

# **BOSNIA AND HERZEGOVINA**

**Third 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. 2017 and 2016) (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<sup>1</sup>**

	<b>2017</b> Year n-1	<b>2016</b> Year n-2
RES-H&C <sup>2</sup> (%)	<b>54.1</b>	<b>53.9</b>
RES-E <sup>3</sup> (%)	<b>38.16</b>	<b>40.28</b>
RES-T <sup>4</sup> (%)	<b>0.56</b>	<b>0.56</b>
Overall RES share <sup>5</sup> (%)	<b>35.9</b>	<b>37.3</b>
Of which from cooperation mechanism <sup>6</sup> (%)	0.00	0.00
Surplus for cooperation mechanism <sup>7</sup> (%)	0.00	0.00

Data: RES-H&C based on new calculation methodology for biomass consumption (see explanation in chapter 6)

RES-E and RES-T: EUROSTAT (Energy Balances and SHARES tool for BiH, 2016 and 2017)

**Note: These data will be taken into account in the official statistics in the coming years.**

The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources based on BHAS data submitted to EUROSTAT are given in the Table 1.1.

**Table 1.1**

	<b>2017</b> Year n-1	<b>2016</b> Year n-2
RES-H&C (%)	<b>28.74</b>	<b>32.33</b>
RES-E (%)	<b>38.16</b>	<b>40.28</b>
RES-T (%)	<b>0.56</b>	<b>0.56</b>
Overall RES share (%)	<b>22.73</b>	<b>24.88</b>
Of which from cooperation mechanism (%)	0.00	0.00
Surplus for cooperation mechanism (%)	0.00	0.00

Data: EUROSTAT (Energy Balances and SHARES tool for BiH, 2016 and 2017)

Note: Explanations on the difference are given in the Chapter 6.

<sup>1</sup> Facilitates comparison with Table 3 and Table 4a of the NREAPs.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

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

<sup>6</sup> In percentage point of overall RES share.

<sup>7</sup> In percentage point of overall RES share.

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

	2017 Year n-1	2016 Year n-2
(A) Gross final consumption of RES for heating and cooling	1220,3	1250,6
(B) Gross final consumption of electricity from RES	467.2	469.1
(C) Gross final consumption of energy from RES in transport	2.7	2.6
(D) Gross total RES consumption <sup>9</sup>	1690,2	1763,4
(E) Transfer of RES <u>to</u> other Contracting Parties or Member States	0.0	0.0
(F) Transfer of RES <u>from</u> other Contracting Parties and 3rd countries	0.0	0.0
(G) RES consumption adjusted for target (D)-(E)+(F)	1690,2	1763,4
GFEC	4383,1	4377,3

Data: A): based on new calculation methodology for biomass consumption (see explanation in chapter 6)

(B)-(C) EUROSTAT (Energy Balances and SHARES tool for BiH, 2016 and 2017)

(D) – (F): Combined calculations

**Note: These data will be taken into account in the official statistics in the coming years.**

**Table 1.1.a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe) based on BHAS data submitted to EUROSTAT (ktoe)**

	2017 Year n-1	2016 Year n-2
(A) Gross final consumption of RES for heating and cooling	417.4	511.4
(B) Gross final consumption of electricity from RES	467.2	469.1
(C) Gross final consumption of energy from RES in transport	2.7	2.6
(D) Gross total RES consumption <sup>10</sup>	887.3	983.0
(E) Transfer of RES <u>to</u> other Contracting Parties or Member States	0.0	0.0
(F) Transfer of RES <u>from</u> other Contracting Parties and 3rd countries	0.0	0.0
(G) RES consumption adjusted for target (D)-(E)+(F)	887.3	983.0
GFEC	3565.1	3622.7

Data: EUROSTAT (Energy Balances and SHARES tool for BiH, 2016 and 2017)

Note: Explanations on the difference are given in the Chapter 6

<sup>8</sup> Facilitates comparison with Table 4a of the NREAPs

<sup>9</sup>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.

<sup>10</sup>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 electricity<sup>11</sup>**

	2017 Year n-1		2016 Year n-2	
	MW	GWh	MW	GWh
Hydro <sup>12</sup> :	<b>2146.96</b>	<b>4893.00</b>	<b>2136.76</b>	<b>5624.68</b>
non pumped				
<1MW	26.09	79.29	21.00	75.60
1MW–10 MW	86.94	212.00	81.83	221.28
>10MW	1593.94	4323.27	1593.94	5182.46
pumped	440.00	278.44	440.00	145.34
mixed <sup>13</sup>				
Geothermal				
Solar:	<b>16.31</b>	<b>21.16</b>	<b>14.15</b>	<b>15.35</b>
photovoltaic	16.31	21.16	14.15	15.35
concentrated solar power				
Tide, wave, ocean				
Wind:	<b>0.30</b>	<b>0.03</b>	<b>0.30</b>	<b>0.03</b>
onshore	0.30	0.03	0.30	0.03
offshore				
Biomass <sup>14</sup> :	<b>1.24</b>	<b>6.79</b>	<b>1.24</b>	<b>0.29</b>
solid biomass	0.24	1.43	0.24	0.23
biogas	1.00	5.36	1.00	0.06
bioliquids				
<b>TOTAL</b>	<b>2164.54</b>	<b>4920.98</b>	<b>2152.19</b>	<b>5640.34</b>
of which in CHP	1.24	6.79	1.24	0,29

