



THE REPUBLIC OF SERBIA
The Ministry of Mining and Energy

**Progress Report on the Implementation of the National Renewable Energy
Action Plan of the Republic of Serbia**

December 2016

LIST OF ABBREVIATIONS

GFEC	– Gross final energy consumption
GHG	– Greenhouse gases
EE	– Energy efficiency
EU	– European Union
EnC	– Energy Community
EC	– European Community
IPA	– Instrument for Pre-Accession Assistance of the European Union
ktoe	– Kilotonne of oil equivalent
Mtoe	– Million tonnes of oil equivalent
SHPP	– Small hydropower plants
NREAP	– National Renewable Energy Action Plan
RES	– Renewable energy sources
PPA	– Model power purchase agreement
TEEnC	– Treaty establishing the Energy Community

INTRODUCTION

Adopting the Law on ratifying the Treaty establishing the Energy Community between the European Community and the Republic of Albania, Republic of Bulgaria, Bosnia and Herzegovina, Republic of Croatia, Former Yugoslav Republic of Macedonia, Republic of Montenegro, Romania, Republic of Serbia and United Nations Interim Administration Mission in Kosovo in line with United Nations Security Council resolution 1244 (“Official Gazette of the Republic of Serbia”, Number 62/06), the Republic of Serbia became an Energy Community member in 2006.

Pursuant to the provision set forth in Article 20 of the Treaty establishing the Energy Community (hereinafter referred to as: TEEEnC), the Republic of Serbia has undertaken to implement European directives in the field of renewable energy sources (hereinafter referred to as: RES) – Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources and Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport. As of 2009, the aforementioned Directives were gradually superseded and eventually repealed in January 2012 with the new Directive 2009/28/EC of the European Parliament and of the Council of 23rd April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC CELEX No. 32009L0028.

In line with the Directive 2009/28/EC and Energy Community Ministerial Council Decision of 18th October 2012 (D/2012/04/MC-EnC) a very demanding and binding goal of achieving a 27% share of renewable energy sources in gross final energy consumption in 2020, was set for the Republic of Serbia. The same Decision required preparation of the National Renewable Energy Action Plan of the Republic of Serbia in line with the approved template for the preparation of this document (Decision 2009/548/EC) and its submission to the Energy Community Secretariat. The National Renewable Energy Action Plan was adopted by the Republic of Serbia in June 2013 (“Official Gazette of the Republic of Serbia”, No. 53/13).

Pursuant to Article 66 of the Energy Law (“Official Gazette of the Republic of Serbia”, No. 145/14) the Ministry in charge of activities in the energy sector shall monitor the National Renewable Action Plan implementation and submit a report on its implementation to the Government (hereinafter referred to as: Report). Moreover, in line with Article 15 of the Energy Community Ministerial Council Decision (D/2012/04/MC-EnC), TEEEnC signatories shall provide the EnC Secretariat with a Report every other year. The first Report was submitted by 31st December 2014. The second Report shall be submitted by 31st December 2016, and it will contain data for 2014 and 2015.

The second Report of the Republic of Serbia was made in line with the recommended template of the European Commission (which is adapted by the EnC Secretariat for TEEEnC signatories), definitions and calculation rules set forth in the Directive 2009/28/EC and Regulation (EC) No. 1099/2008 of the European Parliament and of the Council.

Data shown in the Report were determined based on the 2016 Energy Balance of the Republic of Serbia, which was adopted by the Government on 30th December 2015 (“Official Gazette of the Republic of Serbia”, 113/15). The Energy Balance for 2016 presents realized production and consumption for 2014, estimated data for 2015 and forecasts for 2016. The balancing of energy from renewable energy sources includes production and consumption of electricity from small and large watercourses, wind and solar energy, as well as the production and consumption of heat energy from geothermal energy and solid biomass (firewood, pellet and briquette). Geothermal energy utilization is tracked by the Statistical Office of the Republic of Serbia as part of its statistical research, and the figures on such utilization do not include geothermal energy utilization through the use of heat pumps. Geothermal energy is used solely for heating purposes.

The solid biomass production and consumption includes firewood, pellet and briquette production and consumption for energy purposes to meet the heating needs. Article 5, Paragraph 3 of the Directive 2009/28/EC stipulates that motor biofuels and other liquid biofuels

that do not meet the sustainability criteria set forth in Article 17, Paragraphs 2, 3, 4, 5 and 6 of the Directive, shall not be taken into account while calculating the share of renewable energy sources. Having in mind that the by-laws defining sustainability criteria and their verification have still not been adopted, the consumption of biofuel could not be shown for the purposes of meeting the RES goal in the transport sector.

In addition to the 2016 Energy Balance, the Register of Privileged Electricity Producers (<http://www.mre.gov.rs/doc/registar28.11.html>), maintained by the Ministry of Mining and Energy pursuant to Article 75 of the Energy Law, was also used as a data source for the Report preparation.

1. Sectorial and overall shares of RES and actual consumption of energy from renewable sources in the preceding 2 years (2014 and 2015)

(Article 22 (1) of Directive 2009/28/EC).

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

	2014	2015
RES-H&C (%)	30.34	26.77
RES-E (%)	40.68	38.86
RES-T (%)*	0	0
Overall RES share in GFEC (%)	22.73	21.00
<i>Of which from cooperation mechanism (%)</i>	0	0
<i>Surplus for cooperation mechanism (%)</i>	0	0

Table 1a: Calculation of contribution of using RES of each sector to GFEC (ktoe)

	2014	2015
(A) GFEC of RES for heating and cooling	1038	1041
(B) GFEC of electricity from RES	903	909
(C) GFEC of energy from RES in transport *	0	0
(D) Gross total RES consumption (estimated surplus in relation to the target)	1941	1950
(E) Transfer of RES to EU Member States	0	0
(F) Transfer of RES from other Contracting Parties and 3rd countries	0	0
(G) RES consumption adjusted for target (D)-(E)+(F)	1941	1950

**It is not possible to show RES contribution to the transport sector, since there is no proof that sustainability criteria have been met, neither an adequate statistical monitoring of RES consumption in transport. Such data may be shown in subsequent reports only after all required by-laws in the biofuel field have been adopted, as well as when an adequate statistical monitoring through the Energy Balance has been established.*

Calculation method for individual values given in Table 1 and Table 1a

Gross final energy consumption (GFEC) was calculated in line with Article 2 of the Directive 2009/28/EC as an overall final energy consumed for energy purposes in the industry, transport, households, public and commercial activities, agriculture, forestry and fisheries, including own consumption of electricity and heat energy in the sector of electricity and heat energy production, and losses in the transmission and distribution of electricity and heat energy.

