

BOSNIA AND HERZEGOVINA

Fifth Progress Reports under

Renewable Energy Directive 2009/28/EC as adapted by the

Ministerial Council Decision 2012/04/MC-EnC

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding 2 years (n-1; n-2 e.g. 2021 and 2020) (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 sources¹

	2021 <i>Year n-1</i>	2020 <i>Year n-2</i>
RES-H&C ² (%)	53.31	56.62
RES-E ³ (%)	46.32	49.31
RES-T ⁴ (%)	0.24	0.46
Overall RES share ⁵ (%)	36.56	39.84
<i>Of which from cooperation mechanism⁶ (%)</i>	0.00	0.00
<i>Surplus for cooperation mechanism⁷ (%)</i>	0.00	0.00

Data: EUROSTAT (Energy balances and SHARES tool for BiH, 2020 and 2021)

Note: Data are from EUROSTAT SHARES tools for BiH. Due to a change in methodology for calculating RES shares by EUROSTAT, in 2021 overall RES share is smaller than in 2020.

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)⁸

	2021 <i>Year n-1</i>	2020 <i>Year n-2</i>
(A) Gross final consumption of RES for heating and cooling	1214.77	1270.1
(B) Gross final consumption of electricity from RES	542.49	524.0
(C) Gross final consumption of energy from RES in transport	2.13	2.1
(D) Gross total RES consumption ⁹	1759.4	1796.2
(E) Transfer of RES to other Contracting Parties or Member States	0.00	0.0
(F) Transfer of RES from other Contracting Parties and 3rd countries	0.00	0.0
(G) RES consumption adjusted for target (D)-(E)+(F)	1759.4	1796.2

Note: Data from EUORSTAT (Energy balances and SHARES tool for BiH, 2020 and 2021)

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 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.

⁴ 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.

⁵ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁶ In percentage point of overall RES share.

⁷ In percentage point of overall RES share.

⁸ Facilitates comparison with Table 4a of the NREAPs

⁹ 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 Bosnia and Herzegovina to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹⁰

	2021 Year n-1		2020* Year n-2	
	MW	GWh	MW	GWh
Hydro ¹¹ :	2257	5840.1	2248.8	5764.4
non pumped	1837	5505.3	1828.8	5469.3
<1MW				
1MW–10 MW				
>10MW				
pumped		555		413.0
mixed ¹²	420		420	295.1
Geothermal				
Solar:	57	72	34.9	45
photovoltaic	57	72	34.9	45
concentrated solar power				
Tide, wave, ocean				
Wind:	135	379.9	87	296.7
onshore	135		87	262.0
offshore				
Biomass ¹³ :	10	42	2.1	13.0
solid biomass	9	36	1.1	5.0
biogas	1	6	1	8.0
bioliquids				
TOTAL	2459	6334	2372.8	6119.1
of which in CHP				

Data: *EUROSTAT share tools for 2020 and 2021

Table 1c: Total actual contribution (final energy consumption¹⁴) from each renewable energy technology in Bosnia and Herzegovina to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)¹⁵

	2021 Year n-1	2020 Year n-2
Geothermal (excluding low temperature geothermal heat in heat pump applications)	0	0
Solar	0	0
Biomass ¹⁶ :	1213.6	1270.1
solid biomass	1213.6	1270.1
biogas	1.2	0
bioliquids	00	0
Renewable energy from heat pumps: - of which aerothermal - of which geothermal	0	0

¹⁰ Facilitates comparison with Table 10a of the NREAPs.

¹¹ Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

¹² In accordance with new Eurostat methodology.

¹³ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

¹⁴ Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

¹⁵ Facilitates comparison with Table 11 of the NREAPs.

¹⁶ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

- of which hydrothermal		
TOTAL	1214.8	1270.1
<i>Of which DH¹⁷</i>		
<i>Of which biomass in households¹⁸</i>	1130.9	1159.7

Data: EUORSTAT (Energy balances and SHARES tool for BiH, 2020 and 2021)

Table 1d: Total actual contribution from each renewable energy technology in Bosnia and Herzegovina to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)^{19, 20}

	2021 Year n-1	2020 Year n-2
Bioethanol/ bio-ETBE		
<i>Of which Biofuels²¹ Article 21.2</i>		
<i>Of which imported²²</i>		
Biodiesel		
<i>Of which Biofuels²³ Article 21.2</i>		
<i>Of which imported²⁴</i>		
Hydrogen from renewables		
Renewable electricity		
<i>Of which road transport</i>		
<i>Of which non-road transport</i>	2.13*	2.11*
Others (as biogas, vegetable oils, etc.) – please specify		
<i>Of which Biofuels²⁵ Article 21.2</i>		
TOTAL		

Note: Based on the data from the Energy balances and SHARES tool for BiH, 2020 and 2021
* Only electricity part from RES, no biofuels