Data: Regulatory Commission for Energy in FBiH and Regulatory Commission for Energy of the RS

**Table 1c: Total actual contribution (final energy consumption<sup>15</sup>) 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)<sup>16</sup>**

	2017 Year n-1	2016 Year n-2
Geothermal (excluding low temperature geothermal heat in heat pump applications)	0	0
Solar	0	0
Biomass <sup>17</sup> :	1.220.3	1250.6
solid biomass	1.220.3	1250.6
biogas	0	0
bioliquids	0	0
Renewable energy from heat pumps: - of which aerothermal - of which geothermal - of which hydrothermal	0	0
<b>TOTAL</b>	<b>1220.3</b>	<b>1250.6</b>

<sup>11</sup> Facilitates comparison with Table 10a of the NREAPs.

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

<sup>13</sup> In accordance with new Eurostat methodology.

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

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

<sup>16</sup> Facilitates comparison with Table 11 of the NREAPs.

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

<i>Of which DH<sup>18</sup></i>		
<i>Of which biomass in households<sup>19</sup></i>	1164.6	1187.2

Data: Assessment methodology for biomass household consumption was reviewed and adapted (see explanation in chapter 6)

**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)<sup>20, 21</sup>**

	2017 Year n-1	2016 Year n-2
Bioethanol/ bio-ETBE		
<i>Of which Biofuels<sup>22</sup> Article 21.2</i>		
<i>Of which imported<sup>23</sup></i>		
Biodiesel		
<i>Of which Biofuels<sup>24</sup> Article 21.2</i>		
<i>Of which imported<sup>25</sup></i>		
Hydrogen from renewables		
Renewable electricity	2.46	2.43
<i>Of which road transport</i>		
<i>Of which non-road transport</i>	2.46*	2.43*
Others (as biogas, vegetable oils, etc.) – please specify		
<i>Of which Biofuels<sup>26</sup> Article 21.2</i>		
<b>TOTAL</b>	2.46	2.43

\* Based on the data from the Agency for Statistics of BiH, 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."

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

<sup>19</sup> From the total renewable heating and cooling consumption.

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

<sup>21</sup> Facilitates comparison with Table 12 of the NREAPs.

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

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

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

<sup>25</sup> From the whole amount of biodiesel.

<sup>26</sup> 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**

<b>Name and Reference No. of the Measure</b>	<b>Type of Measure*</b>	<b>Expected Result**</b>	<b>Targeted Group and Activity***</b>	<b>Existing or Planned****</b>	<b>Start and End Dates of the Measure</b>
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
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)	Adopted in 2016, established until 2020 (will be replaced by NECP)
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	Carriers of development projects for RES plants	Planned	2016

		(Article 6 of Directive 2009/28 / EC) and joint projects (Article 9 of Directive 2009/28 / EC)			
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	2017
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	In preparation within Reform of Support Schemes (see NEW 1.10)	2016
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 Customs Tariffs with regards to the use of biofuel	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
1.9 Decision on quality of liquid petrol fuels in BiH	Regulatory	Quality increase	Entity administration, distributors	Planned (in preparation)	2018

New1.10: 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	Planned (already in preparation)	2020-2030
New 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	2017-2020

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

\* 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 order to improve administrative procedures and to remove regulatory and non-regulatory barriers to the development of renewable energies, working groups with representatives from all competent institutions in BiH related to licensing and permitting of RE in BiH were established. In an initial phase, WGs activities were focused on the identification and analysis of the existing licensing and permitting regime in the both entities. The project started with the conduction of baseline surveys assessing the current regime from the perspectives of transparency, harmonization and efficiency. In a second step, a detailed analysis of the existing legal framework was conducted, and case studies were prepared as well as a capacity assessment of institutional and individual actors which are issuing permits for energy projects in the FBiH and RS. All results and recommendations were summarized in the compilation reports: (i) Analysis of Legal Framework and Recommendations for the Removal of Obstacles to Investments in the Energy Sector in the FBiH and (ii) Analysis of Legal Framework and Recommendations for the Removal of Obstacles to Investments in the Energy Sector in the RS.