The share of renewable energy sources in heating and cooling is calculated as the result of dividing the gross final consumption of energy from renewable sources in the heating and cooling sector (as defined in Article 5, Paragraph 1, Item b) and Article 5, Paragraph 4 of the Directive 2009/28/EC) by the gross final consumption of energy for heating and cooling.

The gross final consumption of energy from renewable sources for heating and cooling is calculated as the quantity of energy produced from renewable sources used in district heating and cooling systems, plus the quantity of energy from renewable sources used in industry, households, public and commercial activities, agriculture, forestry and fisheries, for heating, cooling and processing purposes (Article 5, Item 4 of the Directive 2009/28/EC).

The share of renewable energy sources in electricity is calculated as the GFEC from renewable energy sources (as defined in Article 5, Paragraphs 1 and 3 of the Directive 2009/28/EC) divided by the gross final consumption of electricity.

Gross final consumption of electricity from renewable energy sources is calculated as the quantity of electricity produced from renewable energy sources, excluding the electricity production in pumped storage units (reversible power plants) (Article 5, Item 3 of the Directive 2009/28/EC).

The share of renewable energy sources in transport is calculated as the final energy from renewable sources consumed in transport (please see Article 5, Paragraph 1, Item (c) and Article 5, Paragraph 5 of the Directive 2009/28/EC) divided by the consumption in transport of: 1) oil; 2) diesel; 3) biofuel used in road and rail transport and 4) electricity used in land transport.

The GFEC from renewable sources is calculated as the sum of: gross final consumption of electricity from renewable energy sources, gross final consumption of energy from renewable sources for heating and cooling and gross final consumption of energy from renewable sources in transport.

Results achieved in terms of RES utilization increase and analysis of the shown data

Since 2009, when the legal framework with incentive measures (“feed-in” tariffs) was established for the first time in the Republic of Serbia, until October 2016, the following new plants with the installed capacity of 80.3 MW were constructed for production of electricity from RES:

- 1) 61 small hydropower plants with the total installed capacity of around 41 MW (including two old, reconstructed power plants: Ovcar banja and Medjuvrsje);
- 2) 104 solar power plants with the capacity of 8,8 MW;
- 3) 2 wind power plants with the capacity of 10,5 MW, while 7 wind power plants have gained the temporary privileged producer status with the total capacity of 489 MW,
- 4) 7 biogas power plants with the total capacity of around 9 MW.

Data source is the Register of Privileged Electricity Producers (<http://www.mre.gov.rs/doc/registar20.10.16.html>).

A detailed overview of the newly built plants is given in the table below.

Overview of the planned (in line with NREAP) and constructed power plants in the RES field

Power plant type	Planned in line with NREAP [MW]	Current state, October 2016					
		Energy permits* [number and MW]		Temporary privileged producer status [number and MW]		Privileged producer status (constructed) [number and MW]	
HPP larger than 10 MW	250	2	106**	-	-	0	0
HPP up to 10 MW	188	87	149	2	0.7	61	41.2
Biomass	100	4	17	-	-	0	0
Biogas	30	3	7	1	2	7	9.1
Wind	500	8	70	7	489.6	2	10.4
Solar	10	4	17	2	0.1	105	8.8
Geothermal	1	0	0	-	-	0	0
Waste	3	0	0	-	-	0	0
Landfill gas	10	0	0	-	-	0	0

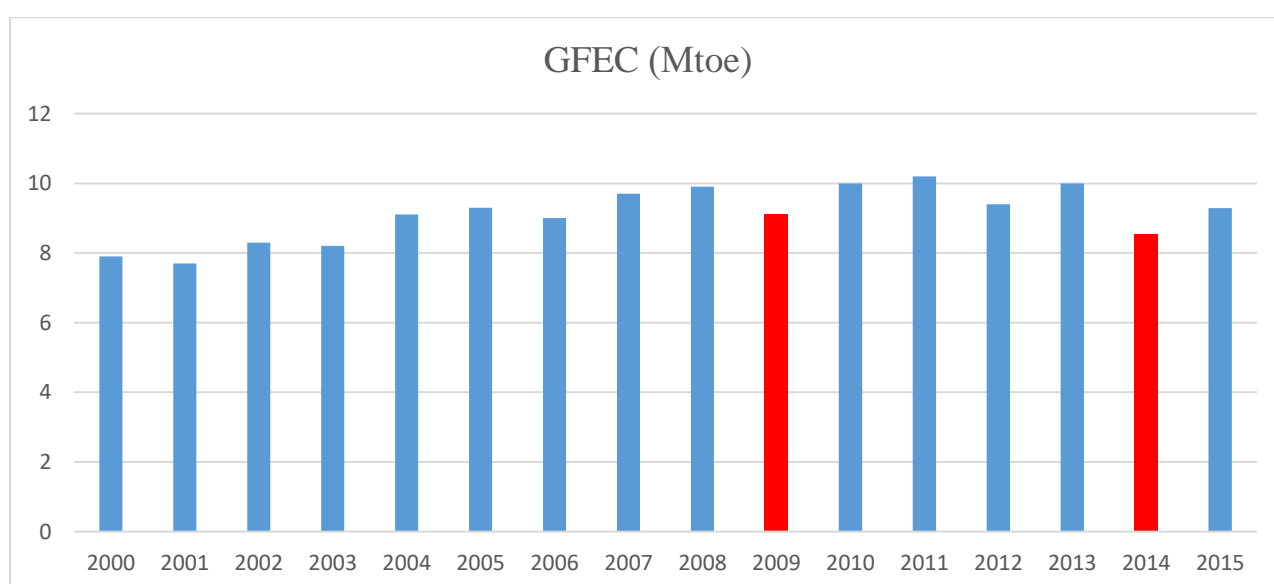
“-” data are not available

* Energy permits for facilities up to 10MW issued in January 2011 and later. The energy permit is a document issued by the Ministry in charge of energy activities and it is necessary for receiving a building permit when constructing energy facilities of 1MW and more. The energy permit is issued with the validity period of three years that may be extended for one additional year. The number of issued energy permits can provide indicative information about future projects.