The RES Electricity in railway transport is calculated pursuant to Article 3, Item 4.a) of the RES Directive 2009/28/EC:

„(a) by calculating a denominator (i.e. the total amount of energy consumed in transport for the purposes of the first subparagraph) only gasoline, diesel, biofuels used in road and rail transport and electricity are taken into account;

(b) by calculating the numerator (i.e. the amount of energy from renewable sources used in transport for the purposes of the first subparagraph) all types of energy from renewable sources used in all modes of transport shall be taken into account;

(c) by calculating the contribution of electricity produced from renewable sources and used in all types of electrical means of transport for the purposes of items (a) and (b), Member States may decide to use either an average share of electricity from renewable sources in the Community or share of electricity from renewable sources energy in its country measured two years before the year in question. Furthermore, in calculating the consumption of electricity from renewable sources in all types of road power electric vehicles, it is considered that consumption is two and a half times higher than the energy content of electricity generated from renewable energy sources.”

¹⁷ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁸ From the total renewable heating and cooling consumption.

¹⁹ For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

²⁰ Facilitates comparison with Table 12 of the NREAPs.

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

²² From the whole amount of bioethanol / bio-ETBE.

²³ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁴ From the whole amount of biodiesel.

²⁵ 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 No. of the Measure	Type of Measure*	Expected Result**	Targeted Group and Activity***	Existing or Planned****	Start and End Dates of the Measure
1.1 Strategic Policy of Energy Sector Operations in BiH Framework Energy Strategy of Bosnia and Herzegovina until 2035	Regulatory	Determinants of development of BiH energy sector including renewable energy, are defined based on entity strategies	All subjects in energy sector	Existing, Framework Energy Strategy of BiH until 2035 adopted in August 2018 ("Official Gazette BiH" No. 70/18)	2018 - ongoing
1.2 Development and improvement of Renewable Energy Action Plan of Bosnia and Herzegovina in accordance with the entity action plans	Regulatory	Bosnia and Herzegovina implements and regularly updates program provisions defined by the Action Plan	All subjects in energy sector	Adopted, monitoring and reporting ongoing (incl. discussion of measures with entities). Since entity Renewable Energy Action Plans will end in 2020, Initiated preparation of the entity Energy and Climate Plans for a period until 2030	Adopted in 2016, established until 2020 (will be replaced by NECP that I sunder preparation) Entity Energy and Climate Plans are in preparation.
1.3 Development, management and reporting on Projects of Energy Community Interest (PECI)	Financial	Efficient participation of Bosnia and Herzegovina in development and interoperability of priority corridors and areas of trans-European energy infrastructure (according to EU Regulation 347/2013)	All subjects in energy sector Carriers of development projects for RES plants	Planned	2016

1.4 Harmonization of incentive programs with other countries	Financial	BiH will have active exchange of renewable energy incentives using statistical transfers (Article 6 of Directive 2009/28 / EC) and joint projects (Article 9 of Directive 2009/28 / EC)	Carriers of development projects for RES plants	Planned	2016
1.5 Progress report concerning promotion and use of renewable energy sources	Planned	BiH regularly reports (every two years) to the Secretariat of the Energy Community issues defined in Article 22 of Directive 2009/28 / EC	All subjects in energy sector	Planned	2020
1.6 Promotional programmes for sustainable use of energy in local communities	Promotional	Bosnia and Herzegovina provides visible support to local communities in promoting sustainable use of energy (promotional activities, promotion of SEAP, pilot projects, etc.)	Local communities	Promotion session started in 2021 as a part of the process for reform of the support schemes (see 1.10)	2021 - ongoing
1.7 Establishing mechanism for monitoring production, export/import, and consumption of biofuel	Regulatory /Statistical	Bosnia and Herzegovina established an efficient mechanism of monitoring the biofuel market and has quality statistical data in possession	Customs, Indirect Taxation Authority, consumers	Planned	2017
1.8 Programme of promoting use of biofuel on the level of BiH - including reconsidering provisions of the Law on Excise and the Law on	Financial	Bosnia and Herzegovina established an incentive system for the use of biofuel introducing import and tax reliefs.	Suppliers and final users	Planned	2017 and further

Customs Tariffs with regards to the use of biofuel					
1.9 Decision on quality of liquid petrol fuels in BiH	Regulatory	Quality increase	Entity administration, distributors	Planned (in preparation)	2018
1.10: Reform of Support Schemes for RES electricity generation	Regulatory	Introduction of new market-based support schemes - increased capacity of RES electricity generation	RE investors, suppliers, RES Operators, Regulatory Commission in both entities	Activities are ongoing. Finalized are draft entity RES Laws	2020-2030
1.11: Improvement of Administrative Procedures for licensing and permitting of RES in line with Art. 15 of the Directive	Regulatory	Administrative Procedures for licensing and permitting of RES in line with Art. 15 of the Directive	RE investors, suppliers, involved authorities of all different levels	Ongoing	2017-2021

In addition to these measures, there are entity measures defined in entity action plans for 2020.

