use of solar energy in the tourism sector			Ministry of Capital Investment		2015-
14. Policy and support schemes for promoting use of renewable energy sources in transport (including obligations of placing biofuels on the market)	Regulatory Financial	10,2 % RES in transport in 2020	Ministry of Capital Investment, local self-government units	Planned	2015-
15. Infrastructural measures in the transport sector with the energy savings effects					
16. Study - Action Plan on energy efficiency in transport					

17. Establishment and implementation of EE criteria in public procurement of vehicles and transport services in the wider public sector					
18. Development and application of regulatory framework for energy efficient buildings	Regulatory Financial	A measure that ensures compliance of energy efficient buildings standards	Participants in the construction, owners of the building that are being reconstructed, owners of the buildings that are being sold	Existing	2013

2.a Please describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)e) of Directive 2009/28/EC).

Montenegro has adopted the Energy Policy, the Law on Energy, as well as the Energy Development Strategy of Montenegro until 2030, which is in force until the adoption of the National Energy and Climate Plan, which is currently being drafted.

The Ministry of Capital Investments (Directorate for Energy) was responsible for monitoring the achievement of the national goal, which was determined for Montenegro by the Decision of the Ministerial Council of the Energy Community, as a percentage of 33% of the share of energy from renewable sources in the total final energy consumption in 2020.

Based on the completed Report on the implementation of the National Action Plan for the use of energy from renewable sources until 2020, it was determined that the share of renewable energy sources in the total final energy consumption in Montenegro in 2020 was 43,76%, which confirmed the fulfillment of the national goal.

2.b Please describe the measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements. (Article 22(1)f) of Directive 2009/28/EC).

According to Article 107 of the Law on Energy, privileged producers have the right of priority when taking over the total produced electricity into the transmission or distribution system, unless the security of the system's operation is threatened. According to Article 112 of the aforementioned law, in the process of managing the transmission system, the transmission system operator gives priority when taking over electricity produced from renewable energy sources or high-efficiency cogeneration to the extent that this allows safe and reliable operation of the power system. Article 116 establishes the same for the distribution system operator.

In Article 175 of the Law on Energy, it is established that the operator of the transmission or distribution system of electricity or gas is obliged to issue consent for connection to the system and ensure priority in the connection of energy facilities for the production of energy from renewable sources, if there are no technical limitations in the transmission or distribution system and if the devices and installations of the facility being connected meet the conditions established by law and technical regulations.

Article 107 of the Law on Energy establishes that privileged producers have the right to incentive measures that are valid at the time of submission of the application for acquiring the temporary status of privileged producer, that is, if they have not acquired temporary status, to incentive measures that are valid at the time of submission of the application for acquiring the status of privileged producer of electricity Energy. If the operator of the transmission or distribution system, due to the safety of the system operation, cannot give priority to the privileged producer, he is obliged to inform the Regulatory Agency for Energy and Regulated Utilities and determine corrective measures to prevent further denial of access to the system.

The costs for connection to the network are determined depending on the type and scope of work to be performed in order to connect the object to the distribution system, in accordance with the following criteria: approved installed power, voltage level of the network to which the user is connected, distance from the existing network, number phase, number and type of measuring devices, type and section of lines, type of equipment, type of devices and materials that are installed in accordance with technical regulations, the need to obtain projects and other documentation required for the construction of the connection and other works. The connection costs include costs for equipment, devices and materials, costs for the execution of works, costs for mechanization and costs for the preparation of technical documentation.

As far as the connection to the transmission system is concerned, the construction of facilities necessary for user connection is based on the application of standard equipment and standard technical solutions and is the responsibility of the system user. The fee for connection to the transmission system should cover the following costs: costs for preparation of studies on connection to the transmission system, costs of revision of project documentation, costs of TSO supervision during the construction of facilities and costs of technical inspection by TSO. The method of calculating these costs is given individually in the methodology for determining prices, terms and conditions for connection to the transmission system.

According to Article 176 of the Law on Energy, the operator of the transmission or distribution system of electricity or gas is obliged to submit to the applicant a proposal for a contract on the construction of infrastructure for connection and connection within 15 days from the date of receipt of the formal request. The contract proposal shall be submitted no later than 90 days from the date of receipt of the orderly request for production facilities with a power of more than 50 kW and facilities of the end customer with a connection power of more than 150 kW. For the mentioned facilities, the competent operator makes an analysis of the possibility of connection to the system at the expense of the applicant.

Connection costs are paid by the system user to the operator of the transmission or distribution system. According to Article 184, in the case when the applicant builds the infrastructure for connection at his own expense, in accordance with the contract from Article 177, the system operator is obliged to provide an assessment of the value of the infrastructure thus built by hiring an independent appraiser, while the value of the built infrastructure at voltage level 0/4 kV is determined by the competent operator on the basis of the price list for purchasing the infrastructure.

Article 185 defines that the system operator purchases the built infrastructure from Article 184 on the basis of a purchase contract concluded within six months at the latest, from the date of obtaining the usage permit, or another act of the competent authority. The mentioned contract regulates the mutual rights and obligations of the operator and the investor and determines the amount of compensation for the purchase of infrastructure, which consists of the value determined in accordance with Article 184 of this law and interest, calculated for the repayment period, which is equal to the rate of return on borrowed capital, determined as three-year weighted average of interest rates contracted on active long-term credit liabilities of network operators in Montenegro, which is valid for the regulatory year in which the purchase agreement is concluded. The operator is obliged to offer the investor a payment.

3. Please describe the support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in the measures used with respect to those set out in your National Renewable Energy Action Plan (Article 22(1)b) of Directive 2009/28/EC).

During 2020, the Regulation on the tariff system for determining the incentive price of electricity from renewable energy sources and high-efficiency cogeneration, which was adopted in the second half of 2011, was in force, and was amended during 2014 and 2015 ("Official Gazette CG", No. 52/11, 28/14 and 79/15).

As a program to support electricity produced from renewable energy sources, Montenegro has chosen a system of guaranteed purchase of electricity at an incentive price from privileged producers, in accordance with the Law on Energy and adopted by-laws. Operators of facilities that produce electricity from renewable energy sources can obtain the status of "privileged producer", and accordingly acquire the right to incentive prices for the produced electricity under legal conditions (Decree on the method of acquiring the status and exercising the rights of a privileged producer of electricity ("Official list of the Republic of Montenegro, No. 59/16) and Article 3 of the Regulation on the tariff system for determining the incentive price of electricity from renewable energy sources and high-efficiency cogeneration. In addition to guaranteed prices, privileged producers have priority in the delivery of total electricity to the transmission or distribution system, and they are also exempt from paying for system balancing

services. The electricity market operator, who enters into contracts with privileged producers, is legally obliged to purchase electricity from them, for a maximum period of 12 years after concluding the formal contract (Article 105 of the Law on Energy). The exact amount it is determined by the Regulation on the Tariff System and mostly depends on the type of RES technology. The first such contract was concluded with the company "Hidroenergija Montenegro" d.o.o. Berane 1 May, 2014.

