



REPUBLIC OF BULGARIA
MINISTRY OF ECONOMY AND ENERGY

SECOND NATIONAL REPORT
ON BULGARIA'S PROGRESS IN THE PROMOTION AND USE OF ENERGY FROM
RENEWABLE SOURCES

drawn up under Article 22(1) of Directive 2009/28/EC on the promotion of the
use of energy from renewable sources

and in accordance with the

Template for Member States'
progress reports under Directive 2009/28/EC

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ACRONYMS

AUER	Sustainable Energy Development Agency
RES	Renewable energy sources
HPP	Hydropower plant
RS	Renewable sources
WPP	Wind power plant
GIS	Geographic Information System
DAMTN	State Agency for Metrological and Technical Surveillance
DKEVR	State Energy and Water Regulatory Commission
MS	Member State
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EC	European Commission
EU	European Union
PP	Power plant
ES	Energy site
ZVAEIB	Renewable and Alternative Energy Sources and Biofuels Act
ZE	Energy Act
ZEVI	Renewable Energy Act
ZID	Amending and Supplementing Act
ZNI	Investment Promotion Act
EERECL	Energy Efficiency and Renewable Energy Credit Line
SHPP	Small hydropower plant
MIE	Ministry of Economy and Energy
MZH	Ministry of Agriculture and Foods
MOSV	Ministry of Environment and Water
CM	Council of Ministers
KIDSF	Kozloduy International Decommissioning Support Fund
NEK	National Electric Company
NREAP	National Renewable Energy Action Plan
NSI	National Statistical Institute
EIA	Environmental impact assessment
OP	Operational Programme
PSHPP	Pumped storage hydropower plant
GGE	Greenhouse gas emissions
EEP	Energy efficiency programme
RDP	Rural development programme
PUDOOS	Enterprise for the Management of Environmental Protection Activities
RV	Road vehicle
RIOSV	Regional Inspectorate of Environment and Water
MV	Medium voltage
ETS	Emission trading scheme
PVP	Photovoltaic power plant
EERSF	Energy Efficiency and Renewable Sources Fund
REECL	Residential Energy Efficiency Credit Line

UNITS OF MEASUREMENT

y	year
km	kilometre
GJ	gigajoule
MJ	megajoule
MW	megawatt
MWh	megawatt-hour
GWh	gigawatt-hour
ha	hectare
ktoe	tonne oil equivalent
kW	kilowatt
m ³	cubic metre

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding two years (2011 and 2012) (Article 22(1) of Directive 2009/28/EC)

In 2012, both production and consumption of energy from renewable sources (RS) in Bulgaria rose substantially. As a result, the country achieved its binding national target of 16 % RES share in gross final energy consumption. The contribution of each sector in the period 2009–2012 is presented in Table 1, where the data for 2009 and 2010 has been updated in accordance with Article 22(4) of Directive 2009/28/EC on the promotion of the use of energy from renewable sources (Directive 2009/28/EC).

Table 1: Sectoral (heating and cooling, electricity and transport) and overall shares of energy from RS¹

	2009	2010	2011	2012
RES-H&C ² (%)	21.7 %	24.4 %	24.9 %	27.5 %
RES-E ³ (%)	11.7 %	13.3 %	13.6 %	16.7 %
RES-T ⁴ (%)	0.4 %	0.4 %	0.4 %	0.3 %
Overall RES share⁵ (%)	12.3 %	14.2 %	14.6 %	16.4 %
<i>Of which from cooperation mechanism⁶ (%)</i>	0	0	0	0
<i>Surplus for cooperation mechanism⁷ (%)</i>	0	0	0	0

Source: NSI estimates provided to the MIE before their official publication

The gross consumption of energy from RS in 2012 closely mirrors the amount of renewable energy envisaged in the National Renewable Energy Action Plan (NREAP) for 2020 (1 718 ktoe). The sector with the largest share of consumption of energy from RS is heating and cooling, followed by electricity. The renewable energy consumption shown in the transport sector only includes electricity, because the legislation laying down the requirements for compliance with the sustainability criteria was

¹ Facilitates comparison with Table 3 and Table 4a of the National Renewable Energy Action Plan (NREAP).

² Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Article 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 the NREAP applies.

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

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

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

⁶ Percentage of overall RES share.

⁷ Percentage overall RES share.

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adopted later. Biofuel consumption in 2012 amounted to 86 ktoe and surpassed the level planned in the NREAP for that year.

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

	2009	2010	2011	2012
(A) Gross final consumption of RES for heating and cooling	811.5	974.3	1 043.3	1 122.0
(B) Gross final consumption of electricity from RES	368.5	423.7	456.0	545.8
(C) Gross final consumption of energy from RES in transport	6.4	5.7	5.9	5.1
(D) Gross total RES consumption⁹	1 186.4	1 403.7	1 505.2	1 672.9
(E) Transfer of RES <u>to</u> other Member States	0	0	0	0
(F) Transfer of RES <u>from</u> other Member States and 3rd countries	0	0	0	0
(G) RES consumption adjusted <i>for target</i> , (D)-(E)+(F)	0	0	0	0

Source: NSI estimates provided to the MIE before their official publication

New capabilities for the production of electricity from hydro, wind and solar energy as well as plants fired by biofuels were put into operation in 2011 and 2012. During this period, the production of electricity rose significantly and, after normalisation of hydro and wind power (in accordance with the requirements of Directive 2009/28/EC), it reached 6 407 GWh in 2012, surpassing the 2010 level by 28 %. The strongest rise in output came from photovoltaic and wind power plants (PVP and WPP).

⁸ Facilitates comparison with Table 4a of the NREAP.

⁹ According to Article 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.

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Table 1b: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Bulgaria to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹⁰

	2009		2010		2011		2012	
	MW	GWh	MW	GWh	MW	GWh	MW	GWh
Hydro¹¹:	3 001	4 071	3 048	4 340	3 108	4 413	3 129	4 488
non pumped	1 988	3 262	2 035	3 682	2 095	3 982	2 116	4 241
<1 MW	40	71	49	101	47	106	51	124
1 MW–10 MW	201	371	224	469	226	509	234	567
>10MW	1 747	2 820	1 762	3 112	1 822	3 367	1 831	3 550
pumped	864		864		864		864	
Mixed (with and without pumped storage) ¹² :	149	253	149	298	149	322	149	339
Geothermal:	0	0	0	0	0	0	0	0
Solar:	2	3	25	15	154	101	1,013	814
<i>photovoltaic</i>	2	3	25	15	154	101	1,013	814
<i>concentrated solar power</i>	0	0	0	0	0	0	0	0
Tide, wave, ocean	0	0	0	0	0	0	0	0
Wind:	333	278	488	604	541	802	677	1 039
<i>onshore</i>	333	278	488	604	541	802	677	1 039
<i>offshore</i>	0	0	0	0	0	0	0	0
Biomass¹³:	9	7	10	35	11	56	14	66
solid biomass	6	5	6	20	6	37	14	65
biogas	3	2	4	15	5	19	0	1
<i>bioliquids</i>	0	0	0	0	0	0	0	0
TOTAL	3 345	4 360	3 571	4 994	3 814	5 373	4 833	6 407
<i>of which in CHP</i>		7		35		56		66

¹⁰ Facilitates comparison with Table 10a of the NREAP.

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

¹² In accordance with new Eurostat methodology.

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

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Source: NSI estimates provided to the MIE before their official publication

Biomass is the main renewable energy source used for heating, and consumption rose each year to reach 91 % of heating and cooling consumption in 2012.