* 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).

Electricity

In 2020 new technical assistance project started with implementation which is focused on creation of foundations for accelerated decarbonization of the energy sector in BiH. From the aspect of renewable energy sources, technical assistance was focused on the following areas which are relevant to the renewable energy sources:

- Implementation of strategic framework and capacity strengthening (preparation of the National Integrated Energy and Climate Plan, as well as the entity Energy and Climate Plans) and
- Promotion of community energy and implementation of market-based incentive schemes for renewable energy.

At the beginning of project activities, in Bosnia and Herzegovina (BiH) production from renewable sources of energy (RES) was promoted through feed-in tariffs (FIT) set by responsible authorities on the entity level in Republika Srpska (RS) and Federation of Bosnia and Herzegovina (FBiH). Policy makers in BiH were aware of the fact that the current support schemes face more and more public scrutiny with respect to its cost for end-users. As a conclusion, policy makers in BiH have decided to pursue a reform of the existing renewable

energy (RE) support system in the country. This reform process was aiming at support in cost reduction and facilitation of the RES projects development in a future liberalized environment of the power sector.

The concept of the RE support schemes reform distinguished between support mechanisms for large and for small-scale RE installations. While the concept recommends the continued use of FIT for small-scale installations, in the case of large-scale installations in BiH are recommended to become subject of feed-in-premium (FIP) based support. For solar photovoltaic (PV), hydro power and onshore wind, the level of FIP should be set by an open auction mechanism, for biomass and -gas by administrative setting (under responsibility by the entity RE operators). To ensure that local citizens can participate in available market-based support schemes, renewable energy communities (REC) were recommended to be involved in a reform.

Identified main elements of the reform referred to in previous paragraphs, were planned to be part of the set of measures to achieve targets defined by the BiH integrated National Energy and Climate Plan (NECP) 2030. Further, in its biannual national progress reports towards the Energy Community Secretariat regarding the implementation of the EU Renewable Energy Directive BiH have laid out its plans to reform the support mechanisms for RES based technologies.

The Project supported:

- Preparation of draft NECP for BiH. Detailed analysis of its content are prepared, as well as analysis of existing regulatory and administrative framework which is planned to be incorporated into the NECP. Established is NECP working group.
- Elaboration of the report with recommendations for finalization of legislative package of the RES auction process in BiH based on the EU experience. For this purpose, the report contained following:
 - ✓ Overview of BiH auction process based on drafted entity RES Laws. The defined auction processes of RS and FBiH are presented separately and divided into three auctions stages: (1) preparation of the auction, (2) execution of the auction and (3) monitoring after the auction. In addition, this chapter covered an overview of relevant stakeholders and presents visualizations of the different auction phases in the form of simplified tables and process diagrams.
 - ✓ Elaboration of possible improvements to the RS and FBiH auction processes, including identified gaps in the regulatory framework regarding process efficiency (number of sub-processes, time, jurisdiction), process transparency in communication with relevant stakeholders (institutions and auction participants), and required capacities for conducting auctions (i.e. necessary technical and human capabilities as well as costs estimate).
 - ✓ Recommendations for update and finalization of the legislative package for the RES auction process (primary, secondary and tertiary legislation) based on a high-level legal gap analysis.

In both entities, implementation of the above-mentioned recommendations to improve primary legislation has started. Established is RES technical working group

- Elaboration of detailed techno-legal analysis of possibilities for establishment of the energy community (EC) projects in BiH, in line with existing draft primary legislation on RES and as it is requests from EU Directive 2018/2001 on the promotion of the use of energy from renewable sources (recast) and EU Directive 2019/944 on common rules for the internal market for electricity and amending Directive 2012/27/EU. It resulted with a report with analysis of the following: possible EC legal forms in BiH, procedures for establishment of different legal forms REC together with procedure for obtaining status of REC, rights and obligations of REC, criteria which must be fulfilled by the members of REC to obtain rights prescribed by the entity laws, distinguishing criteria between REC and Citizen Energy Community (CEC). Document will be used as an input for drafting entity Rulebooks on RECs.

Previously listed documents were presented to established RES technical working groups containing representatives of relevant state and entity institutions from the electro-energy sector of BiH.

Heating&Cooling

The production of heat from the RES is neither incentivized nor specifically regulated on the state or entity level, only on the level of municipalities.

Transport

The existing legislation in both entities cover some of the measures for biofuels required under Directive 2003/30/EC and Directive 2009/28/EC (RED) such as details related to fuel quality, monitoring, and relevant definitions.