These documents were presented to the key-stakeholders of the involved institutions and adopted in 2018 by FBiH and RS Governments for official use to improve the administrative procedures for RE in both entities. They contain over 100 recommendations to improve the legal framework in order to make licensing & permitting procedure for RE more efficient, transparent and harmonized with the EU Directive.

Additionally to that, detailed guidelines for investors were prepared and published in order to provide a structured picture of all the necessary permits and permitting procedures necessary



for the operation of (renewable) energy facilities, thus making the administrative procedures for RE more transparent and clearer for investors as well as for the involved authorities.

In both entities, the implementation of the above mentioned recommendations to improve the administrative procedures has started and has led to first results.

#### *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.

### **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). 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 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 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) 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) 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).**

Since 2012, in Bosnia and Herzegovina, generation of electricity from renewable sources is currently promoted through feed in tariffs (FIT) set by responsible authorities on the entity level in RS and FBiH.

*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 2018, activities on revision of Action Plan for Usage of Renewable Energy Sources in RS started and in October 2018 a RS Government adopted a Revised Action Plan for Usage of Renewable Energy Sources in RS (Official Gazette of the Republic of Srpska, No. 96/18).

In relation to the previous AP, the following dynamic quotas were changed:

- for SPPs quotas increased - from 8 MW to 12,20 MW,
- For biomass quotas decreased - from 14,83 to 12,96 MW.

In March 2019 the draft to amend the Law on RES in Republic of Srpska was adopted by the RS Government and was referred to the consideration of the RS National Assembly. In April 2019 the RS National Assembly adopted a Law on the Amendments to the Law on Renewable Energy Sources and Efficient Cogeneration (Official Gazette of the Republic of Srpska, No. 26/19). Within that Law amendment, wind power plants were excluded from the system of incentives.

*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) 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 2018, activities on revision of Action Plan for Usage of Renewable Energy Sources in the Federation of BiH started and in November 2018 a FBiH Government adopted Revised Action Plan for Usage of Renewable Energy Sources in the Federation of BiH (Official Gazette of FBiH, 94/18), where in relation to the previous AP, the following dynamic quotas are changed:

- for SPPs quotas increased - from 11 MW to 23 MW,
- For biogas new dynamic quota was introduced in amount of 1.2 MW

#### *BIH*

As a result of these measures, by the end of 2017, in Bosnia and Herzegovina 113 MW of small hydropower plants, 16 MW of solar PV and 1 MW of biogas are registered.

In order to adjust the incentive system according to the needs and feasible potential of other technologies and to introduce a cost-efficient market component into the incentive mechanisms, a comprehensive reform of the support scheme system for RES based electricity is required in both entities.

Since the beginning of 2018, a Working Group, consisting of representatives of several BIH authorities with legal competences in the energy sector has been engaged in developing a concept for a reform of RE support schemes in BIH. It is planned to have the reform and the respective legislation adopted until the end of 2020, entering into force in the beginning of the year 2021. Currently, public consultations are conducted with regard to the proposed mechanism and processes.

The proposed reform aims at both reducing renewable energy support cost and facilitating development of renewable energy projects in a fully liberalized electricity sector environment.

The working group made distinctive proposals for the renewable energy support scheme reform for large-scale and for small-scale installations. Large-scale installations shall become subject to Feed-in Premium (FIP) based support, while small-scale installations will continue

to benefit from administratively set Feed-in-Tariffs (FIT). The threshold separating large from small scale shall be set technology specific but is yet to be defined.

The amount of FIP for large scale installations shall be set through the introduction of auctions for wind, solar and hydro power and administratively through a defined calculation methodology for biomass and biogas.

The FIP shall be paid to large-scale RE producers on top of the revenue from the electricity sales on the open market. For the transition period preceding the establishment of the Intra-Day Market and Day-Ahead Electricity Market in BiH, the reform foresees the introduction of a new, flexible reference price based on the Methodology defined by the Regulatory Commissions. The reference price should reflect seasonal and daily demand for electricity supply mirroring simulated wholesale electricity market price.

Small-scale installation up to the defined threshold shall be continued to be subject to administratively set, technology-specific FIT. The FIT shall be complemented by quotas (i.e. annual capacity limits) to steer their expansion, with a first-come-first-serve policy as a basic approach to the allocation of support. Technology quotas shall contain minimum shares to be filled by and give priority to local community-energy initiatives.

To allow citizens to actively participate and benefit from the energy transition, a stable and sustainable mechanism for self-consumers (Prosumers) shall be established in both entities. For prosumers, a net billing mechanism shall be introduced as an alternative option of RE support, i.e. the supplier should “net” electricity supply by remunerating excess energy fed into the grid.