The status of the privileged producer is determined by the decision of the Regulatory Agency for Energy and Regular Utilities (RAE), after which the energy producer enters into an agreement with the market operator on the purchase of electricity from renewable energy sources at an incentive price. The contract also specifies details such as the expected annual production, the amount of the incentive price and the responsibilities in balancing the system. The market operator pays the incentive price for the produced electricity monthly to the favored producer on the basis of the concluded contract on the purchase of electricity. The privileged producer is obliged to provide the market operator with guarantees of origin for the entire produced electricity for which he received the incentive before payment. The operator of the transmission or distribution system is obliged to provide the market operator with data on the electricity produced in the plant for which the energy entity has acquired the right to an incentive price (Article 9 of the Tariff System Regulation).

Table 3: Support schemes for renewable energy for 2021 through feed-in tariffs

RES support schemes year, 2021		Average incentive price per incentive unit (c€/kWh) *	Total paid out (mil.€)**	Total amount of incentives (mil. €)**
Hydropower plants up to 10 MW ****				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	9.04	14.6	6.53
	Guaranteed premiums			
	Offers			
Solid biomass power plants from forestry and agriculture up to and including 1 MW				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	13.71	0	0
	Guaranteed premiums			
	Offers			
Solid biomass power plants from the wood processing industry				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	12.31	0	0
	Guaranteed premiums			
	Offers			
Landfill gas power plants and gas from wastewater treatment plants up to and including 1 MW				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	8.00	0	0
	Guaranteed premiums			
	Offers			

Biogas power plants up to and including 1 MW				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	15.00	0	0
	Guaranteed premiums			
	Offers			
Solar power plants				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	11.88	0.29	0.17
	Guaranteed premiums			
	Offers			
Wind farms				
Incentive price determined by a Regulation on the tariff system	Production incentives			
	Guaranteed tariffs	9.75	31.25	15.08
	Guaranteed premiums			
	Offers			
Total annual incentive in the electricity sector			46.29	21.77
Total annual incentive in the heat sector			0	0
Total annual incentive in the transport sector			0	0

* Average incentive price achieved in 2021. The incentive price is determined for each type of technology differently, and in accordance with the regulation adopted by the Government.

** Total funds paid to privileged electricity producers for delivered electricity at incentive prices.

*** The total amount of incentives paid to the privileged producers obtained as the difference between the total funds paid to the privileged producers for the delivered energy at the incentive prices and the funds paid by the supplier and/or the self-supplier customer to the market operator for the energy produced by the privileged producers.

**** Incentives for the production of electricity from hydroelectric power plants are, in accordance with the legal solution, limited to an installed power of up to 10 MW.

3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3 (6) of Directive 2003/54/EC. (Article 22(1)b) of Directive 2009/28/EC).

The Energy Law stipulates that encouraging the use of renewable energy sources and highly efficient cogeneration is based on incentive measures. Renewable energy production is encouraged for certain producers ("privileged producers"), according to Article 23 of the Energy Law.

Every producer who receives the status of a privileged producer has a guaranteed purchase of produced energy at a fixed price for the entire period of that status (12 years, Article 105). The status of a privileged producer may be acquired in accordance with Article 104 of the Energy Act and in accordance with the Regulation on the manner of acquiring the status and exercising the rights of a privileged producer of electricity. All eligible producers have the right to the purchase price for energy according to the Regulation on the tariff system, i.e. the Regulation on the manner of realization and amount of incentive prices for electricity, priority in delivery of produced energy to the transmission or distribution system, as well as exemption from balancing costs.

Tariffs and / or incentive prices depend on the type of facilities, their capacities, annual production and other factors. The tariff system determines incentive prices for electricity produced from plants using renewable energy sources and cogeneration plants on the basis of justified construction or reconstruction costs, labor and maintenance costs and return on investment. The support program is financed from the fee charged for each kWh of electricity purchased by end customers, as well as on the basis of funds allocated from the state budget. The transfer of funds from consumers to eligible producers is done on a monthly basis through market operators. The market operator enters into a contract with eligible producers for the purchase of electricity at an incentive price. Also, the market operator concludes agreements with electricity suppliers and self-supply customers on taking over the obligatory share of electricity produced in the facilities of eligible producers in the proportion of the electricity they supply to their customers in the total amount of electricity delivered to end customers in Montenegro. Transmission and distribution system operators are obliged to submit data on the delivered electricity from the eligible producer and the energy taken over by each electricity supplier. The method of collecting funds for incentives and their distribution is regulated by the Decree on the fee for incentives for the production of electricity from renewable sources and highly efficient cogeneration ("Official Gazette of Montenegro", No. 29/19). This decree stipulates that electricity buyers and household customers are exempted from paying the fee for stimulating the production of eligible producers for the first 300 kWh of electricity consumed on a monthly basis, while the missing incentive funds will be provided from the Budget of Montenegro.

4. Please provide information on how, where applicable, the support schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material? (Article 22 (1)c of Directive 2009/28/EC)).

There are currently no such measures.

5. Please provide information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system. (Article 22(1)d of Directive 2009/28/EC)).

The system of guarantees of origin is regulated by the Law on Energy and the Decree on the manner of issuing, transmitting and withdrawing guarantees of origin of electricity produced from renewable energy sources and highly efficient cogeneration. By adopting amendments to the Energy Law ("Official Gazette of Montenegro", No. 82/2020), the obligation to issue a guarantee of origin was transferred from the Energy Regulatory Agency to the market operator, which is why a new Regulation on the manner of issuing, transferring and withdrawing guarantees of origin of electricity produced from renewable energy sources and highly efficient cogeneration ("Official Gazette of Montenegro", No. 110/20).

The guarantee of origin may not be issued to an energy entity that produces thermal energy for district heating and / or cooling in a plant with an installed capacity of less than 1 MW.

The guarantee of origin is issued by the energy market operator at the request of the electricity producer, for energy produced in an energy facility using renewable energy sources or highly efficient cogeneration, after reviewing the technical documentation and direct insight into the operation of the facility.

The transmission or distribution system operator to which the facility for which the guarantee of origin is issued is connected, is obliged to submit to the market operator data on the amount of electricity produced, measured at the place of delivery to the transmission or distribution system.

The guarantee of origin is issued only once for 1 MWh of electricity produced. The period of production of electricity for which a guarantee of origin is issued may not exceed 12 months.

The guarantee of origin may be transmitted independently of the electricity produced to which it relates, provided that, in order to ensure that that energy is presented to the customer only once, multiple counting and display of electricity produced from renewable sources is not permitted.