However, several new measures introduced by the RED have to be transposed into the legislation and adopted in both entities. In particular, measures covering the mandatory sustainability criteria imposed on biofuels must be included in order to meet the requirements of the Directive. In addition, it is necessary to set and maintain an integrated support mechanism for increasing the share of biofuels in transport. The setting up of that mechanism is currently in a planning phase.

Setting up a comprehensive legislative and regulatory framework for biofuels will be essential in order to establish the conditions for their introduction and subsequent contribution towards the biofuels targets established under the RED.

In December 2020, Energy Community Secretariat prepared a report on "Modalities to foster use of renewable energy sources in the transport sector by the Energy Community Contracting Parties". Established NECP working group decided to apply developed elements of the study as an input for preparation of the NECP document.

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).

Connection to the grid is regulated by the Rulebook on Connection adopted by the State Electricity Regulatory Commission (SERC) ("Official Gazette of BiH", No. 95/08, 79/10, 60/12, 83/17). RES electricity producers who are connected to the grid pay 50% of the fixed part of the connection costs.

The Law on Renewable Energy Sources and Efficient Cogeneration in RS ("Official Gazette of BiH", No 39/13, 79/15, 26/19) defines that distribution companies, at their expense, shall analyse the possibilities and conditions for connection of producers of energy from RES and Efficient Cogeneration.

The Rulebook on conditions for connection of power plants to the grid of Republika Srpska adopted by Elektroprivreda Republike Srpske in 2014 regulates the conditions of connection and advantages in accessing the grid for producers of electricity from renewable energy sources as well as the distribution of connection costs for the joint connection of several producers.

The Law on Usage of Renewable Energy Sources and Effective Cogeneration ("Official Gazette of the Federation of Bosnia and Herzegovina", No. 70/13 and 5/14) stipulates that power generators using renewable energy sources have priority in deciding on their requests for connection to the electricity network over plants that do not use renewable energy sources.

The Law on Electricity in the Federation of Bosnia and Herzegovina ("Official Gazette of the Federation of Bosnia and Herzegovina", No. 66/13 and 94/15, 54/19) stipulates that the distribution system operator is required, while dispatching of distributed generation, to give

priority to the generation plants using renewable energy sources or waste, or cogeneration plants.

The Rulebook on the Methodology for Calculating Connection Charges and Defining Terms and Conditions for Connection to the Distribution Network ("Official Gazette of FBiH" No. 89/14, 84/19) stipulates that the the RES electricity producer shall cover 50% of the calculated average value of the connection costs and that the process of connection of the facility is carried out in accordance with the applicable regulations and standards.

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).

In Bosnia and Herzegovina (BiH) production from renewable sources of energy (RES) is promoted through feed-in tariffs (FIT) set by responsible authorities on the entity level in Republika Srpska (RS) and Federation of Bosnia and Herzegovina (FBiH). One of the main challenges of the current RES support system is the difficulty to allocate technology quotas based on expected potential and to set the right level of incentive (feed-in tariff) to stimulate the investment. To avoid excessive subsidies for some technologies on the one hand and to adjust the incentive system according to the needs and feasible potential of other technologies on the other hand, a comprehensive reform of the support scheme system for RES based electricity is required to introduce cost-efficient support mechanisms.

In that aspect, under the guidance of the Ministry of Foreign Trade and Economic Relations of BiH, the Ministry of Energy and Mining of the RS and the Federal Ministry of Energy, Mining and Industry, in the period from November 2017 until November 2019, manifold activities were conducted to prepare for the envisaged reform of the Renewable Energy Support Schemes in Bosnia and Herzegovina. All results from conducted activities were used as input for finalization of the reform process for the support system in BiH.

The concept of the RE support schemes reform distinguished between support mechanisms for large and for small-scale RE installations. While the concept recommends the continued use of FIT for small-scale installations, in the case of large-scale installations in BiH are recommended to become subject of feed-in-premium (FIP) based support. For solar photovoltaic (PV), hydro power and onshore wind, the level of FIP should be set by an open auction mechanism, for biomass and -gas by administrative setting (under responsibility by the entity RE operators). To ensure that local citizens can participate in available market-based support schemes, renewable energy communities (REC) were recommended to be involved in a reform.

In a period from 2020 until 2021 prepared is Report with recommendations for finalization of legislative package of the RES auction process in BiH based on the EU experience. For this purpose, the report contained following:

- ✓ Overview of BiH auction process based on drafted entity RES Laws. The defined auction processes of RS and FBiH are presented separately and divided into three auctions stages: (1) preparation of the auction, (2) execution of the auction and (3) monitoring after the auction. In addition, this chapter covered an overview of relevant stakeholders and presents visualizations of the different auction phases in the form of simplified tables and process diagrams.
- ✓ Elaboration of possible improvements to the RS and FBiH auction processes, including identified gaps in the regulatory framework regarding process efficiency (number of sub-processes, time, jurisdiction), process transparency in communication with relevant stakeholders (institutions and auction participants), and required capacities for conducting auctions (i.e. necessary technical and human capabilities as well as costs estimate).