** Reconstruction of existing power plants

The gross final energy consumption in Serbia, in the period from 2000 to 2015 (Mtoe)

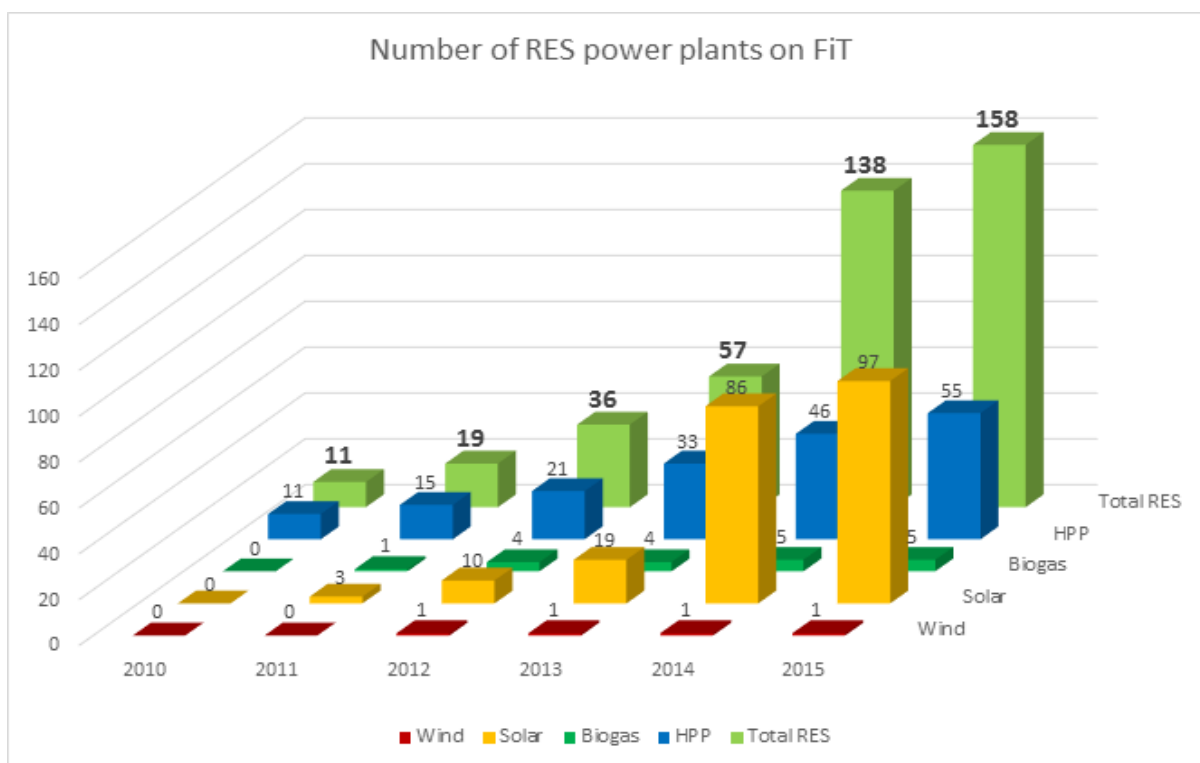
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
7.9	7.7	8.3	8.2	9.1	9.3	9.0	9.7	9.9	9.1	10.0	10.2	9.4	10.0	8.5	9.3



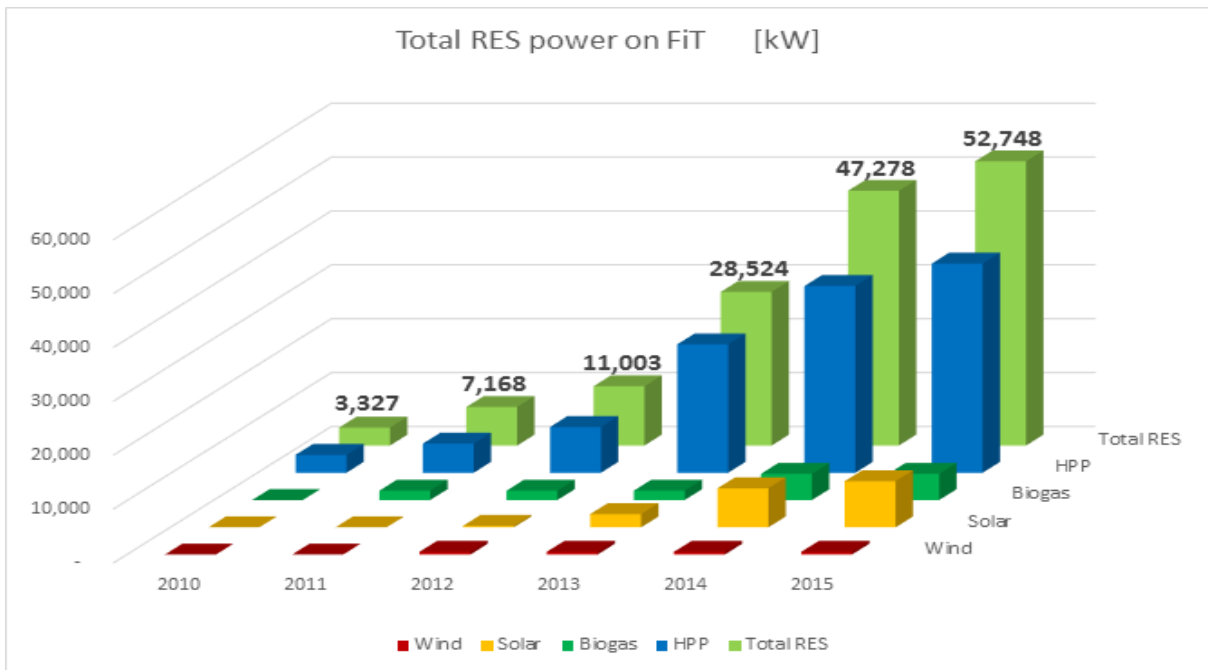
The gross final energy consumption in Serbia, in the period from 2000 to 2015, that is from 2007 to 2015 (Mtoe)

Looking at data from Table 1, as well as RES shares from previous years, which were 20.27% in 2012 and 19.1 in 2013, it may be assumed that the undertaken incentive measures do not give results. However, as it was emphasized in the previous Report on the implementation of NREAP from 2014, that the year 2009, which was chosen as the base year for calculating the binding target, had clearly expressed specificities which led to the fact that RES share in GFEC for 2009 was 21.2%, which are considerably higher values than the real perennial average values. Besides that, disastrous floods struck the Republic of Serbia. The largest coal mines were completely submerged, which led to a decrease of production of the biggest thermal power plants, which are the most important production facilities in Serbia. This is the reason why there was a significant decrease of GFEC in 2014 in relation to the average perennial trend, thus leading to a considerably higher RES share in GFEC in relation to other years. All of this shows that small countries, which are exposed to a strong influence on GFEC from big investments in economy, RES share in GFEC is not a representative data on the status of renewable energy sources in the energy sector.