In a first phase, conducted between October 2017 and August 2018, several options have been analysed and evaluated in order to agree on the conceptual structure of the reform and selected support mechanism. The second phase, currently being implemented foresees the drafting of detailed legislation, respective guidelines, overview of roles and processes definitions and other required documents and calculations.

Upon consent of BiH policy makers, it is planned to have the reform and the respective legislation adopted until the end of 2020, entering into force in the beginning of the year 2021.

**Table 3: Support schemes for renewable energy**

Support plans for RES year 2018		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 (0.0606 – 0.0714) €/kWh Guaranteed purchase prices, and the premium part in that is 0,0315-0,0422 €/kWh	FBiH (0.06 – 0.144) €/kWh	RS: 21,193  FBiH: 19,245

	Feed-in premium	RS (0.0164 - 0.0272) €/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	RS 0.075 €/kWh Guaranteed purchase prices, and the premium part in that is 0,0307 €/kWh	FBiH (0.073 – 0.187 €/kWh)	FBiH: 12,674
Feed-in premium	RS 0.0307 €/kWh	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 (0.1159 – 0.1234) €/kWh Guaranteed purchase prices, and the premium part in that is 0,0865-0,0942 €/kWh	FBiH (0.12 - 0.24€/kWh)	RS: 1,831
Feed-in premium	RS (0.0714-0.0791) €/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 (0.0949-0.1402) €/kWh Guaranteed	FBiH (0.093 – 0.208 €/kWh)	RS: 1,595

			purchase prices, and the premium part in that is 0,0658-0,1106€/kWh		FBiH: 6,745
		Feed-in premium	RS (0.0507-0.0956) €/kWh	FBiH -	
		Tenders			
Estimated total support in the electric power sector on an annual level					RS: 24.664 premium + 0.45 imbalance costs FBiH: 20.00
Estimated total support in the heating sector on an annual level					0
Estimated total support in the transportation sector on an annual level					0

\* Quantity of electric power for which support has been provided per unit of provided support, indicated efficiency of support for individual types of technology.

\*\*NOTE: Data for the Federation of FBiH are the last available data, based on assessment, and they are for 2016.

Data from Regulatory Commission for Energy in FBiH and Regulatory Commission for Energy of the RS (FERK Decision No: 01-07-1034-02/18, RERS Decision No: 01-233-6/18/P-80-127).

**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, indebted 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 FERC and published in Official Gazette of the FBiH ("Official Gazette of FBiH no 50/14 and 82/15) was applied. Since January 1<sup>st</sup> 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)).**

In both entities, FIT and related capacity quotas are defined and established that foresee the provision of incentives for solid biomass co-generation and for biogas (see chapter 3 and table 3).

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 MWe<sup>27</sup>. 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 MWe<sup>28</sup> from cattle, pig and poultry manure. The recent introduction of the quota for biogas in the FBiH (see chapter 3) and the respective adaptation of the related FIT foresees to target that potential.

**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 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 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 automatic transfer and cancellation of guarantees of origin for electricity produced at installations of privileged producers, which will be 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)).**

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

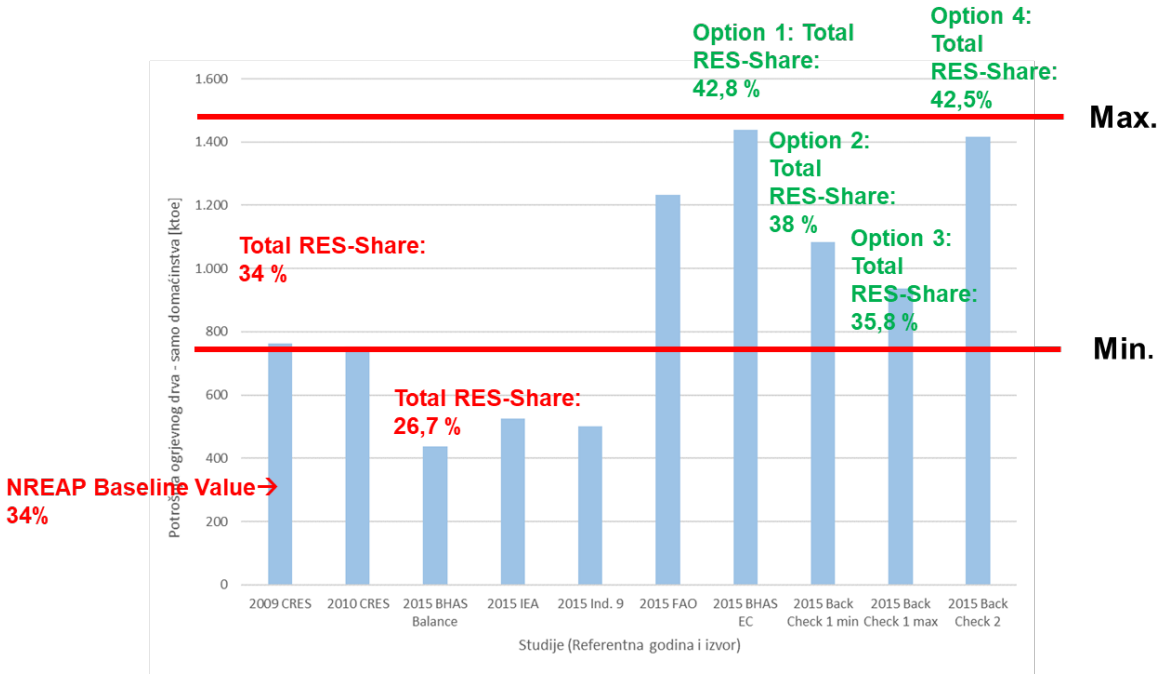
<sup>28</sup> Calculation based on results from: Atlas on Biomass Potentials BiH (<http://atlasbm.bhas.gov.ba>), BiH 2019