- ✓ Recommendations for update and finalization of the legislative package for the RES auction process (primary, secondary and tertiary legislation) based on a high-level legal gap analysis.

In both entities, implementation of the above mentioned recommendations to improve primary legislation has started. Established is RES technical working group

In addition to ongoing activities on the support system, elaborated is detailed techno-legal analysis of possibilities for establishment of the energy community (EC) projects in BiH, in line with existing draft primary legislation on RES and as it is requests from EU Directive 2018/2001 on the promotion of the use of energy from renewable sources (recast) and EU Directive 2019/944 on common rules for the internal market for electricity and amending Directive 2012/27/EU. It resulted with a report with analysis of the following: possible EC legal forms in BiH, procedures for establishment of different legal forms REC together with procedure for obtaining status of REC, rights and obligations of REC, criteria which must be fulfilled by the members of REC to obtain rights prescribed by the entity laws, distinguishing criteria between REC and Citizen Energy Community (CEC). Document will be used as an input for drafting entity Rulebooks on RECs.

Planned are following activities for further implementation relevant to the reform of market-based support schemes:

- Analysis of the auction process for procurement of goods in accordance with Law on public procurement (Official gazette of BiH, 39/2014) and relevant rulebooks;
- Finalization of draft entity Rulebooks on renewable energy auctions;
- Preparation of draft entity Rulebooks on RECs;
- Preparation of templates needed for conducting entity RES auctions;
- Conduct peer-review for developed templates for auction premium award;
- Conduct public promotion of RES auction process;
- Develop methodologies needed for conducting auctions.

RS

In the RS, additionally to the FIT support, the framework for RES in the RS foresees the optional support of electricity from renewable sources through (feed in) premiums (FIP) together with the remuneration through a reference price. This option has however not been applied yet as the provided incentives in both entities were based on FIT similar guaranteed prices.

The possibility of boosting the production of energy from renewable sources in the heating and cooling sector and the use of biofuels in transport will be analysed in the future.

Administrative and other affairs of the incentives system are performed by the Operator of the incentive system in accordance with the Rules for the Implementation of the Incentive System. Until the establishment of the Operator of the Incentive system, administrative and financial affairs of the incentives system are performed by Elektroprivreda Republike Srpske.

The Law on Renewable Energy Sources and Efficient Cogeneration stipulates that producers of electricity from renewable energy sources and in efficient cogeneration are eligible for the following types of incentives:

- a) advantages in connecting to the grid,
- b) priority in grid access,
- c) the right to compulsory energy purchase,
- d) the right to guaranteed purchase price (feed-in tariff), and
- e) the right to a premium for consumption for own needs and sale on the RS market.

In 2020, RS Government adopted a Revised Action Plan for Usage of Renewable Energy Sources in RS (Official Gazette of the Republic of Srpska, No. 45/14, 111/15, 96/18, 97/18, 3/20, 124/20).

Dynamic quotas for 2020, in accordance with the latest changes, are following:

- hydro: 112.36 MW,

- PVs on the ground below 250 kW and on the rooftops below 1MW: 18.22 MW,
- Biomass. 6.94 MW (solid: 3.90 MW, liquid: 3.04 MW).

Dynamic quotas for 2021, in accordance with the latest changes, are following:

- hydro: 108.53 MW,
- PVs on the ground below 250 kW and on the rooftops below 1MW: 24.83 MW,
- Biomass: 4.16 MW (solid: 1.12 MW, liquid: 3.04 MW).

FBiH

FBiH Government adopted Action Plan for Usage of Renewable Energy Sources in the Federation of BiH (Official Gazette of FBiH, 48/14 and 70/14, 94/18) stating the binding target of the FBiH on the energy share from renewable energy sources in the total final consumption of electricity, heating and / or cooling and energy for transport, taking into account the effects of regulatory measures related to the improvement of energy efficiency and energy savings for end customers, as well as other measures aimed at meeting the set goals and the defined amount of energy (dynamic quotas), which will be encouraged through the feed-in tariff until 2020, by which the following primary sources are stimulated: hydropower, solar energy, wind energy, biogas and solid biomass.

In line with the above mentioned acts, there is a system for boosting electricity generation from RES and it is currently the only system for promoting renewable energy in the FBiH.