The guarantee of origin of electricity produced from renewable energy sources shall contain in particular:

- 1) data on the energy source from which the energy was produced and the dates of the beginning and end of the production period for which the guarantee of origin is issued;
- 2) name, location, type and installed power of the energy facility in which energy is produced;
- 3) the scope of investment support for the energy facility, the scope of incentives for energy produced from that facility and data on the manner of incentives;
- 4) date of commissioning of the energy facility;
- 5) date of issue and period of validity, as well as the unique identification number of the guarantee of origin and the name of the country in which it was issued.

The guarantee of origin of electricity produced from highly efficient cogeneration shall contain in particular:

- 1) name, location, type and installed power of the energy facility in which energy is produced;
- 2) the scope of investment support for the energy facility, the scope of incentives for the energy produced from that facility and data on the manner of incentives;
- 3) date of commissioning of the energy facility;
- 4) date of issue and period of validity, as well as the unique identification number of the guarantee of origin and the name of the country in which it was issued;
- 5) the lower thermal power of the fuel used for the production of electricity for which a guarantee of origin is issued;
- 6) the purpose for which the thermal energy produced in the high-efficiency cogeneration facility in which the electricity for which the guarantee of origin is issued is used;
- 7) saving of primary energy in the process of electricity production for which a guarantee of origin is issued;
- 8) data on the amount of produced electricity that is produced in accordance with the criteria and rules of high efficiency;
- 9) the amount of thermal energy produced together with electricity.

The Decree on the manner of issuing, transferring and withdrawing guarantees of origin of energy produced from renewable energy sources and highly efficient cogeneration regulates the manner of issuing, transferring and withdrawing guarantees of origin, content and manner of submitting data on delivered electricity by transmission or distribution system operators. the content of the guarantee of origin of electricity produced from renewable energy sources or from highly efficient cogeneration, the content of the application for the issuance of a guarantee of origin, as well as the documentation submitted with the application.

The guarantee of origin is issued in electronic form at the request of the manufacturer.

6. Please describe the developments in the preceding year in the availability and use of biomass resources for energy purposes. (Article 22(1g) of Directive 2009/28/EC).

Table 4 shows the available data.

Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)	Primary energy in domestic raw material (ktoe)	Amount of imported raw material from EU (*)	Primary energy in amount of imported raw material from EU (ktoe)	Amount of imported raw material from non EU(*)	Primary energy in amount of imported raw material from non EU (ktoe)
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	2021	2021	2021	2021	2021	2021
Biomass supply for heating and electricity:						
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	636,957m3	146.08	1,979t	0.85	-	-
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	41,905m3	9.56	0m3	0	-	-
Energy crops (grasses, etc.) and short rotation trees (please specify)	-	-	-	-	-	-
Agricultural by-products / processed residues and fishery by-products **	-	-	-	-	-	-
Biomass from waste (municipal, industrial etc.) **	-	-	-	-	-	-
Others (please specify)	-	-	-	-	-	-
Biomass supply for transport:						
Common arable crops for biofuels (please specify main types)	-	-	-	-	-	-
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)	-	-	-	-	-	-
Others (please specify)	-	-	-	-	-	-

* Amount of raw material in m³ for biomass from forests and in tons of biomass for biomass from agriculture and fishery products

** The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

Table 4a. Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (ha)
	2021
1. Land used for common arable crops (wheat, sugar beet etc.) and oil seeds (rapeseed, sunflower etc.) (Please specify main types)	-
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	-
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	-

There is no data about the plants growing for energy production.

7. Please provide information on any changes in commodity prices and land use within your Contracting Party in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in your country. (Article 22(1) h) of Directive 2009/28/EC).

There is almost no influence on prices because of bigger use of biomass or other types of RES.

8. Please describe the development and share of biofuels made from wastes, residues, non-food cellulosic material, and lingo cellulosic material. (Article 22(1) i) of Directive 2009/28/EC).

Table 5: Production and consumption of Art.21(2) biofuels (Ktoe)

Article 21(2) biofuels ²⁰	2021
Production – Fuel type X (Please specify)	-
Consumption – Fuel type X (Please specify)	-
Total production Art.21.2.biofuels	-
Total consumption Art.21.2. biofuels	-
% share of 21.2. fuels from total RES-T	-

There was no using biofuels made from waste, residues, non-food cellulosic material and lingo cellulosic material in 2021.

9. Please provide information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within your country in the preceding 2 years. Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within your country. (Article 22 (1) j) of Directive 2009/28/EC).

There is no plan for production of biofuels.

²⁰ Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

10. Please estimate the net greenhouse gas emission savings due to the use of energy from renewable sources (Article 22 (1) k) of Directive 2009/28/EC).

The contribution to the reduction of greenhouse gas emissions is determined according to the projections of electricity production from renewable energy sources, the use of renewable energy sources in transport and the use of renewable energy sources for heating and cooling by 2020.

In order to determine the contribution of renewable energy sources in reducing greenhouse gas emissions, an assessment of the so-called. avoided CO₂ emissions due to the use of renewable energy sources instead of fossil fuels. Avoided emissions are determined by replacing the amounts of electricity produced from renewable energy sources, and renewable energy for heating and cooling and transport, as stated in the National Action Plan, with fossil fuels and their CO₂ emissions.

In the production of electricity from renewable energy sources, a comparison was made with fossil fuel power plants, and the emission estimate took into account CO₂ emissions from TPP Pljevlja 1. Reduced CO₂ emissions from the heating and cooling sector assume the use of fuel oil instead of renewable energy sources.

Table 6: Estimated GHG emission savings from the use of renewable energy (t CO₂eq)

Environmental aspects	2021
Total estimated net GHG emission saving from using renewable energy²¹	1,270,389
- Estimated net GHG saving from the use of renewable electricity	443,080
- Estimated net GHG saving from the use of renewable energy in heating and cooling	827,309
- Estimated net GHG saving from the use of renewable energy in transport	-

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Contracting Parties, Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22 (1) l, m) of Directive 2009/28/EC).

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Contracting Parties, Member States and/or third countries in Montenegro (ktoe)^{22, 23}

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	-	-	-	-	-	-	-	-	-	-

There is no planned transfer to/from other Contracting Parties, Member States and/or third countries.

²¹ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

²² Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report Contracting Party may correct the data of the previous reports.

²³ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).

11.1. Please provide details of statistical transfers, joint projects and joint support scheme decision rules

There is no planned use of statistical transfers or participation in joint projects and joint support scheme decision rules.

12. Please provide information on how the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates. (*Article 22(1)(n) of Directive 2009/28/EC*).

Biodegradable fraction of municipal solid waste including biowaste and landfill gas - the estimation of the theoretical potential of municipal solid waste (MSW) in the CRES report is 710 TJ for whole Montenegro.

Biodegradable fraction of industrial waste - the usage of sewage methane for energy purposes should also be considered, at least for the bigger cities where the sewage water is treated in a wastewater treatment plant.