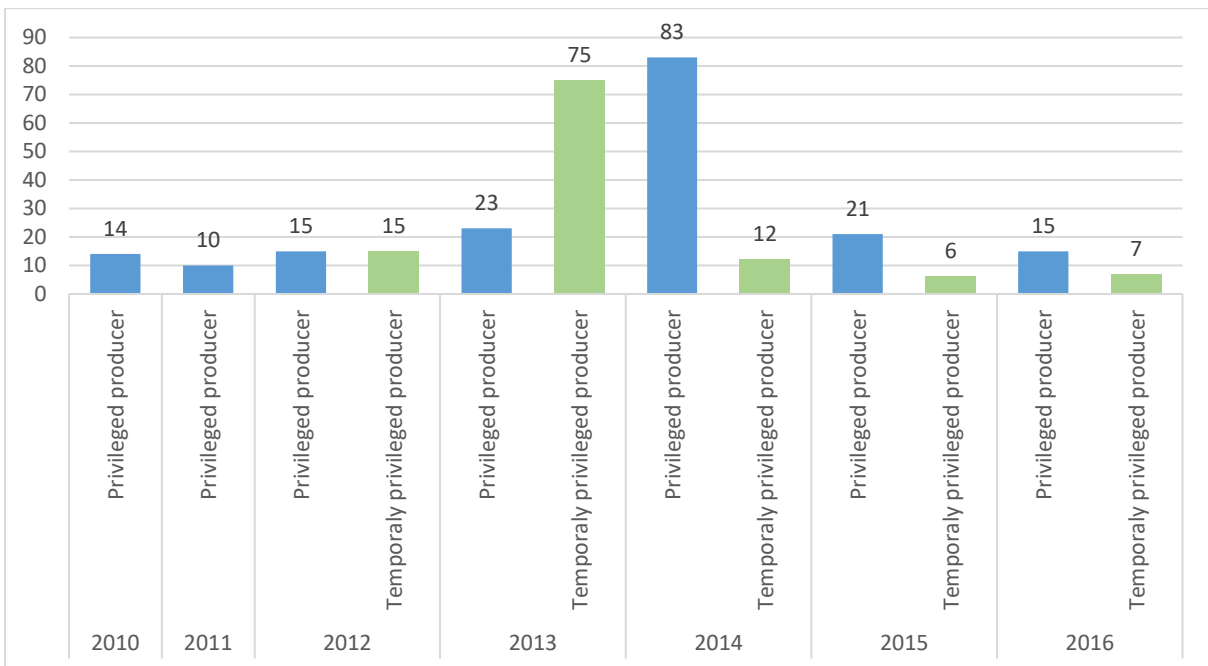
Namely, from 2010 when the system “feed-in” tariffs started to be implemented, there has been a continuous growth of new capacities for production of electricity from RES. The growth is more significant in terms of the number of newly constructed capacities than in respect to the installed capacity, as it is shown on Graphs 1, 2 and 3. It took a few years for the new system of incentives to come to life, and then to build confidence with investors in the functioning of the system, as well as to prepare appropriate projects, especially projects for large power plants.



Graph 1 The number of all types of power plants on RES from introducing the system of incentives with “feed-in” tariffs



Graph 2 Installed capacities of all types of power plants on RES from introducing the system of incentives with “feed-in” tariffs



Graph 3 The number of issued status of temporary and privileged producers from introducing the system of incentives with “feed-in” tariffs

The Republic of Serbia, as a member of the Energy Community, in line with the Ministerial Council Decision of 18th October 2012, committed herself to transpose the Directive 2009/28/EC on the promotion of the use of RES in her legal framework by 1st January 2014. By the same Energy Community Ministerial Council Decision, the Directive was amended and adapted for application within the EnC framework.

The Energy Law, which was adopted on 29th December 2014, transposed suggestions of the Directive 2009/28/EC and chose "support schemes" to encourage greater utilization of RES. Article 2 of the Directive defines "support scheme" as any instrument, scheme or mechanism

applied by a Member State or a group of Member States, that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased. This includes, but is not restricted to, investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes including those using green certificates, and direct price support schemes including "feed-in tariffs" and premium payments. The Republic of Serbia decided, in line with the suggestion from Art. 2 of the Directive which promotes the possibility for each state to freely choose a "support scheme" which it considers the most suitable, to continue with applying the model of "feed-in tariffs" out of two reasons: due to the lack of a rapid development of projects and progress in this field, and in order to more easily implement the policy in the field of RES through the incentive mechanism whose effects it was possible to analyze and forecast since it had been applied for almost 4 years. The Law did not define a possibility of applying other mechanism of support schemes. The Energy Community provided professional support on drafting the Law and gave its consent on the adoption of the Energy Law 2014.

Only after the adoption of the new Energy Law, were the significant effects of the long-range establishing a system of "feed-in tariffs" recorded. Thus, in mid-2015, by submitting a series of requests for obtaining the temporary status of a privileged producer, large investments in the field of using the wind energy were finally launched after having been announced and expected for a long time. Only in 2015, 13 requests were submitted for acquiring the temporary status of a privileged producer of wind power plants with the total installed capacity of 920.3 MW, which was much higher than the maximum capacity planned in strategic, planning and by-law documents amounting to 500 MW by 2020.

Temporary status was issued for nearly 500 MW new wind power plants, which means around 700 million EUR of investments. These capacities are significant for Serbia because of two very important reasons: the first one is contributing to a gradual achieving of 27% RES share in GFEC by 2020, and the second one is building confidence in other investors that the Republic of Serbia is developing a stable climate for investments and is a reliable partner to everyone who wants to invest in the field for RES.

One of the conditions for getting the temporary status of a privileged producer was to submit financial resources (bank guarantee or deposit) in the amount of 2% of the investment project value. This condition was introduced so as to eliminate those investors who do not have serious intentions to realize the project. Bank guarantees in the amount of nearly 16 million EUR were submitted to the Ministry of Mining and Energy, as financial resources which guarantee that 500 MW new wind power plants will be built. The Ministry is authorized to collect the bank of guarantees if the power plants are not built within the given deadline. The collected means would be used for paying off privileged producers who produce electricity from RES, as it is foreseen in the Regulation on compensation for encouraging privileged electricity producers.

On 15th June 2016, the Government of the Republic of Serbia adopted three Regulations to more closely regulate the system of incentives for producers of electricity which use RES. The Regulations are fully compliant with the Energy Law and the Directive 2009/28/EC.

The Commission for State aid control made a Decision on the basis of State Aid Application of the Ministry of Mining and Energy of 8th June 2016, allowing the use of state aid granted under the Regulation on incentive measures for producing electricity from RES and highly-efficient combined heat and power production.