The system, among other things, defines the following:

- The system is financed through collection of incentive fee paid by all end-users of electricity. Once a year, the FBiH Government determines the fee by decision;
- Another form of promoting the electricity generation from RES is the purchase of generated electricity from eligible producers at the reference price. The reference price is determined by FERK (Regulatory Commission for Energy in the FBiH), and it is 20% higher than the average market price of electricity in the FBiH over the past 12 months;
- Purchase at the reference price of electricity produced from renewable energy sources is carried out during the trial operation of plants using RES, as well as eligible producers, if their production is included in the mandatory quotas prescribed by FBiH Action Plan for Usage of Renewable Energy Sources;
- Issuance of the guarantee of origin is a part of the system of promoting the generation of electricity.

There are no regulations for promotion of renewable energy in the sectors of cogeneration, heating and cooling systems, and transport services, so they are not implemented.

In 2021, FBiH Government adopted Decisions on establishing binding targets for the use of renewable energy sources in the Federation of Bosnia and Herzegovina ("Official Gazette of the Federation of Bosnia and Herzegovina", number 17/21, 36/21).

Dynamic quotas for 2020, in accordance with the latest changes, are following:

- Hydro up to 1MW: 35 MW,
- Hydro from 1 to 10 MW: 87.13 MW,
- PVs: 40.56 MW,
- WPs: 223.62 MW,
- Solid biomass: 4.16 MW,
- Biogas: 0 MW.

Table 3: Support schemes for renewable energy

Support plans for RES year 2021		Per unit		Total (M€)
Hydro Energy				
Instrument (indicate relevant data)	Obligation/quota (%)			
	Penalty/purchase option/purchase price (€/unit)			
	Average certified price			
	Tax exemption/refund			
	Investment subsidies (donated capital or loans) (€/unit)			
	Production incentives			
	Feed-in tariff	RS (0.0569-0.0714) €/kWh Guaranteed purchase prices, and the premium part in that is 0.0278-0.0422 €/kWh	FBiH (0.0980-0.0660) €/kWh	Data not available -
	Feed-in premium	RS (0.0278-0.0422) €/kWh	FBiH -	
Tenders		N/A		
Wind energy				
Instrument (indicate relevant data)	Obligation/quota (%)			
	Penalty/purchase option/purchase price (€/unit)			
	Average certified price			
	Tax exemption/refund			
	Investment subsidies (donated capital or loans) (€/unit)			
	Production incentives			
	Feed-in tariff	-	FBiH (0.1175-0.0644) €/kWh	Data not available -
	Feed-in premium	-	FBiH -	0
Tenders		N/A		
Biomass and Biogas (different tariffs)				
Instrument (indicate relevant data)	Obligation/quota (%)			
	Penalty/purchase option/purchase price (€/unit)			
	Average certified price			
	Tax exemption/refund			
	Investment subsidies (donated capital or loans) (€/unit)			
	Production incentives			
	Feed-in tariff	RS (0.1053-0.1171) €/kWh Guaranteed purchase prices, and the premium part in that	FBiH (0.2666-0.1063) €/kWh	Data not available

		is 0.0762-0.0879 €/kWh		
	Feed-in premium	RS (0.0762-0.0879) €/kWh	FBiH -	
	Tenders		N/A	
Solar energy				
Instrument (indicate relevant data)	Obligation/quota (%)			
	Penalty/purchase option/purchase price (€/unit)			
	Average certified price			
	Tax exemption/refund			
	Investment subsidies (donated capital or loans) (€/unit)			
	Production incentives			
	Feed-in tariff	RS (0.0727-0.0944) €/kWh Guaranteed purchase prices, and the premium part in that is 0.0436 – 0.0653 €/kWh	FBiH (0.1434-0.0873) €/kWh	
Feed-in premium	RS (0.0436 – 0.0653) €/kWh	FBiH -		
	Tenders			
Estimated total support in the electric power sector on an annual level				Data not available
Estimated total support in the heating sector on an annual level				0
Estimated total support in the transportation sector on an annual level				0

Source: Data from Regulatory Commission for Energy in FBiH and Regulatory Commission for Energy of the RS (FERK Decision No: 06-02-1-1157-1/21, RERS Decision No: 01-526-7/21/P-23-459).

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).

Elektroprivreda Republike Srpske (in the role of the Operator of the incentive system) offtake electricity from producers who generate electricity from renewable sources, indebts distribution companies that distribute the energy to end customers as electricity suppliers in accordance with applicable regulations. The incentives are provided from the levy collected by all end users in order to support generation of electricity from renewable sources. The Operator of the incentives system uses collected funds to pay the producers for the invoiced generation (consumed) of electricity from renewable sources.

During 2016 in FBiH a Rulebook on Obligatory Share and Load of Electricity Produced from RES that was adopted by FERK and published in Official Gazette of the FBiH ("Official Gazette of FBiH no 50/14 and 82/15) was applied. Since January 1st 2017 a new Rulebook on Obligatory Share and Load of Electricity Produced from RES ("Official Gazette of FBiH no. 99/16) has been applied.