**Montenegro Progress Reports under
Renewable Energy Directive 2009/28/EC as adapted by the
Ministerial Council Decision 2012/04/MC-EnC
period 2020**

INTRODUCTION

Pursuant to Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance) (hereinafter: the Directive), the Republic of Montenegro assumed the obligation to increase the use of renewables to reach at least a 33% share of energy from renewable sources in gross final consumption at the EU level by 2020. That goal was determined by applying the Directive methodology with the base year being 2009.

Article 22 of the Directive requires Member States to submit a report to the Commission on progress in the promotion and use of energy from renewable sources by 31 December 2011, and every two years thereafter. The last report, which should be submitted by 31 December 2021, is a report for 2020.

Member State reports are important for monitoring overall renewable energy policy developments and Member State compliance with the measures set out in the Directive and the National Renewable Energy Action Plan of each Member State. The data included in these reports will also serve to measure the impacts referred to in Article 23 of the Directive.

The report by the Republic of Montenegro on progress in the promotion and use of energy from renewable sources, pursuant to Article 22 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources, was prepared according to the template for Member State progress reports under Directive 2009/28/EC, which is available on the website of the European Commission's Directorate General for Energy.

The purpose of the template is to help ensure that the reports prepared by Member States are complete, cover all the requirements laid down in Article 22 of the Directive and are comparable with other reports and National Renewable Energy Action Plans. Much of the template draws on the template for the National Renewable Energy Action Plans.

The Report on the implementation of the National Action Plan for the Use of Energy from Renewable Sources until 2020 for the 2020 has been filled out in accordance with the provisions of the Rulebook on calculating the share of energy from renewable sources in total final energy consumption, energy content and calculation of total energy consumption used in traffic, method of calculating the amount of electricity produced in hydro and wind power plants and method of calculating the amount of energy from heat pumps ("Official Gazette of Montenegro" number: 34/17, 42/21 and 82/20) which has been drawn up in accordance with the calculation rules set out in Directive 2009/28 / EC and Regulation (EC) No 882/2004. 1099/2008 of the European Parliament and of the Council.

In line with the obligations Montenegro has as a member of Energy Community, the Directive 2009/28/EC has been implemented into the Energy Law ("Official Gazette of Montenegro" number 5/16 and 51/17), in the part concerning electricity and energy used for heating and/or cooling. According to the article 19 in the Energy Law, implementation of the Action Plan should be followed by the Ministry of Energy and a progress report should be submitted to the Montenegro Government and Energy Community. Progress Report must have an analysis of reaching the national goal of individual shares (electricity, heating and cooling, transport), as well as total share of renewable energy sources in the final energy consumption in the period under observation.

In the meantime, amendments to the Law on Energy ("Official Gazette of Montenegro" No. 82/20) were adopted, which stipulates that the realization of the obligatory share of energy from renewable sources in the total final energy consumption is in the public interest, in accordance with the obligations under the ratified international agreement. The amendment to the law stipulates as a novelty that the sources and scope of energy use from renewable sources will be determined by the National Energy and Climate Plan (NECP) instead of the current National Action Plan for the Use of Energy from Renewable Sources. Until the adoption of the NECP in accordance with the amendments to the law, Article 236, stipulates that the National Action Plan for the Use of Energy from Renewable Sources until 2020, adopted on

the basis of the Law on Energy ("Official Gazette of Montenegro" No. 28/10, 6) / 13 and 10/15). In addition, Article 236b stipulates that Reporting on the implementation of the National Action Plan for the Use of Energy from Renewable Energy Sources until 2020 will continue in accordance with the provisions of the Law on Energy ("Official Gazette of Montenegro", No. 5/16 and 51/17).

Activities on the development of the first NECP started in 2019 were intensified in 2020 and 2021. Support for the development of this document was provided within the project Development of Climate Policy Capacities in the countries of Southeast and Eastern Europe, South Caucasus and Central Asia - Phase III, for the implementation of which GIZ is responsible. The project is implemented in close cooperation with the Secretariat of the Energy Community in order to meet the prescribed obligations. A draft of the first three chapters of the NEKP has been prepared, a modelling framework has been established, scenarios to be considered have been defined and a model of policies and measures has been prepared.

Regarding the existing legislative framework, Montenegro is currently obliged to prepare one report on the implementation of the National Action Plan for the Use of Energy from Renewable Sources until 2020, for the 2020. In this regard, the Ministry of Capital Investments, through the public procurement procedure in order to prepare the subject reports, engaged the Faculty of Mechanical Engineering, University of Montenegro. For the purposes of preparing this report, MONSTAT data were used. Report on the implementation of the National Action Plan for the Use of Energy from Renewable Sources until 2020 for the 2020., the same batch analysis of data was made, which ultimately reflects the degree of achievement of the national goal.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding year (2020) (Article 22 (1) a of Directive 2009/28/EC).

Sectoral goals and indicative pathways

The Directive 2009/28/EC defines goals for shares of renewable energy sources in year 2020 in the following sectors: electricity, heating and cooling and transport.

Three sectoral goals were calculated for year 2020 from the base scenario:

- Electricity: 51.4%
- Heating and cooling: 38.2%
- Transport: 10.2%

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources¹

	2020
RES-H&C ² ³ (%)	60.23
RES-E ⁴ (%)	62.38
RES-T ⁵ (%)	1.19
Overall RES share ⁶ (%)	43.76
<i>Of which from cooperation mechanism⁷ (%)</i>	-
<i>Surplus for cooperation mechanism⁸ (%)</i>	-

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)⁹

	2020
(A) Gross final consumption of RES for heating and cooling	147.80
(B) Gross final consumption of electricity from RES	185.18
(C) Gross final consumption of energy from RES in transport	2.54
(D) Gross total RES consumption ¹⁰	335.52
(E) Transfer of RES <u>to</u> other Contracting Parties or Member States	-
(F) Transfer of RES <u>from</u> other Contracting Parties and 3rd countries	-
(G) RES consumption adjusted for target (D)-(E)+(F)	335.52

¹ Facilitates comparison with Table 3 and Table 4a of the NREAPs.

² Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.

³ When calculating the share of renewable energy sources in heating and cooling, the data for firewood from Statistical Office of Montenegro as well as data about the harvested trees was used. The moisture content is 20%, in line with the Manual for wood biomass fuel.

⁴ Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)a) and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

⁵ Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c) and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

⁶ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁷ In percentage point of overall RES share.

⁸ In percentage point of overall RES share.