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.

However, the reported values for biomass consumption in households and therefore the total biomass consumption differ significantly depending on source and methodology of the underlying study. The baseline value for total biomass consumption given in the National Renewable Energy Action Plan of BiH for 2009, on which the RES target was based, is 792 ktoe, resulting into a total RES share of 34%. The value was later increased to 1.578 ktoe in 2015 based on results from a survey conducted by BHAS, supported by the Energy Community Secretariat (EncS). The results were accepted by the EnCs, officially published in the Energy Balance of BiH documenting a total RES share in FEC of 41.5% for 2015. However, in March 2018, the 2015 value was corrected downwards to 491 ktoe based on another study conducted by BHAS, which led into a RES-share in total FEC of BiH of 26,7%, that veers BiH far away from the 2020 target achievement under the Energy Community Treaty. This broad range of values for biomass consumption in 2015 would imply furthermore either a duplication of the biomass consumption assumed for 2009 (survey data for 2015) or the bisection of it (current Energy Balance data for 2015), both within a period of only 6 years.

Considering that fuelwood consumption in households contributes to over 90% of total biomass consumption, the recorded values in this sector need to be evaluated carefully in order to decide on the most appropriate methodological approach for establishing the most accurate value. Assessment of a “true” result for biomass household consumption remains difficult, due to the high number of unregistered cuttings and harvesting of biomass in BiH and the strong variation in terms of qualities, densities and quantification of firewood.

With the objective to define an appropriate assessment methodology that a) is in-line with the respective baseline value for 2009 for the setting of BiH 2020 RE-target and b) which can be replicated annually without a high administrative effort, different methodologies and studies have been assessed and discussed with the involved institutions (Ministry of Foreign Trade and Economic Relations in BiH, Agency for statistics of BiH, Federal Ministry of Energy, Mining and Industry, Ministry of Energy and Mining of RS, Regulatory Commission for Energy in FBiH, Regulatory Commission for Energy of the RS, GIZ TA Projects)