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

	2014		2015	
	MW	GWh	MW	GWh
Hydro*:	2995	10430	3012	10500
non pumped	2381	10999	2398	10170
<1MW	21.3	-	25.0	-
1MW–10 MW	30.6	198	30.6	188
>10MW	2329	-	2343	-
<i>pumped</i>	614	898	614	945
<i>mixed</i>	-	-	-	-
Geothermal	-	-	-	-
Solar:	7.24	6	8,59	8.87
photovoltaic	7.24	6	8.59	8.87
concentrated solar power	-	-	-	-
Tide, wave, ocean	-	-	-	-
Wind:	0.5	0.372	0.5	0.356
onshore	0.5	0.372	0.5	0.356
offshore	-	-	-	-
Biomass:	4.86	20.65	4.86	20.54
solid biomass	-	-	-	-
biogas	4.86	20.651	4.86	20.543
bioliquids	-	-	-	-
TOTAL:	3014.92	10463.02	3034.94	10529.77
of which power plants with combined production	-	-	-	-

“-” data are not available

* The production from hydropower plants is normalized in accordance with the rule set forth in Annex II to Directive 2009/28/EC

Table 1c: Estimate of total contribution (final energy consumption) expected from each renewable energy technology to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)

	2014 (ktoe)	2015 (ktoe)
Geothermal (excluding low temperature geothermal heat in heat pump applications)	6	6
Solar	-	-
Biomass	1032	1035
<i>solid biomass</i>	1032	1035
<i>biogas</i>	-	-
<i>bioliquids</i>	-	-
Renewable energy from heat pumps:	-	-
- of which aerothermal		
- of which geothermal		
- of which hydrothermal		
TOTAL	1038	1041
<i>Of which DH</i>	2	2
<i>Of which biomass in households</i>	852	855

„-“ data are not available

NOTE: The solid biomass production and consumption includes firewood, pellet and briquette production and consumption for energy purposes (to meet the heating needs). As part of the activities of the Energy Community in the field of RES, and for the purpose of defining the targets, a biomass consumption study was conducted for all TEEEnC signatories. This study has established the biomass production and consumption for 2009 and 2010. While preparing the new energy development Strategy of the Republic of Serbia, based on these data, the Energy Balance forecasts have been made until 2030. These forecasts were used as the source for data on solid biomass production and consumption for 2014 and 2015.

Table 1d: Estimate of total contribution expected from each renewable energy technology to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)

	2014	2015
Bioethanol/ bio-ETBE	-	-
[ktoe]		
<i>Of which Biofuels</i>	-	-
(Article 21.2)		
<i>Of which imported [%]</i>	-	-
Biodiesel	-	-
[ktoe]		
<i>Of which Biofuels</i>	-	-
(Article 21.2)		
<i>Of which imported [%]</i>	-	-
Hydrogen from renewables	-	-
[ktoe]		
Renewable electricity	-	-
[ktoe]		
Of which road transport	-	-
[ktoe]		
Of which non-road transport [ktoe]	-	-
Others (as biogas, vegetable oils, etc.) – please specify	-	-
[ktoe]		
<i>Of which Biofuels</i>	-	-
(Article 21.2)		
TOTAL [ktoe]	-	-

„-“ data are not available

NOTE: Reliable data in the transport sector are not available. The data will be available upon the adoption of by-laws which regulate the sector of consumption and verification of biofuels in the Republic of Serbia in accordance with the 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 the National Renewable Energy Action Plan (Article 22(1) a) of Directive 2009/28/EC)

Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure	Expected result	Targeted group and or activity	Existing or planned	Start and end dates of the measure
1. Measure “Promotion of Electricity Production through Incentive Purchase Prices” Energy Law (“Official Gazette of the Republic of Serbia”, No. 145/2014)	financial regulatory	increase in the production of electricity from RES	energy entities	existing	2009
Measure implementation mechanisms					
1.1 Regulation on Conditions and Procedure for Acquiring the Status of the Privileged Electricity Producer, Temporary Privileged Producer of electricity from RES (“Official Gazette of the Republic of Serbia”, No. 56/16)					15/12/2016
1.2 Regulation on Incentive Measures for production of electricity from RES and from highly-efficient heat and power production (“Official Gazette of the Republic of Serbia”, No. 56/16)					15/06/2016 - 31/12/2018
1.3. Regulation on the Agreement on purchasing electricity (“Official Gazette of the Republic of Serbia”, No. 56/16)					15/06/2016 - 31/12/2018
1.4. Regulation on the Fee for promoting Privileged Electricity Producers (“Official Gazette of the Republic of Serbia”, No. 12/16)					13/02/2016
1.5 Regulation on the Amount of the special fee for promotion in 2016 (“Official Gazette of the Republic of Serbia”, No. 12/16)					13/02/2016 - 31/12/2016
2. Measure “Guarantee of Origin of Electricity Produced from Renewable Energy Sources” Energy Law (“Official Gazette of the Republic of Serbia”, No. 145/2014)	financial regulatory	increase in the production of electricity from RES	energy entities	planned	2017
Measure implementation mechanisms					
2.1 Regulation on the Guarantee of Origin					
2.2 Rulebook on the Method of Calculation and Showing all shares of energy sources in sold electricity					

3. Measure “Promotion of Biofuel Production and Consumption” Energy Law (“Official Gazette of the Republic of Serbia”, No. 145/14)	financial regulatory	increase in biofuel production and consumption	energy entities	planned	2017
Measure implementation mechanisms					
3.1 Rulebook on Technical and Other Requirements for Liquid Fuels of Biological Origin					
3.2 Regulation on Sustainability Criteria for Biofuels					
3.3 Regulation on the Mandatory Marketing of a Certain Percentage of Biofuels					
3.4 Regulation on Incentive Measures for Biofuel Production					
4. Measure “Improvement of the Ministry of Mining and Energy Website” URL: http://www.mre.gov.rs/energetska-efikasnost-obnovljivi-izvori.php	soft informative	to increase information availability; to clarify administrative procedures in the RES field; to increase transparency in the Ministry’s work;	energy entities, natural persons	existing	2014

PROJECTS AND PROGRAMMES OF THE MINISTRY OF MINING AND ENERGY THAT CONTRIBUTE TO A HIGHER RES UTILIZATION

Projects financed through IPA 2012 EU Instrument for Pre-Accession Assistance

Updating the Register of Small Hydropower Plants

This program envisages a Service Agreement for the project of Updating the Register of Small Hydropower Plants, with the value of 1.5 million EUR. The evaluation of bids received for the project is in progress, and the project completion is planned for 2018 when it is expected that an updated Cadaster of SHPP will be completed. Its development will facilitate the implementation of projects relating to SHPP construction through streamlined search for potential locations and systematized presentation of main parameters.

Projects financed through IPA 2014 EU Instrument for Pre-Accession Assistance

Preparation of the National scheme for the verification of biofuels

This program envisages a Service Agreement for the project of Developing a National scheme for the verification of biofuels in the amount of 500 000 EUR. The approval of the project is in progress, and the project completion is planned for 2018 when it is expected that the analysis of possibilities for applying the national scheme for the verification of biofuels is completed. The study will provide a specific insight into the costs and benefits of any national scheme verification biofuels and facilitate the achievement of the targets from the NREAP in the transport sector.