⁹ Facilitates comparison with Table 4a of the NREAPs

¹⁰ According to Art.5(1)of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

Table 1.b: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Montenegro to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹¹

	2020	
	MW	GWh
Hydro ¹² :	696.69	1846.78
non pumped		
<1MW	12.376	
1MW–10 MW	35.314	
>10MW	649	
pumped	-	-
mixed ¹³	-	-
Geothermal	-	-
Solar:	2.3	2.29
photovoltaic	2.3	2.29
concentrated solar power	-	-
Tide, wave, ocean	-	-
Wind:	118.00	312.28
onshore	118.00	312.28
offshore	-	-
Biomass ¹⁴ :	-	-
solid biomass	-	-
biogas	-	-
bioliquids	-	-
TOTAL	816.99	2161.35
of which in CHP	-	-

Table 1c: Total actual contribution (final energy consumption¹⁵) from each renewable energy technology in Montenegro to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)¹⁶

	2020
Geothermal (excluding low temperature geothermal heat in heat pump applications)	-
Solar	-
Biomass ¹⁷ :	147.8
solid biomass	147.8
biogas	-
bioliquids	-
Renewable energy from heat pumps:	
- of which aerothermal	-
- of which geothermal	-
- of which hydrothermal	-
TOTAL	-
Of which DH ¹⁸	-
Of which biomass in households ¹⁹	-
	147.8

¹¹ Facilitates comparison with Table 10a of the NREAPs.

¹² Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

¹³ In accordance with new Eurostat methodology.

¹⁴ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

¹⁵ Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

¹⁶ Facilitates comparison with Table 11 of the NREAPs.

¹⁷ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹⁸ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁹ From the total renewable heating and cooling consumption.

Table 1d: Total actual contribution from each renewable energy technology in Montenegro to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)^{20, 21}

	2020
Bioethanol/ bio-ETBE	-
<i>Of which Biofuels²² Article 21.2</i>	-
<i>Of which imported²³</i>	-
Biodiesel	-
<i>Of which Biofuels²⁴ Article 21.2</i>	-
<i>Of which imported²⁵</i>	-
Hydrogen from renewables	-
Renewable electricity	2.54
<i>Of which road transport</i>	-
<i>Of which non-road transport</i>	2.54
Others (as biogas, vegetable oils, etc.) – please specify	-
<i>Of which Biofuels²⁶ Article 21.2</i>	-
TOTAL	2.54

²⁰ For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

²¹ Facilitates comparison with Table 12 of the NREAPs.

²² Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²³ From the whole amount of bioethanol / bio-ETBE.

²⁴ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁵ From the whole amount of biodiesel.

²⁶ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

2. Measures taken in the preceding 2 years and/or planned at national level to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in your National Renewable Energy Action Plan. (Article 22(1)a) of Directive 2009/28/EC)

Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned* ***	Start and end dates of the measure
1. Feed-in tariffs for electricity produced in power plants using renewable energy sources and power plants for high efficiency cogeneration (plants of privileged producers)	Financial	51.4 % of electricity from RES in gross final electricity consumption in 2020	Investors - Privileged producers	Existing	2010-
2. Priority in delivery of total electricity generated in power plants of privileged producers into the transmission or distribution system	Regulatory				
3. Exemption of charges for imbalances by the system operator for privileged producers	Regulatory				
4. Compulsory minimal share of electricity from renewable energy sources in the total electricity supply that shall be procured by each supplier of electricity	Regulatory		Suppliers of electricity and self-producers	Existing	2010-
5. Guarantees of origin	Regulatory	Evidencing the origin of energy generated from RES	RES and cogeneration producers	Existing	2010-

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned* ***	Start and end dates of the measure
6. Policy and support schemes for promoting use of renewable energy sources in heating and cooling	Regulatory / Financial	Greater use of national RES potential for heating and cooling	Investors	Existing	2015-
7. Implementation of regular energy audits of heating systems and air conditioning systems			Ministry of Economy, owners of buildings /heating and air conditioning system		
8. Obligation for new buildings in certain climate zones to cover a quota of their energy needs for domestic hot water with renewable sources (solar thermal systems)	Regulatory	Increased use of RES in buildings	Investors; HVAC designers	Existing	2013-
9. Improvement of energy performance of buildings in the public sector: Montenegro Energy Efficiency Project (MEEP) - Implementation of energy efficiency measures in six healthcare buildings and nine educational buildings Energy Efficiency Programme in Public Buildings (EPPB) - Improvement of the energy efficiency, comfort and working conditions in the selected educational buildings (kindergartens, primary and secondary schools and student dormitories)			Ministry of Economy; Ministry of Finance; state authorities		
10. Establishment and implementation of EE criteria in public procurement of goods and services, as well as in purchase and rental of buildings	Regulatory	Increase of energy efficacy	Ministry of Economy, Ministry of Finance, authorities responsible for	Existing	2013

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned* ***	Start and end dates of the measure
			implementation of public procurement		
<p>11. Programmes of support for using RES in households and other sectors:</p> <p>MONTESOL - Interest-free credit line for installation of solar-thermal systems for households</p> <p>SOLARNI KATUNI - Project related to installation of photovoltaic solar systems in summer pasture lands</p> <p>ENERGY WOOD II - Interest-free credit line for installation of heating systems on modern biomass fuels (pellets, briquettes) for households</p> <p>ENERGY EFFICIENT HOME – credit line without interest for the installation of heating systems run on modern forms of biomass (pellets, briquettes), efficient façade woodwork and façade thermal insulation.</p>	Financial	Energy and economic savings; Increased use of RES in buildings; Creation of a market for utilization of solar/bio- mass energy	Investors – households; Eligible dealers and installers; Banks	Existing and planned	2011-
12. Program of subsidies in some municipalities for the installation of solar systems in new buildings by reducing utility costs (fees for utility lands)			Investors		2009-
13. Incentive program related to the use of solar energy in the tourism sector	Financial	Increased use of RES in buildings	Ministry of Economy, Ministry of Sustainable Development and Tourism	Existing	2015-

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned* ***	Start and end dates of the measure
14. Policy and support schemes for promoting use of renewable energy sources in transport (including obligations of placing biofuels on the market)	Regulatory Financial	10,2 % RES in transport in 2020	Ministry of Economy, Ministry of Sustainable Development and Tourism, local self-government units	Planned	2015-
15. Infrastructural measures in the transport sector with the energy savings effects					
16. Study - Action Plan on energy efficiency in transport					
17. Establishment and implementation of EE criteria in public procurement of vehicles and transport services in the wider public sector					
18. Development and application of regulatory framework for energy efficient buildings	Regulatory Financial	A measure that ensures compliance of energy efficient buildings standards	Participants in the construction, owners of the building that are being reconstructed, owners of the buildings that are being sold	Existing	2013

* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).

**Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?

***Who are the targeted persons: investors, end users, public administration, planners, architects, installers, etc? or what is the targeted activity / sector: biofuel production, energetic use of animal manure, etc)?

**** Does this measure replace or complement measures contained in Table 5 of the NREAP?

2.a Please describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)e) of Directive 2009/28/EC).

Montenegro has adopted the most important documents (Energy Policy, Energy Development Strategy of Montenegro until 2030, the Law on Energy, the Law on Strategic Environmental Assessment and the National Action Plan for the Use of Energy from Renewable Sources until 2020), and the last adopted the document is an Action Plan for the implementation of the Energy Development Strategy until 2030. The Action Plan (AP) is complementary to the Strategy as both documents have the same goal: to concretize the vision of energy development and to identify the ways in which that vision will be realized. These are the most important documents for the development of renewable sources in Montenegro.