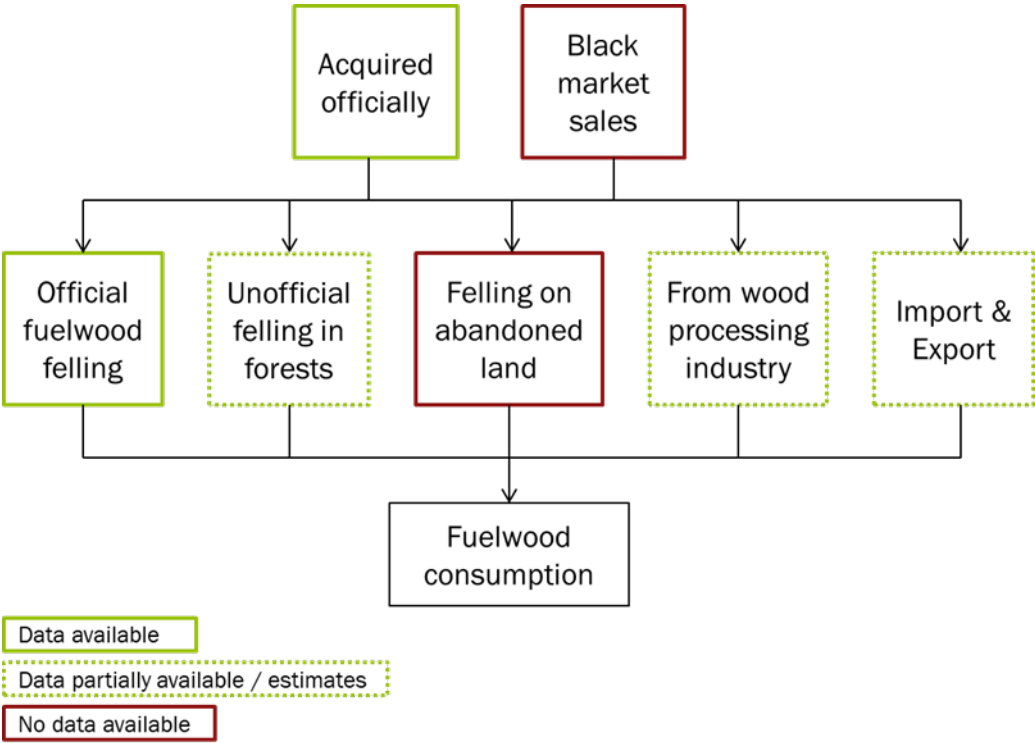




The graph above shows the results for biomass household consumption in BiH of different studies and years (here 2009/2010 as NREAP baseline value reference and 2015 as a further reference year for comparison of different methodologies). Additionally, the total RES-share in gross final energy consumption is added for selected results in %.

The min./max. results are based on a methodology as per expert assessment, defining specific heat consumption, heated area, efficiency, statically reliable data of consumption of other heating fuels and number of households. The last four results on the right side of the graph represent selected methodology options that have been discussed amongst the responsible institutions for future assessment of biomass consumption in households in BiH and in the entities.

The year 2015 had around 15% more heating degree days than 2009, so a higher consumption could generally be justified. Considering the market development in the past decade, it is apparent, that fuel wood utilization has slightly increased through the utilization of woodchips in district heating systems (DHS) and public buildings and wood pellets in larger buildings and households, while modern households in the larger urban area have switched to the supply of gas, heat pumps and electricity. The biomass consumption of DHS and public buildings is being assessed separately. Thus, it can be assumed that strong market changes of biomass consumption in households as implied through the different data between 2009 and 2016 (50-200% of the 2009 value) have not happened in BiH.



The figure above is self-explanatory and shows that many elements can influence fuelwood consumption in BiH; however, not all elements can be captured, statistically or otherwise.

A detailed analysis of different studies can be found in the *Report on Biomass Potential Monitoring in Bosnia and Herzegovina*<sup>29</sup>. In general, it can be summarized that surveys (bottom-up-methodology) are the most statistically reliable assessment methodologies. The largest differences throughout the survey is within the specific consumption assessment. This represents however a difficult value to provide by interviewees, as they typically do not buy their fuelwood in this quantity for one year but rather in small quantities throughout the year or heating period and they do not possess the required expertise to evaluate the high variety of quality and quantity parameters of fuel wood. However, the values which can be assumed to be most accurate are the number of households using fuelwood as this is a simple yes/no

<sup>29</sup> GIZ, UNDP, 2019: Report on Biomass Potential Monitoring in Bosnia and Herzegovina

question therefore subject to the least amount of error and the heated area. Considering that FAO (2016), Glavonjic et al. (2017) & BHAS, EnCT (2015), Robina & Loncarevic (2017) all come to the conclusion that 75% of households use fuelwood, this value was also used for one of the proposed assessment options for the years following the year 2015.

The four options being evaluated and discussed amongst the above mentioned institutions where the following:

Option 1: Results from EnC/BHAS survey 2015 (completed)

Option 2: Expert Assessment and Energy Balance (average of min.-max.-calculation)

Option 3: Assessment with data from EnC/BHAS survey 2015 (% of biomass consuming households) and Energy Balance

Option 4: Expert Assessment with data from EnC/BHAS survey 2015 (% of biomass consuming households)

The detailed methodology and input parameters are described in the presentation *Potrošnja biomase u domaćinstvima u BiH*<sup>30</sup>

The institutions agreed on Option 2 as the most appropriate calculation methodology, considering the baseline value for 2009, availability of data, the possibility for annual adaptation and assessment on the entity level. Option two is considering the median value of the min.-/max.-expert assessment, which is based on specific heat consumption, heated area, efficiency, statically reliable data of consumption of other heating fuels and number of households.

The tables below show the assessment and assumed parameters for the baseline year 2015 based on Option 2. The first table shows the consumption of all non-biomass fuels for heating&cooling in BIH in 2015 according to the EUROSTAT Energy Balance.

<b>FEC in households for heating&amp;cooling without biomass (BIH Energy Balance 2015, EUROSTAT)</b>		
District Heating Systems (other)	96,1	ktoe/a
Coal	55,1	ktoe/a
Fuel oil and LPG	78,2	ktoe/a
Natural gas	33,2	ktoe/a
Electricity*	50,0	ktoe/a*
<b>Total</b>	<b>312,7</b>	<b>ktoe/a</b>

\* total electricity consumption in households = 406 ktoe (2015), electricity for heating based on expert assessment

In a next step, the amount of biomass consumption was calculated, assuming the following range of parameters as presented in the table below.