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

	2009	2010	2011	2012
Geothermal (excluding low temperature geothermal heat in heat pump applications)	33	33	33	33
Solar	0	10	14	15
Biomass¹⁶:	741	884	944	1 005
<i>solid biomass</i>	741	883	943	1 005
<i>biogas</i>	0	1	1	0
<i>bioliquids</i>	0	0	0	0
Renewable energy from heat pumps:	32	38	42	47
<i>- of which aerothermal</i>	0	0	0	0
<i>- of which geothermal</i>	0	0	0	0
<i>- of which hydrothermal</i>	0	0	0	0
TOTAL	806	964	1 033	1 101
<i>Of which DH¹⁷</i>	0	0	0	0
<i>Of which biomass in households¹⁸</i>	653	711	747	759

Source: NSI estimates provided to the MIE before their official publication

The renewable energy consumption shown in the transport sector only includes electricity, because the legislation laying down the requirements for compliance with the sustainability criteria was adopted later. If the consumption of biofuels (biodiesel and bioethanol) had been taken into account, the share of renewable energy in the gross final energy consumption achieved in 2012 would have been approximately 1 % higher.

¹⁴ Direct use and district heat as defined in Article 5(4) of Directive 2009/28/EC.

¹⁵ Facilitates comparison with Table 11 of the NREAP.

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

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

¹⁸ From the total renewable heating and cooling consumption.

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

	2009	2010	2011	2012
Bioethanol/ bio-ETBE	0.0	0.0	0.0	0.0
<i>Of which biofuels²¹ Article 21(2)</i>	0.0	0.0	0.0	0.0
<i>Of which imported²²</i>	0.0	0.0	0.0	0.0
Biodiesel	0.0	0.0	0.0	0.0
<i>Of which biofuels²³ Article 21(2)</i>	0.0	0.0	0.0	0.0
<i>Of which imported²⁴</i>	0.0	0.0	0.0	0.0
Hydrogen from renewables	0.0	0.0	0.0	0.0
Renewable electricity	8.0	7.4	8.0	6.1
<i>Of which road transport</i>	2.7	2.8	3.4	1.7
<i>Of which non-road transport</i>	5.3	4.6	4.6	4.4
Others (as biogas, cold-pressed vegetable oils, etc.) — please specify	0.0	0.0	0.0	0.0
<i>Of which biofuels²⁵ Article 21(2)</i>	0.0	0.0	0.0	0.0
TOTAL	8.0	7.4	8.0	6.1

Source: NSI estimates provided to the MIE before their official publication

Pursuant to Article 18(2) of the Renewable Energy Act (ZEVI), achievement of the binding national target for 2020 will mean discontinuing some of the incentives available to RES generation sites that apply for grid connection after the date of the report of the Minister of Economy and Energy confirming that the overall national target as per Article 12(1) of the ZEVI has been achieved. Accordingly, the procedure for connecting to the relevant grids provided in Section II of the ZEVI will not apply to these sites. The electricity produced by these sites will not be subject to mandatory purchase by the public supplier and public retailers at preferential prices and under long-term agreements.

¹⁹ For biofuels, take into account only those that comply with the sustainability criteria, cf. Article 5(1), last subparagraph of Directive 2009/28/EC.

²⁰ Facilitates comparison with Table 12 of the NREAP.

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

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

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

²⁴ From the whole amount of biodiesel.

²⁵ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

2. **Measures taken and/or planned at national level in the preceding two years (2011 and 2012) to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national renewable energy targets as outlined in the National Renewable Energy Action Plan (*Article 22(1)(a) of Directive 2009/28/EC*)**

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Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
Measures relating to 'Existing measures' in Table 5 of the NREAP					
1. Preferential tariffs for electricity produced from RS (FIT)	Financial	Electricity generated (ktoe)	Investors	Existing*	<p>The preferential tariffs were introduced by the Renewable and Alternative Energy Sources and Biofuels Act (ZVAEIB) in 2007.</p> <p>Under the ZVAEIB, the preferential FIT for the purchase of electricity produced from RS were determined once each year.</p> <p>The measure was continued in the ZEVI as follows:</p> <ul style="list-style-type: none"> - FIT are determined by 30 June each year or more than once per year if there is a significant change of the pricing elements; - FIT do not change during the entire period of the power purchase agreement. FIT for biomass-fired power plants are updated each year by a factor determined in accordance with Article 32(4), (5), (6), (7) and (8) of the ZEVI. FIT are no longer available after that period has expired. <p>The measure is in force, but will not be available to sites for generation of electricity from RS that apply for grid connection after the date of the report</p>