The generated electricity that Operator for Renewable Energy Sources and Efficient Cogeneration in FBiH is buying from producers who generate electricity from renewable sources, by the reference and guaranteed prices, with the application of this Rulebook has been allocated to all suppliers who supply end customers in the Federation and to eligible customers who import electricity for their own use in accordance with the respective percentage shares of their sold electricity on the electricity market.

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)).

With the help of international organizations, primarily the GIZ, activities to introduce advanced incentive systems such as "feed-in-premium" or "auction", or systems that are more market-oriented mechanisms, have been launched. Prepared are draft entity Laws on RES in 2019.

As part of the project "Decarbonization of the Energy Sector in Bosnia and Herzegovina" implemented by GIZ in cooperation with MoFTER and relevant international institutions, sub-project 3 "Demonstration of Innovative Processes for the Promotion of Renewable Energy in BiH" envisages implementation of innovative processes that support the decarbonization of the energy sector and the transparent and cost-effective implementation of incentive schemes for RES in BiH. Sub-project 3 implies the continuation of the reforms of the existing system of incentives for renewable energy, which aims to reduce costs and facilitate the development of RES projects in the future liberalized environment of the electricity sector; that is, the identification of the main elements of the reform that will be part of the measures for achieving the goals defined by the NECP.

The sub-project supports the implementation of activities in the area of two sub-processes:

1. Encouraging the concept of community energy based on RES and
2. Support to the implementation of the first RES auction.

As a part of sub-project 3, conducted is analysis of existing and planned (drafted) RES legal framework. Elaborated is report with recommendations for finalization of legislative package of the RES auction process in BiH based on the EU experience. Implementation of recommendations started in 2021.

Related to solid biomass co-generation, the FIT in both entities are set in that way, that they are feasible only i) with a constant utilization of the generated heat and ii) with low-cost biomass feedstock such as bark, saw-dusk and other biomass residues. The wood-processing industry, as one of the most important industrial sectors in BIH fulfils both feasibility criteria by having a constant 24/ process heat demand and on-site generation of biomass residues. The current biomass co-generation on by-products of the wood-processing industry in BIH is around 26 MWeI²⁶. Several projects are currently under development, however, awareness-raising and other promotion measures despite the FIT and available technology quotas are required to exploit the full potential.

With regard to biogas, the largest available potential for BIH is coming from animal waste from farms, with a total unused potential of around 23 MWeI²⁷ from cattle, pig and poultry manure.

²⁶ Calculation based on results from: Atlas on Biomass Potentials BIH (<http://atlasbm.bhas.gov.ba>), BIH 2019

²⁷ Calculation based on results from: Atlas on Biomass Potentials BIH (<http://atlasbm.bhas.gov.ba>), BIH 2019

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)).

In the past period, MoFTER initiated activities to establish a system of guarantees of origin in Bosnia and Herzegovina. On this issue, MoFTER organized a series of meetings with the competent institutions of the energy sector in BiH and prepared several letters and information on the topic. MoFTER together with competent entity institutions followed activities on this issue that were also initiated by the Secretariat of the Energy Community - all relevant BiH institutions participated in workshop organized on this topic in November 2020. Also, institutions analysed the prepared document "Options for the Implementation of the System of Guarantees of Origin in the Energy Community". Following regional meeting on this topic organized by the Secretariat in April 2021, MoFTER gathered the opinions of all entity institutions regarding participation in the regional scheme for guarantees of origin. All relevant BiH institutions confirmed the interest, and MoFTER informed the Secretariat that Bosnia and Herzegovina accepts the offered assistance of the Secretariat, as the coordinator of the whole process.

In the RS, the Rulebook on Issuing Guarantees of Origin of Electricity (Official Gazette of RS, no.1/14) regulates the use of guarantees of origin of RES-E. So far, there have been no requests for guarantees of origin. Large HPPs that are not in the incentive system are entitled to guarantees of origin but have not yet requested them. Guarantees of origin of heat from renewable sources have not yet been regulated.

In the FBiH, the Rulebook on the Application for Issuing the Guarantee of Origin (Official Gazette of FBiH no. 101/15) entered into force on January 5, 2016. This Rulebook defines the issuance, transfer and cancellation of guarantees of origin for electricity from the RES. This Rulebook provides that privileged producers are not entitled to apply for the issue of guarantees of origin. The same rulebook also envisaged the adoption of an internal act regulating the automatic transfer of guarantees of origin for electricity produced in plants of privileged producers, since privileged producers can not apply for the issue of guarantees of origin. Therefore, on December 19, Operator for Renewable energy sources and efficient cogeneration in FBiH has adopted the Rulebook for a transfer of guarantees of origin for electricity produced at installations of privileged producers, which is applied from 01.01.2019. In this way, the guarantees of the origin of energy from the plant of the privileged producers will be automatically issued based on the data from the Operator's database on RES production, and transferred to suppliers and eligible customers who are obliged to purchase electricity from the RES. These guarantees of origin will be distributed to suppliers in proportion to the electricity they have sold on the market.