	<b>Minimum</b>	<b>Maximum</b>	<b>Unit</b>
Number of Households (No.HH)	1.155.736	1.155.736	No
Average specific heat consumption (SEC)	140	200	kWh/m <sup>2</sup>
Heated area (A)	51,2	51,2	m <sup>2</sup>
Thermal efficiency ( $\eta_{\text{therm}}$ )	65%	60%	

<sup>30</sup>GIZ, 2019: Potrošnja biomase u domaćinstvima u BiH - Metodologije procjene i njihov doprinos u udjelu OIE, 02.04.2019

Total final energy consumption for household heating&cooling (FECtot)	1095,9	1696,0	ktoe
without biomass (FECnonBio)	312,7	312,7	ktoe
<b>Biomass consumption on households for heating&amp;cooling (FECBio)</b>	783,2	1383,4	<b>ktoe</b>

**The arithmetic mean of the two min./max.-values for biomass household consumption in 2015 is 1083 ktoe.** This value is considered to be the baseline value for the annual adaptation for the following years until 2020. The methodology for adaptation of the baseline value for 2015 considers the annual change in consumption of other fuels in household (see table above for FEC in households without biomass) according to EUROSTAT data and the BIH Energy Balance. The same ratio of these values for the year of adaptation related to the baseline year 2015 is applied on the baseline value for biomass consumption in households to define the value for biomass consumption in households for the year of adaptation. (see table below)

Annual fuel consumption residential sector in ktoe				
Year	2014	2015*	2016	2017
<b>Biomass Household Consumption (ktoe)</b>	1041,53	1083,29	1187,23	1164,63
<b>Other fuels in Households (w.o. electricity) (ktoe)**</b>	252,53	262,65	287,85	282,37

\*Baseline year for calculation

\*\* according to EUROSTAT/BH Energy Balance

With regard to the thus defined value for biomass consumption in household for 2016, the total biomass consumption for this year is calculated by adding to that value the biomass final energy consumption of other sectors like industry (17.5ktoe), district heating systems (13.7ktoe) and commercial & public services, (32.2ktoe), this results into a **total biomass consumption of BIH in 2016 of 1250.64 ktoe** (see table 1c).

The selected option 2 can be implemented on the level of the entities in the future as well. Data provided within the RS Report also confirms the results of the conducted calculation according to Option 2.

According to the RS Report, biomass in Republika Srpska is a significant renewable source of energy although it has never been exactly evaluated in the RS. Various sources have different data, and energy statistics have not yet been sufficiently established. The use of biomass in households, except for firewood, was not promoted to a significant extent. Total cutting of firewood (public and private forests) is about 850000 m<sup>3</sup>. It is estimated that unrecorded wood cutting is at least about 60%, which leads to the amount of about 400 ktoe in primary energy for total biomass consumption for heating&cooling. In the last couple of years significant pellet consumption has been observed in the domestic heating sector. Efforts to undertake larger use of forest and agricultural residues for heating in rural settlements through projects have not yielded into significant results. The main reasons are:

- insufficient regulatory framework in the forestry sector,
- insufficient forest openness,
- lack of regulation in the heating sector,
- undeveloped infrastructure,
- low awareness of citizens about using this significant potential.

Additionally to the utilization of biomass in households, in the RS a new efficient biomass-fired cogeneration (CHP) plant "Nova Toplana" Prijedor (with installed capacity of 0.250 MWe and 20 MWt), and one biogas power plant "Buffalo Energy GOLD-MG", Novo Selo, municipality of

Šamac, (installed capacity 0.999 MWe) were built and connected to the grid. Two new CHP biomass plants "Nova Topola" in the municipality of Gradiska (installed capacity 0.992 MWe and 4.8 MWt), and "Cogeneration plant on biomass", Kneževo municipality (installed capacity 0.820 MWe and 5 MWt) are currently under construction.