Competent Ministry for energy (Directorate for Energy and Energy Efficiency) is responsible for monitoring the implementation of the National Action Plan. Article 19 of the Law on Energy ("Official Gazette of Montenegro", No. 5/16 and 51/17) provides a detailed overview of the process of monitoring the implementation of the action plan, which includes a thorough and continuous assessment of all procedures and data related to production and distribution of energy from renewable sources.

During 2020, amendments to the Law on Energy ("Official Gazette of Montenegro" No. 82/20) were adopted, which stipulates that the realization of the mandatory share of energy from renewable sources in the total final energy consumption is of public interest, in accordance with the commitments international agreement. The amendment to the law stipulates as a novelty that the sources and scope of energy use from renewable sources will be determined by the National Energy and Climate Plan (NECP) instead of the current National Action Plan for the Use of Energy from Renewable Sources.

Until the adoption of the NECP in accordance with the amendments to the law, Article 236, stipulates that the National Action Plan for the Use of Energy from Renewable Sources until 2020, adopted on the basis of the Law on Energy ("Official Gazette of Montenegro" No. 28/10, 6) / 13 and 10/15). In addition, Article 236b stipulates that Reporting on the implementation of the National Action Plan for the Use of Energy from Renewable Energy Sources until 2020 will continue in accordance with the provisions of the Law on Energy ("Official Gazette of Montenegro", No. 5/16 and 51/17).

Activities on the development of the first NEKP started in 2019 were intensified in 2020 and 2021. Support for the development of this document was provided within the project Development of Climate Policy Capacities in the countries of Southeast and Eastern Europe, South Caucasus and Central Asia - Phase III, for the implementation of which GIZ is responsible. The project is implemented in close cooperation with the Secretariat of the Energy Community in order to meet the prescribed obligations. A draft of the first three chapters of the NEKP has been prepared, a modeling framework has been established, scenarios to be considered have been defined and a model of policies and measures has been prepared.

2.b Please describe the measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements. (Article 22(1)f) of Directive 2009/28/EC).

According to Article 107 of the Law on Energy ("Official Gazette of Montenegro", No. 5/16, 51/17 and 82/20), eligible producers have the right of priority in taking over the total produced electricity into the transmission or distribution system, unless the security is endangered system operation. According to Article 112 of the said Law, in the process of transmission system management, the transmission system operator gives priority to taking over electricity produced from renewable energy sources or highly efficient cogeneration to the extent that it allows safe and reliable operation of the electricity system. Article 116 stipulates the same for the distribution system operator.

Article 175 of the Energy Law stipulates that the operator of the transmission or distribution system of electricity or gas is obliged to issue a consent for connection to the system and provide priority in connecting energy facilities for production of energy from renewable sources, if there are no technical restrictions in transmission or distribution system and if the devices and installations of the connected facility meet the conditions determined by law and technical regulations.

Article 107 of the Energy Law stipulates that eligible producers are entitled to incentive measures that are valid at the time of applying for temporary status of eligible producer, or if it has not acquired temporary status, to incentive measures that are valid at the time of applying for eligible status of eligible producer of electricity. Energy. If the transmission or distribution system operator, due to the security of the system, cannot give preference to the privileged producer, it is obliged to inform the Energy Regulatory Agency and determine corrective measures to prevent further denial of access to the system.

In accordance with the Law on Energy, the costs of connection to the transmission system or distribution system are paid by the system user. According to the connection procedure defined in the Rules for the functioning of the distribution system, the investor bears the costs of issuing conditions for connection, decisions on giving consent to that connection, connection costs, costs of construction of lines and devices to the connection point, costs of necessary interventions in the distribution network. and the delivery of electricity produced in power plants.

According to the methodology for determining prices, deadlines and conditions for connection to the distribution system, the connection of production facilities to the distribution system is classified as a "non-standard connection". The calculation of costs for a "non-standard connection" is done within the economic study, which must be prepared separately for each connection.

Connection costs are determined depending on the type and scope of work to be performed in order to connect the facility to the distribution system, in accordance with the following criteria: approved installed power, voltage level of the network to which the user connects, distance from existing network, number of phases, number and type of measuring devices, type and cross-section of lines, type of equipment, type of devices and materials that are installed in accordance with technical regulations, the need to obtain projects and other documentation required for the construction of the connection and other works. Connection costs include costs for equipment, devices and materials, costs of works, mechanization costs and costs for the preparation of technical documentation.

With regard to the connection to the transmission system, the construction of facilities necessary for the connection of users is based on the fact that the applicant is obliged to pay a fee for the connection power. The amount of the fee is determined by the competent system operator in accordance with the methodology approved by the Energy Regulatory Agency.

The connection of the facility to the transmission or distribution system of electricity is done on the basis of contracts for the construction of connection infrastructure concluded by the applicant for connection and the competent system operator. In accordance with Article 176 of the Energy Law, the system operator is obliged to submit to the applicant a contract for the construction of connection infrastructure. In case the applicant builds the infrastructure at his own expense, the system operator is obliged to provide an assessment in accordance with Article 184 of the Energy Law. Article 185 of the Law stipulates that the system operator purchases infrastructure if it is used for transmission, i.e. distribution of electricity and if, in addition to the owner, it is used by other legal or natural persons, i.e. new users based on the contract referred to in Article 175 of this Law. the functioning of the System was disrupted.

3. Please describe the support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in

the measures used with respect to those set out in your National Renewable Energy Action Plan. (Article 22(1)b) of Directive 2009/28/EC).

The Decree on the Tariff System for Determining the Incentive Price of Electricity from Renewable Energy Sources and High-Efficiency Cogeneration ("Official Gazette of Montenegro", No. 52/11, 28/14 and 79/15) was in force until the end of January 2019, the mentioned Decree ceased to be valid with the adoption of the Decree on the manner of realization and amount of incentive prices for electricity produced from renewable sources and highly efficient cogeneration, adopted by the Government of Montenegro in December 2018, and amended in July 2019 (" Official Gazette of Montenegro ", No. 3/19 and 40/19).