Cooperation between the Republic of Serbia and the Federal Republic of Germany in the energy sector

This cooperation primarily involves the financial form of cooperation between the Federal Republic of Germany and the Republic of Serbia that is being implemented through appropriate projects in the fields of energy efficiency, renewable energy sources and district heating. The main partners of the Republic of Serbia are the Federal Ministry for Economic Cooperation and Development of the Federal Republic of Germany (in German: Bundesministerium für Wirtschaftliche Zusammenarbeit - BMZ), the German Development Bank (in German: Kreditanstalt für Wiederaufbau - KfW) and the German Agency for International Cooperation (in German: Deutsche Gesellschaft für Internationale Zusammenarbeit - GIZ), as part of the German Climate and Technology Initiative (in German: Deutsche Klima-und Technologieinitiative - DKTI).

Project: “Promotion of Renewable Energy Sources Utilization – Biomass Market Development”

The aim of this project is the biomass utilization in heating plants in the Republic of Serbia for the production of heat energy or combined heat and power production. The Project budget amounts to around 110 million EUR. In early December 2012, the Ministry of Mining and Energy and KfW signed the Agreement on Donation for Consultancy Services worth 300,000 EUR, within which the previous feasibility study for selected thermal power plants was completed. The feasibility studies were completed in April 2014 and in line with their results local self-government units in the south-western part of Serbia were invited to take part in the implementation of projects related to the utilization of forest biomass for production of heat energy in local heating plants. The negotiation process for the realization of the first phase of the project in the amount of 20 million EUR, is currently in progress.

Cooperation with the United Nations Development Programme – UNDP

Project: “Reducing Barriers to Accelerate the Development of Biomass Markets in Serbia”

The Ministry of Mining and Energy and the United Nations Development Programme (UNDP), together with the Ministry of Agriculture and Environmental Protection, are implementing the project: “*Reducing Barriers to Accelerate the Development of Biomass Markets in Serbia*”. The project funds are provided by the Global Environment Facility (2.85 million USD) and the UNDP (0.31 million USD). The overall objective of the project is the sustainable energy utilization through the diversification of energy sources and development of the biomass market for consumption for energy purposes in Serbia. The project funds shall be used to provide grants to investors for construction of plants (~1MWel) for combined heat and power (CHP) production from biomass. The total amount of funds available for grants for this purpose is 1.6 million USD.

A public call for tender for interested investors was completed in December 2015, and the Agreement of donation was signed with altogether 6 concrete projects for constructing biogas plants. By November 2016, 4 plants were completed, and it is expected that the remaining 2 will be completed in 2017. The total installed capacity of all plants is 6.32 MWel, and the overall investment value of all projects is 23 million USD. An interactive "step-by-step" Guides for investors were created and translated into English, with the aim to introduce potential investors with all the necessary procedures awaiting for them.

"Green Energy" internet portal was prepared as the official informative web site in the field of renewable energy sources and the site of biomass stock exchange. It was created in cooperation with the Chamber of Commerce of Serbia, and it was planned to be launched by the end of 2016.

Energy Sector Development Strategy of the Republic of Serbia

The National Assembly of the Republic of Serbia adopted on 4th December 2015, the Energy Development Strategy of Republic of Serbia until 2025 with projections to 2030. The realization of sustainable energy development of the Republic of Serbia in the period up to 2030, in line with the needs and possibilities of the economy and society and achieving the set targets, will require that a further development of the energy sector of the Republic of Serbia is based, among other things, on the intensive utilization of RES, while it is anticipated that the promotion of RES is included in the energy plans of towns and local communities as part of the local energy strategies. The objectives, activities and measures foreseen in this area by the Strategy, are in line with EU policy in the field of RES, and in accordance with the objectives of the Regional Energy Strategy of the Energy Community, which presuppose providing a secure and sustainable energy supply. However, they are primarily aligned with the need for an economic development and technological modernization, that is, a sustainable economic and social development of the Republic of Serbia. In this sense, these objectives are also consistent with the National Strategy for Sustainable Development ("Official Gazette of RS", 57/08) as a document which is important for the harmonization of all sectorial, developmental, economic, social and environmental objectives of the society.

Drafting of the Regulation on the Programme for Implementing the Energy Development Strategy of Republic of Serbia (hereinafter: PIS) until 2025 with projections to 2030, for the period from 2017 to 20123, is currently in progress.

PIS will, in line with the Energy Development Strategy of Republic of Serbia until 2025 with projections to 2030, the Spatial Plan of the Republic of Serbia, Action plans in the field of RES and energy efficiency and other relevant strategic documents, define the measures relating to the adoption of new or harmonization of the existing laws and by-laws with EU directives and recommendations, Decisions and recommendations of the Energy Community as well as the Western Balkans Sustainable Charter in the context of the Berlin process. If a professional expert determines that the existing action plans in the field of RES deviate from the real situation, he will suggest alternative measures and activities and explain them

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

The Energy Law

The Energy Law regulates acquiring of rights to engage in electricity and/or heat energy production.

The Energy Law was adopted on 29th December 2014 ("Official Gazette of the Republic of Serbia", No.145/14), and it provides for the following benefits for investors who are planning to use RES:

- 1) all producers who are using renewable energy sources may acquire a temporary status and thereby increase the bankability of their projects;
- 2) in addition to the temporary status and the privileged electricity producer status, the renewable source producer status is also being introduced, which creates a precondition for all electricity producers, who are using renewable sources, to obtain guarantees of origin;
- 3) instead of the former 3 agreements, one model agreement on the purchase of electricity under a suspensive condition has been introduced. The investor who is planning to use renewable energy sources for the electricity production will have, prior to construction commencement, all requirements and incentive measures specified in the trial operation phase, and after the acquiring of the privileged producer status;
- 4) the privileged producer status, the temporary privileged producer status, and the renewable source producer status may also be acquired by a natural person who produces

electricity from renewable sources only for one power plant with the installed capacity of up to 30 kW;

5) at the request of the electricity producer, the distribution system operator must issue an authorization allowing the producer to construct the connection to the system at its own expense on behalf of the system operator. In such a case, the producer shall have the costs of connecting to the system reduced in line with the methodology for determining costs of connecting to the transmission and distribution system;

6) the investors who are constructing power plants from RES with the installed capacity of up to 100 kW are no longer obliged to obtain the financial security instrument while acquiring the temporary status.

A package of by-laws governing the system of incentives in the sector of producing electricity from renewable sources was adopted on 15th June 2016. The package includes three regulations, including a model agreement for purchasing electricity from privileged producers (Power Purchase Agreement - PPA). Since the introduction of feed-in tariffs system in 2009, this had been the third update of the system of incentives, which introduced significant improvements in comparison to the previous regulation.