6. Please describe the developments in the preceding 2 years in the availability and use of biomass resources for energy purposes. (Article 22(1)g of Directive 2009/28/EC)).

Biomass present a significant renewable energy source in BiH. Biomass consumption contributes with 50-75% to achieving the set renewable energy goal for BiH of 40% RES of total final energy consumption.

In 2020 and 2021 there were no significant analysis of availability and use of biomass resources for energy purposes, as well as no biomass and biogas facilities. Presented data are used from EUROSTAT Share tools.

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)	
	2021 Year n-1	2020 Year n-2	2021 Year n-1	2020 Year n-2	2021 Year n-1	2020 Year n-2	2021 Year n-1	2020 Year n-2	2021 Year n-1	2020 Year n-2	2021 Year n-1	2020 Year n-2
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	2,675,000 m ³ firewood	2372,000 m ³ firewood	1263	1119								
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**			33	17								
Energy crops (grasses, etc.) and short rotation trees (please specify)	Not registered	Not registered										
Agricultural by-products / processed residues and fishery by-products **	Not registered	Not registered										
Biomass from waste (municipal, industrial etc.) **	Not registered as such	Not registered as such										
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

Data: BHAS (http://atlasbm.bhas.gov.ba), Estimated data from 2019

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

Land use	Surface (ha)	
	2021 Year n-1	2020 Year n-2
1. Land used for common arable crops (wheat, sugar beet etc.) and oil seeds (rapeseed, sunflower etc.) (Please specify main types)	Common crops: maize total 200376 ha of which maize for seed 4 ha, buckwheat 836 ha. Industrial crops: soybeans 10647 ha, tobacco 1070 ha, potatoes 33560 ha of which potatoes for seed 1 ha. Vegetables: 33272 ha. Fodder crops: clover 34859 ha, lucerne 28907 ha, mixture grasses and clover 26919 ha, green maize for silage 35867 ha.	Common crops: maize total 200544 ha of which maize for seed 180 ha, buckwheat 833 ha. Industrial crops: soybeans 12684 ha, tobacco 1004 ha, potatoes 38892 ha of which potatoes for seed 160 ha. Vegetables: 36145 ha. Fodder crops: clover 35024 ha, lucerne 29267 ha, mixture grasses and clover 26515 ha, green maize for silage 35447 ha.
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	Currently not separately assessed, existing plantation in public forests, but not yet quantified.	Currently not separately assessed, existing plantation in public forests, but not yet quantified.
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	Currently not separately assessed.	Currently not separately assessed.

*Data from BHAS

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).

No information available.

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 ²⁸	2021 Year n-1	2020 Year n-2
Production – Fuel type X (Please specify)	0	0
Consumption – Fuel type X (Please specify)	0	0
Total production Art.21.2.biofuels	0	0
Total consumption Art.21.2. biofuels	0	0
% share of 21.2. fuels from total RES-T	0	0

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*).

No information available.

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*).

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

Environmental aspects	2021 Year n-1	2020 Year n-2
Total estimated net GHG emission saving from using renewable energy²⁹		
- Estimated net GHG saving from the use of renewable electricity	6,72	5,99
- Estimated net GHG saving from the use of renewable energy in heating and cooling	3,51	3,52
- Estimated net GHG saving from the use of renewable energy in transport	0	0

Data from LEAP. For the calculation of estimated GHG emissions savings, the following emission factors were used:

- Electricity - 0.78 t / MWh for overall production including RES and/or around 110 t of CO₂/TJ in TPPs
- Firewood - 0 t / MWh – no fossil emissions, biogenic emissions 1.6 tonnes/tonne
- Coal – 1.9 t / metric tonne, in heating
- Gas - 56 metric tonne / TJ in heating.

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2022) 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*).

It should be noted that the BHAS published the total statistical energy balance for Bosnia and Herzegovina for the years 2020 and 2021. Eurostat has published BiH energy balances for 2020 and 2021 that are, together with the Eurostat Shares tools, used in preparation of this report.

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

²⁸ Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

²⁹ 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.

**Contracting Parties, Member States and/or third countries in Bosnia and Herzegovina
(ktoe)^{30, 31}**

	2020 Year n-2	2021 Year n-1	2022
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	Data not available	Data not available	Data not available

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

So far no statistical transfers, joint projects or joint support scheme decision rules have been used.

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).

No information available.

³⁰ 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 2020. In each report Contracting Party may correct the data of the previous reports.

³¹ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).