As a program to support electricity produced from renewable energy sources, Montenegro has chosen a system of guaranteed purchase of electricity at an incentive price from eligible producers, in accordance with the Law on Energy and adopted bylaws. Operators of plants that produce electricity from renewable energy sources can obtain the status of "privileged producer", and accordingly acquire the right to incentive prices for produced electricity under legal conditions (Decree on the manner of acquiring the status and exercising the right of privileged producer of electricity). No. 59/16 and 89/20), Article 3 of the Regulation on the Tariff System for Determining the Incentive Price of Electricity from Renewable Energy Sources and High-Efficiency Cogeneration, starting from 23 January 2019 in accordance with Article 3 and 4 Regulations on the manner of realization and amount of incentive prices for electricity produced from renewable sources and highly efficient cogeneration. In addition to guaranteed prices, eligible producers have priority in the delivery of total electricity to the transmission or distribution system, and are exempt from paying balancing services. Electricity market operator, which enters into contracts with a privileged producers, it is legally obliged to buy electricity from them, for a period of 12 years (Article 105 paragraph 3 of the Energy Law) after concluding a formal contract. The exact amount is determined by the Regulation on the tariff system, i.e. the Regulation on the manner of realization and the amount of incentive prices, and it mostly depends on the type of RES technology. The first such contract was concluded with the company "Hidroenergija Montenegro" d.o.o. Berane, 1 May 2014 for a small hydroelectric power plant "Jezerstica".

The status of a privileged producer is determined by a decision of the Energy Regulatory Agency, after which the energy producer concludes a contract with the market operator on the purchase of electricity from renewable energy sources at an incentive price. The contract also specifies details such as projected annual production, the amount of the incentive price and responsibilities in balancing the system.

The market operator pays the incentive price for the produced electricity to the privileged producer on a monthly basis on the basis of the concluded contract on the purchase of electricity. The eligible producer is obliged to submit guarantees of origin to the market operator before payment for the entire produced electricity for which he has obtained the incentive. The transmission or distribution system operator is obliged to submit to the market operator data on the produced electricity in the plant for which the energy entity has acquired the right to an incentive price).

Table 3: Support schemes for renewable energy for 2020 through feed-in tariffs

RES support schemes year, 2020		Per unit support (c€/kWh)	Total (M€)*
Small hydropower plants up to 10 MW			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	4.5
		Guaranteed premiums	
		Offers	
Wind farms			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	5.0
		Guaranteed premiums	
		Offers	
Solar power plants on roof structures up to 1 MW			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	7.2
		Guaranteed premiums	
		Offers	
Solid biomass power plants from forestry and agriculture up to and including 1 MW			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	9.749
		Guaranteed premiums	
		Offers	
Solid biomass power plants from the wood processing industry			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	8.394
		Guaranteed premiums	
		Offers	
Landfill gas power plants and gas from wastewater treatment plants up to and including 1 MW			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	4.084
		Guaranteed premiums	
		Offers	
Biogas power plants up to and including 1 MW			
Incentive price determined by a regulation of the Government	Production incentives		
		Guaranteed tariffs	11.084

	Guaranteed premiums	
	Offers	
Total annual incentive in the electricity sector	-	19.431
Total annual incentive in the heat sector	-	-
Total annual incentive in the transport sector	-	-

*Total incentive paid to eligible producers

*Total incentive paid to eligible producers

3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3 (6) of Directive 2003/54/EC. (Article 22(1)b) of Directive 2009/28/EC).

The Energy Law stipulates that encouraging the use of renewable energy sources and highly efficient cogeneration is based on incentive measures. Renewable energy production is encouraged for certain producers ("privileged producers"), according to Article 23 of the Energy Law.

Every producer who receives the status of a privileged producer has a guaranteed purchase of produced energy at a fixed price for the entire period of that status (12 years, Article 105). The status of a privileged producer may be acquired in accordance with Article 104 of the Energy Act and in accordance with the Regulation on the manner of acquiring the status and exercising the rights of a privileged producer of electricity. All eligible producers have the right to the purchase price for energy according to the Regulation on the tariff system, i.e. the Regulation on the manner of realization and amount of incentive prices for electricity, priority in delivery of produced energy to the transmission or distribution system, as well as exemption from balancing costs.

Tariffs and / or incentive prices depend on the type of facilities, their capacities, annual production and other factors. The tariff system determines incentive prices for electricity produced from plants using renewable energy sources and cogeneration plants on the basis of justified construction or reconstruction costs, labor and maintenance costs and return on investment. The support program is financed from the fee charged for each kWh of electricity purchased by end customers, as well as on the basis of funds allocated from the state budget. The transfer of funds from consumers to eligible producers is done on a monthly basis through market operators. The market operator enters into a contract with eligible producers for the purchase of electricity at an incentive price. Also, the market operator concludes agreements with electricity suppliers and self-supply customers on taking over the obligatory share of electricity produced in the facilities of eligible producers in the proportion of the electricity they supply to their customers in the total amount of electricity delivered to end customers in Montenegro. Transmission and distribution system operators are obliged to submit data on the delivered electricity from the eligible producer and the energy taken over by each electricity supplier. The method of collecting funds for incentives and their distribution is regulated by the Decree on the fee for incentives for the production of electricity from renewable sources and highly efficient cogeneration ("Official Gazette of Montenegro", No. 29/19). This decree stipulates that electricity buyers and household customers are exempted from paying the fee for stimulating the production of eligible producers for the first 300 kWh of electricity consumed on a monthly basis, while the missing incentive funds will be provided from the Budget of Montenegro.

4. Please provide information on how, where applicable, the support schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material?) (Article 22 (1)c of Directive 2009/28/EC).

There are currently no such measures.

5. Please provide information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system. (Article 22(1)d of Directive 2009/28/EC)).

The system of guarantees of origin is regulated by the Law on Energy and the Decree on the manner of issuing, transmitting and withdrawing guarantees of origin of electricity produced from renewable energy sources and highly efficient cogeneration. By adopting amendments to the Energy Law ("Official Gazette of Montenegro", No. 82/2020), the obligation to issue a guarantee of origin was transferred from the Energy Regulatory Agency to the market operator, which is why a new Regulation on the manner of issuing, transferring and withdrawing guarantees of origin of electricity produced from renewable energy sources and highly efficient cogeneration ("Official Gazette of Montenegro", No. 110/2020).

The guarantee of origin may not be issued to an energy entity that produces thermal energy for district heating and / or cooling in a plant with an installed capacity of less than 1 MW. The guarantee of origin is issued by the energy market operator at the request of the electricity producer, for energy produced in an energy facility using renewable energy sources or highly efficient cogeneration, after reviewing the technical documentation and direct insight into the operation of the facility.

The transmission or distribution system operator to which the facility for which the guarantee of origin is issued is connected, is obliged to submit to the market operator data on the amount of electricity produced, measured at the place of delivery to the transmission or distribution system.

The guarantee of origin is issued only once for 1 MWh of electricity produced. The period of production of electricity for which a guarantee of origin is issued may not exceed 12 months. The guarantee of origin may be transmitted independently of the electricity produced to which it relates, provided that, in order to ensure that that energy is presented to the customer only once, multiple counting and display of electricity produced from renewable sources is not permitted.

The guarantee of origin of electricity produced from renewable energy sources shall contain in particular:

- 1) data on the energy source from which the energy was produced and the dates of the beginning and end of the production period for which the guarantee of origin is issued;
- 2) name, location, type and installed power of the energy facility in which energy is produced;
- 3) the scope of investment support for the energy facility, the scope of incentives for energy produced from that facility and data on the manner of incentives;
- 4) date of commissioning of the energy facility;
- 5) date of issue and period of validity, as well as the unique identification number of the guarantee of origin and the name of the country in which it was issued.