Law on Planning and Construction

The umbrella law for the construction of power plants which use RES is the Law on Planning and Construction, whose amendments were adopted on 29th December 2014 ("RS Official Gazette", No. 145/14).

The amendments of the Law brought a number of specific obligations for administrative bodies and accelerated procedures for the construction of energy facilities. From 1st January 2016, the building permit is issued as an electronic document. The Ministry of Construction, Transport and Infrastructure provided a support for informing citizens through a special website dedicated to the instructions for using of a unified procedure for issuing permits and approvals in the process of constructing facilities: <http://gradjevinskedozvole.rs/pitanja-i-odgovori.php?IDOblast=678>

2.b 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 electric power grid, or transmission and distribution system, is regulated by the Energy Law. Article 70 of the Energy Law and the Regulation on Incentive Measures for Privileged Electricity Producers guarantees the purchase of the total amount of energy produced in plants using renewable energy sources, which meets the requirements set forth in Article 16 of Directive 2009/28/EC regarding the guaranteed or priority access to the grid-system of electricity produced from renewable energy sources.

The requirement of a minimum curtailment related to the takeover of energy from renewable energy sources is set forth in Article 162 of the Energy Law, which stipulates that the electricity produced utilizing RES shall have priority access in the takeover of electricity by the transmission or distribution system, except for instances where the system safety is jeopardized. The requirement of the transparent, objective and non-discriminatory showing of costs related to access to the grid is set forth in Article 176 of the Energy Law. Consent to the operating rules of the distribution and transmission system is given by the Energy Agency.

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

Table 3: Support schemes for RES

RES support schemes, 2015		Per unit support	Total (M€)*
Hydropower plants			
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)		
	Penalty/Buy out option/ Buy out price (€/unit)		
	Average certificate price		
	Tax exemption/refund		
	Investment subsidies (capital grants or loans) (€/unit)		
	Production incentives		
	Feed-in tariff	7.5-12.60c€/kWh	15
	Feed-in premiums		
Solar power plants			
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)		
	Penalty/Buy out option/ Buy out price (€/unit)		
	Average certificate price		
	Tax exemption/refund		
	Investment subsidies (capital grants or loans) (€/unit)		
	Production incentives		
	Feed-in tariff	9-14.6 c€/kWh	4.2
	Feed-in premiums		
Wind power plants			
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)		
	Penalty/Buy out option/ Buy out price (€/unit)		
	Average certificate price		
	Tax exemption/refund		
	Investment subsidies (capital grants or loans) (€/unit)		
	Production incentives	9.2 c€/kWh	0.041
	Feed-in tariff		
	Feed-in premiums		
Biogas power plants			
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)		
	Penalty/Buy out option/ Buy out price (€/unit)		
	Average certificate price		
	Tax exemption/refund		
	Investment subsidies (capital grants or loans) (€/unit)	15-18.3 c€/kWh	3.1
	Production incentives		
Feed-in tariff			

		Feed-in premiums		
		Tendering		
Biomass power plants				
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)			
	Penalty/Buy out option/ Buy out price (€/unit)			
	Average certificate price			
	Tax exemption/refund			
	Investment subsidies (capital grants or loans) (€/unit)			
	Production incentives			
		Feed-in tariff	8.22-13.26 c€/kWh	0
		Feed-in premiums		
	Tendering			
Landfill gas power plants and sewage gas power plants				
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)			
	Penalty/Buy out option/ Buy out price (€/unit)			
	Average certificate price			
	Tax exemption/refund			
	Investment subsidies (capital grants or loans) (€/unit)			
	Production incentives			
		Feed-in tariff	8.44 c€/kWh	0
		Feed-in premiums		
	Tendering			
Geothermal power plants				
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)			
	Penalty/Buy out option/ Buy out price (€/unit)			
	Average certificate price			
	Tax exemption/refund			
	Investment subsidies (capital grants or loans) (€/unit)			
	Production incentives			
		Feed-in tariff	8.2 c€/kWh	0
		Feed-in premiums		
	Tendering			
Waste fired power plants				
Guaranteed purchase of electricity from privileged producers – Feed-in tariff	Obligation/quota (%)			
	Penalty/Buy out option/ Buy out price (€/unit)			
	Average certificate price			
	Tax exemption/refund			
	Investment subsidies (capital grants or loans) (€/unit)			
	Production incentives			
		Feed-in tariff	8.57 c€/kWh	0
		Feed-in premiums		
	Tendering			
Total annual estimated support in the electricity sector				24.2
Total annual estimated support in the heating sector				
Total annual estimated support in the transport sector				

***Data source: Notification of the guarantee supplier Pivredno društvo EPS Snabdevanje [Company Electric Power Industry of Serbia – Supply] regarding the total money amount invoiced to consumers serviced by the public supplier, excluding the transmission and distribution costs, for the period from October 2014 to September 2015, pursuant to Article 6 of the Regulation on the Method of Calculation and Allocation of Incentive Remunerations for Privileged Electricity Producers.*

3.1. Information on how electricity whose production is supported by incentive measures is allocated to final customers, pursuant to Article 3 (6) of Directive 2003/54/EC (Article 22(1) b) of Directive 2009/28/EC)

Together with the delivered invoice for the supplied electricity or in another appropriate manner, the supplier and the public supplier of electricity are obliged to provide the customer with information on the share of each energy source in the total amount of electricity sold by such supplier in the previous year, as well as on the measures and manner, or effects of activities taken to increase the energy efficiency and protect the environment for production facilities from which the electricity was supplied (Article 196 of the Energy Law).

4. Information the support schemes for RES 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)

Currently there are no support schemes that would include additional benefits.

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

The Energy Law stipulates that the guarantee of origin is a document with the sole purpose to prove to the final customer that the given share or quantity of energy was produced from renewable energy sources, as well as from the combined heat and power production with the high degree of primary energy utilization. Articles 82, 83, 84, 85, 86 and 87 of the Energy Law have established the legal basis for the enactment of the Regulation of the guarantee of origin and Rulebook on the Method of Calculation and Showing all shares of energy sources in sold electricity. This Regulation and the Rulebook specify the contents of the guarantee of origin of electricity produced from renewable energy sources, the procedure of issuance of guarantees, transfer and termination of validity of guarantees, manner of maintaining the register of issued guarantees of origin, as well as the manner of submitting data on produced electricity measured at the point of delivery to the transmission, or to the distribution system. The Energy Law stipulates that the operator of the distribution system issues guarantees of origin. Since the operator of the distribution system has ensured technical conditions for maintaining the register, the application of the system of guarantees of origin will start when bylaw regulations enter into force. In December 2016, the process of adoption of these bylaws began, and the beginning of full implementation of the system is planned for 2017.