**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)	
	2017 Year n-1	2016 Year n-2	2017 Year n-1	2016 Year n-2	2017 Year n-1	2016 Year n-2	2017 Year n-1	2016 Year n-2	2017 Year n-1	2016 Year n-2	2017 Year n-1	2016 Year n-2
<b>Biomass supply for heating and electricity:</b>												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	373.794 t of DM (data not complete)	716.344 t of DM	147,3 ktoe (data not complete)	282,3 ktoe								
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**		677.671 t of DM	Data not complete	267,1 ktoe								
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)  Unregistered biomass consumption (firewood, biomass from abandoned land,			Data not complete	701.2								

residues, not further determined) here only as min. value													
<b>Biomass supply for transport:</b>													
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/>

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

Land use	Surface (ha)	
	2017 Year n-1	2016 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 arable crops (wheat, other cereals, maize/corn: 313.894 ha Oil seeds (rapeseed, sunflower etc.): 10.101 ha	Common arable crops (wheat, other cereals, maize/corn: 313.587 ha Oil seeds (rapeseed, sunflower etc.): 9.191 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.  However, the only documentable usage of other energy crops, that are not biofuels for transport or short rotation plantations, would be the corn and grass silage being used in the two	Currently not separately assessed.  However, the only documentable usage of other energy crops, that are not biofuels for transport or short rotation plantations, would be the corn and grass silage being used in the two operating biogas plants (primarily operating on

	operating biogas plants (primarily operating on animal waste, 1x 999 kWel+ 1 x 36 kWel) in the RS since 2016. The land use for the consumed corn and gras silage is estimated with less than 50 ha.	animal waste, 1x 999 kWel+ 1 x 36 kWel) in the RS since 2016. The land use for the consumed corn and gras silage is estimated with less than 50 ha.
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\*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.

**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 <sup>31</sup>	2017 Year n-1	2016 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).**

**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	2017 Year n-1	2016 Year n-2
<b>Total estimated net GHG emission saving from using renewable energy<sup>32</sup></b>	2.093.825	2.091.395
- Estimated net GHG saving from the use of renewable electricity	2.036.650	2.042.230
- Estimated net GHG saving from the use of renewable energy in heating and cooling	57.175	49.165
- Estimated net GHG saving from the use of renewable energy in transport		

<sup>31</sup> Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

<sup>32</sup> 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.

Data from the Republic of Srpska only.

For the calculation of estimated GHG emissions, the following emission factors were used:

- Electricity - 0.8 t / MWh,
- Firewood - 0 t / MWh
- Coal - 0.34 t / MWh
- Gas - 0.2 t / MWh.

**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*).**

It should be noted that the BHAS, for the first time, published the total statistical energy balance for Bosnia and Herzegovina for the years 2014 - 2016, including the revision of total statistical energy balance for year 2014. The First Report under Renewable Energy Directive 2009/28/EC was made using previous data from previous energy statistics, which caused the change of statistical indicators for the period 2014 – 2016. Therefore, there was a change in the indicative trajectory for the same period, from the one trajectory that was presented to the NREAP BiH document. Now, the aforementioned statistical indicators, according to the official energy statistics, are essentially distant from the responding trajectories defined by NREAP.

The inconsistency in energy statistics is a significant difficulty in planning the implementation of renewable energy in Bosnia and Herzegovina. On the one hand, the goals and the complete plan of their realization are defined on the previous statistics, while monitoring the implementation is done according to the data from the updated statistics. This leads to inconsistency and it is impossible to monitor the efficiency of the system for increasing renewable energy itself.

It is necessary to find a solution to the newly emerging situation. These energy balances have to be revised one more time. In this regard, MoFTER together with BHAS is in process of forming the Energy statistics Working group aiming to improve and upgrade the quality of data. The assessment methodology for biomass consumption in households has been revised and an assessment option has been selected that shall be subject to adaption and official statistical recognition for the reported time frame (2015 and 2016) in the beginning of the year 2019 (see chapter 6). The selected option has already been considered for the respective provision of data on biomass consumption for this Progress Report.

Analyzing the movement of energy share from the RES with respect to gross final consumption in the Republic of Srpska in recent years, it is evident that this indicator moves below the minimum path in relation to the RS Action Plan.

Targets, ie. plans for electricity generation from solar power plants and small hydropower plants are expected to be achieved already this year.

There is delay in the construction of wind farms, whose planned production is anticipated to intensify, but it is expected to reach the target in the next two years.

The delay in the realization of the planned targets of the RS Action Plan is caused by the slow implementation of planned major hydro power plants for which concession has been already granted (HPP Dabar, HPP Buk Bijela, HPP Mrsovo, HPP Ulog etc.), as well as insufficient regulation in the heating and cooling sector, and in the use of biofuels in transport.

**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 Bosnia and Herzegovina  
(ktoe)<sup>33, 34</sup>**

	<b>2016</b> <i>Year n-2</i>	<b>2017</b> <i>Year n-1</i>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	-53,2 ktoe (-34,2 ktoe H&C, -14ktoe electricity and -5 ktoe biofuels)	-31,4 ktoe (+14 ktoe H&C, -33 ktoe electricity and -12,4 ktoe biofuels)	-81,5 ktoe (+9,3 ktoe H&C, -66,8 ktoe electricity and -23,4 ktoe biofuels)		

\*Data from the Republic of Srpska only

**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.

<sup>33</sup> 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.

<sup>34</sup> When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).