The guarantee of origin of electricity produced from highly efficient cogeneration shall contain in particular:

- 1) name, location, type and installed power of the energy facility in which energy is produced;
- 2) the scope of investment support for the energy facility, the scope of incentives for the energy produced from that facility and data on the manner of incentives;
- 3) date of commissioning of the energy facility;
- 4) date of issue and period of validity, as well as the unique identification number of the guarantee of origin and the name of the country in which it was issued;
- 5) the lower thermal power of the fuel used for the production of electricity for which a guarantee of origin is issued;
- 6) the purpose for which the thermal energy produced in the high-efficiency cogeneration facility in which the electricity for which the guarantee of origin is issued is used;

- 7) saving of primary energy in the process of electricity production for which a guarantee of origin is issued;
- 8) data on the amount of produced electricity that is produced in accordance with the criteria and rules of high efficiency;
- 9) the amount of thermal energy produced together with electricity.

The Decree on the manner of issuing, transferring and withdrawing guarantees of origin of energy produced from renewable energy sources and highly efficient cogeneration regulates the manner of issuing, transferring and withdrawing guarantees of origin, content and manner of submitting data on delivered electricity by transmission or distribution system operators. The content of the guarantee of origin of electricity produced from renewable energy sources or from highly efficient cogeneration, the content of the application for the issuance of a guarantee of origin, as well as the documentation submitted with the application.

The guarantee of origin is issued in electronic form at the request of the manufacturer. According to the Energy Act, the market operator is responsible for the Regulation on the manner of issuing, transferring and withdrawing guarantees of origin of energy produced from renewable energy sources and highly efficient cogeneration. All activities related to guarantees of origin issued to electricity producers and highly efficient cogeneration are clearly defined by law to prevent abuse, such as double issuance, etc.

6. Please describe the developments in the preceding year in the availability and use of biomass resources for energy purposes. (Article 22(1g) of Directive 2009/28/EC).

Table 4 shows the available data.

Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)	Primary energy in domestic raw material (ktoe)	Amount of imported raw material from EU (*)	Primary energy in amount of imported raw material from EU (ktoe)	Amount of imported raw material from non EU(*)	Primary energy in amount of imported raw material from non EU (ktoe)
	2020	2020	2020	2020	2020	2020
Biomass supply for heating and electricity:						
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	601193m ³	137.88	1963t	0.84	-	-
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	39639m ³	9.08	0m ³	0	-	-
Energy crops (grasses, etc.) and short rotation	-	-	-	-	-	-

trees (please specify)						
Agricultural by-products / processed residues and fishery by-products **	-	-	-	-	-	-
Biomass from waste (municipal, industrial etc.) **	-	-	-	-	-	-
Others (please specify)	-	-	-	-	-	-
Biomass supply for transport:						
Common arable crops for biofuels (please specify main types)	-	-	-	-	-	-
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)	-	-	-	-	-	-
Others (please specify)	-	-	-	-	-	-

* Amount of raw material if possible in **m3 for biomass from forestry** and in **tonnes for biomass from agriculture and fishery and biomass from waste**

** The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

Table 4a. Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (ha)
	2020
1. Land used for common arable crops (wheat, sugar beet etc.) and oil seeds (rapeseed, sunflower etc.) (Please specify main types)	-
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	-
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	-

There is no data about the plants growing for energy production.

7. Please provide information on any changes in commodity prices and land use within your Contracting Party in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in your country. (Article 22(1) h) of Directive 2009/28/EC).

There is almost no influence on prices because of bigger use of biomass or other types of RES.

8. Please describe the development and share of biofuels made from wastes, residues, non-food cellulosic material, and lingo cellulosic material. (Article 22(1) i) of Directive 2009/28/EC).

Table 5: Production and consumption of Art.21(2) biofuels (Ktoe)

Article 21(2) biofuels ²⁷	2020
Production – Fuel type X (Please specify)	-
Consumption – Fuel type X (Please specify)	-
Total production Art.21.2.biofuels	-
Total consumption Art.21.2. biofuels	-
% share of 21.2. fuels from total RES-T	-

There was no using biofuels made from waste, residues, non-food cellulosic material and lingo cellulosic material in 2020.

9. Please provide information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within your country in the preceding 2 years. Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within your country. (Article 22 (1) j) of Directive 2009/28/EC).

There is no plan for production of biofuels

10. Please estimate the net greenhouse gas emission savings due to the use of energy from renewable sources (Article 22 (1) k) of Directive 2009/28/EC).

The contribution to the reduction of greenhouse gas emissions is determined according to the projections of electricity production from renewable energy sources, the use of renewable energy sources in transport and the use of renewable energy sources for heating and cooling by 2020.

In order to determine the contribution of renewable energy sources in reducing greenhouse gas emissions, an assessment of the so-called. avoided CO₂ emissions due to the use of renewable energy sources instead of fossil fuels. Avoided emissions are determined by replacing the amounts of electricity produced from renewable energy sources, and renewable energy for heating and cooling and transport, as stated in the National Action Plan, with fossil fuels and their CO₂ emissions.

In the production of electricity from renewable energy sources, a comparison was made with fossil fuel power plants, and the emission estimate took into account CO₂ emissions from TPP Pljevlja 1. Reduced CO₂ emissions from the heating and cooling sector assume the use of fuel oil instead of renewable energy sources.

Table 6: Estimated GHG emission savings from the use of renewable energy (t CO₂eq)

Environmental aspects	2020
Total estimated net GHG emission saving from using renewable energy²⁸	1,221,100
- Estimated net GHG saving from the use of renewable electricity	439,939

²⁷ Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

²⁸ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

- Estimated net GHG saving from the use of renewable energy in heating and cooling	781,161
- Estimated net GHG saving from the use of renewable energy in transport	-

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Contracting Parties, Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22 (1) l, m) of Directive 2009/28/EC).

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Contracting Parties, Member States and/or third countries in Montenegro (ktoe)^{29, 30}

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)									

There is no planned transfer to/from other Contracting Parties, Member States and/or third countries.

11.1. Please provide details of statistical transfers, joint projects and joint support scheme decision rules

There is no planned use of statistical transfers or participation in joint projects and joint support scheme decision rules.

12. Please provide information on how the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates. (Article 22(1)(n) of Directive 2009/28/EC).

Biodegradable fraction of municipal solid waste including biowaste and landfill gas - the estimation of the theoretical potential of municipal solid waste (MSW) in the CRES report is 710 TJ for whole Montenegro.

Biodegradable fraction of industrial waste - the usage of sewage methane for energy purposes should also be considered, at least for the bigger cities where the sewage water is treated in a wastewater treatment plant.

²⁹ Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report Contracting Party may correct the data of the previous reports.

³⁰ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).