6. 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)

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)	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.) *	-	-	-	-	-	-	-	-	-	-	-	-
Indirect supply of wood biomass (residues and co-products from wood industry etc.)	-	-	-	-	-	-	-	-	-	-	-	-
Energy crops (grasses, etc.) and short rotation trees	-	-	-	-	-	-	-	-	-	-	-	-
Agricultural by-products / processed residues and fishery by-products	-	-	-	-	-	-	-	-	-	-	-	-
Biomass from waste (municipal, industrial etc.)	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-
Biomass supply for transport:												
Common arable crops for biofuels	-	-	-	-	-	-	-	-	-	-	-	-
Energy crops (grasses, etc.) and short rotation trees for biofuels	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-

“-” data are not available

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

Табела 4а: Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (ha)	
	2014	2015
1. Land used for common arable crops (wheat, sugar beet etc.) and oil seeds (rapeseed, sunflower etc.)	-	-
2. Land used for short rotation trees (willows, poplars)	-	-
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum	-	-

“-” data are not available

NOTE: The use of energy crops and short rotation trees is still in the experimental phase in the Republic of Serbia, and the required data are not currently available. The Agreement for the implementation of the project “Development of the Market of Biomass Used for Energy Purposes” is currently being prepared. The project was approved by the BMZ and planned to be implemented via cooperation between Serbia and Germany, through joint participation by KfW and GIZ, as part of the DKTI. Based on the onsite primary survey, one of the results of this project will provide statistical data required for completion of Tables 4 and 4a in future reports.

7. Information on any changes in commodity prices and land use in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources (Article 22 (1) h) of Directive 2009/28/EC)

Currently, there are no data available. As part of the IPA 2 program the required data should be the result of a detailed study on financial aspects of the NREAP implementation and application of Directive 2009/28/EC.

8. 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)

There are currently no statistically processed data. There are known examples of individual production for own needs (mainly from waste oils), with negligibly small quantities.

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

Article 21(2) biofuels of Directive 2009/28/EC	2014	2015
Production – Fuel type	-	-
Consumption – Fuel type	-	-
Total production Art.21.2.biofuels	-	-
Total consumption Art.21.2. biofuels	-	-
% share of 21.2. fuels from total RES- transport sector	-	-

„-” data are not available

9. Information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality in the preceding 2 years (Article 22 (1) j) of Directive 2009/28/EC)

There is currently no information on estimated impacts of the production of biofuels. The NREAP provides for a possibility of biofuel imports by the Republic of Serbia in case its own production capacities are not sufficient.

10. Estimated 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	2014	2015
Total estimated net GHG emission saving from using renewable energy	8.397.984	8.105.917
Estimated net GHG saving from the use of electricity from RES	4.012.746	3.707.981
Estimated net GHG saving from the use of renewable energy sources in heating and cooling sector	4.385.238	4.397.936
Estimated net GHG saving from the use of RES energy in transport	-	-

„-“ data are not available

11. The excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/exported to other Member States and/or third countries, as well as estimated potential for joint projects until 2020 (Article 22 (1) l, m) of Directive 2009/28/EC)

Table 7: Actual and estimated excess and/or deficit of production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries (ktoe)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production	0	0	0	0	-	-	-	-	-

„-“ data are not available

11.1. Statistical transfers, joint projects and joint support scheme decision rules

The National Action Plan was adopted on 4th June 2013 and delivered to the EnC Secretariat together with the updated Document on Planned Cooperation Mechanisms (*Forecast document*) which, among other things, shows the estimated potential for joint projects with the EU member countries.

In October 2011, an agreement regarding the implementation of joint projects in the RES field was signed between the Ministry of Infrastructure and Energy of the Republic of Serbia (on behalf of the Government of the Republic of Serbia) and the Ministry of Economic Development of the Italian Republic (on behalf of the Government of the Italian Republic).

The Agreement on Cooperation between the Government of the Republic of Serbia and the Government of the Italian Republic in the field of energy underwent the ratification process at the National Assembly of the Republic of Serbia in December 2012. The President of the Council of Ministers of the Italian Republic is expected to sign the Decree in the forthcoming period, which will fully complete the ratification process of both parties. In this way the preconditions required for the commencement of implementation of the Agreement and projects provided for in its Annex will be met. Construction of small hydropower plants in Serbia and “green” energy exports to Italy are envisaged by the Agreement.

12. The manner of estimating the share for biodegradable waste in waste used for producing energy, and actions taken to improve and verify such estimates (*Article 22(1)(n) of Directive 2009/28/EC*)

Based on data on the total quantity of municipal waste generated annually and the share of biodegradable fractions in such waste, the value of the biodegradable quantity of the municipal solid waste was estimated for the purpose of drafting the energy development strategy. A precise estimate regarding the use of this waste for energy purposes could not be made due to dispersion of such waste and difficulties in terms of collecting and separating appropriate fractions. One of the results of the project “Development of the Market of Biomass Used for Energy Purposes”, which is currently being prepared, should provide data required for better estimates of these data.

CONCLUSION:

During the reporting period there has been a continuous growth of new capacity for the production of electricity from RES particularly the small hydro and biogas power plants.

The very bad experiences of the project developers and International Financial Institutions (hereinafter: IFI) regarding RES projects investment in EU in the previous period, especially related to wind energy projects, as well as an overestimated political risk for investment in Republic of Serbia have resulted that planned wind farms have still not been constructed.

In order to overcome this circumstances which are not the fault of the Republic of Serbia, the additional effort was put to find acceptable solution in close cooperation with IFI. As a result of this cooperation was the adoption of new package of regulations in RES area in June 2016. The new regulations have been met almost all the requirements asked by the IFI and provide the highest possible legal security of investments in renewable energy area. As an argument in this regard is the fact of about 500 MW issued temporary privileged statuses for wind plants which indicates that the goals foreseen under NREAP in wind energy will be met.

A wider use of biomass is expected in the transport sector and the heating and cooling sector in the coming period. A high value of the assumed obligation in traffic, with short deadlines for the establishing a legal framework, a system for control and verification of the origin and quality of biofuels, as well as the lack of industrial capacity for the production of second-generation biofuels, have led to deviations from the planned dynamics of utilizing this type of RES in Serbia. Considering all of the above, it can be expected that, in the coming years, the dynamics of utilizing biofuels will be slower than it is foreseen in the Action plan.

Due to disturbances in the economy, which affect the amount and continuous variation of gross final energy consumption in Serbia, the data on the share of RES varies continuously and it cannot be considered a representative indicator of the use of RES in the energy sector.

In order to achieve the intended objectives within the stipulated deadline, it is necessary to make a comprehensive professional analysis as a basis for foreseeing measures and activities for a greater use of renewable RES.