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
					referred to in Article 22(1) of Directive 2009/28/EC, which confirms that the overall national target has been achieved.
2. Mandatory and priority connection of renewable electricity producers to the grid	Regulatory	Electricity generated (ktoe)	Investors	Existing*	The measure was introduced in 2007. The ZEVI, which was adopted in 2011, established a new approach and introduced a number of steps preceding the connection process.
3. Payment only of the direct costs of connection to the grid	Regulatory	Installed capacity (MW/year)	Investors	Existing*	<p>According to the ZEVI, the cost of building the facilities connecting the producer's energy site (ES) to the relevant electric grid, to the boundary of ownership of the electric facilities, is borne by the producer, while the cost of building the facilities connecting the producer's ES from the boundary of ownership of the electric facilities to the connection point, and the cost of developing the electric grids for the purpose of such connection, including reconstruction and modernisation, is borne by the owner of the relevant grid.</p> <p>The measure is in force. It is not limited in time.</p>
4. Long-term power purchase agreements for the electricity produced from RS	Regulatory	Electricity generated (ktoe)	Investors	Existing*	<p>The measure was introduced by the ZVAEIB in 2007. The power purchase periods established by the ZVAEIB were:</p> <ul style="list-style-type: none"> - 25 years for electricity produced from geothermal

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
					<p>and solar energy;</p> <ul style="list-style-type: none"> - 15 years for electricity produced from other RES, except HPP, of an installed capacity above 10 MW. <p>Following the adoption of the ZEVI in 2011, the power purchase periods are:</p> <ul style="list-style-type: none"> - 20 years for electricity produced from geothermal and solar energy and from biomass; - 12 years for electricity produced from wind energy; - 15 years for electricity produced by hydropower plants. <p>The measure is in force but will not be available to sites for generation of electricity from RS that apply for grid connection after the date of the report referred to in Article 22(1) of Directive 2009/28/EC, which confirms that the overall national target has been achieved.</p>
5. Purchase obligation for electricity produced from renewable sources, excluding electricity produced by HPPs with more than 10 MW installed capacity	Regulatory	Electricity generated (ktoe)	Investors	Existing*	<p>Regulated by the ZVAEIB in the period 2007 to May 2011.</p> <p>Following the adoption of the ZEVI: The public supplier and the retailers are obligated to purchase all renewable electricity except that which the</p>

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
					<p>producer uses for own purposes or elects to use for own consumption and for supply to its own branches, enterprises and sites and/or sells at freely negotiated prices.</p> <p>The measure is in force.</p>
6. Penalty payments in the event of production restrictions caused by the fault of the grid operator	Financial	Electricity generated (ktoe)	Investors	Existing*	<p>According to the ZEVI in 2011, the agreement for access to the transmission or distribution grid must set out the terms and conditions for fulfilment of the provisional schedules and the compensation amounts due by the operator in the event of production restrictions at the plant.</p>
7. Mechanism for compensating the costs of the public supplier and public retailers incurred in purchasing renewable electricity at preferential prices.	Regulatory	Electricity generated	Grid operators, investors and users	Existing**	<p>The measure was introduced by the ZVAEIB in 2007.</p> <p>In 2012 Bulgaria adopted a 'Methodology for compensation of the costs incurred by the Public supplier and the Public retailers in performance of their public obligations for purchasing at preferential prices the electricity produced from renewable energy sources and from high-efficient cogeneration of heat and electricity'. The Methodology formulates standard and transparent rules for compensation of the costs incurred by energy companies.</p> <p>This compensation mechanism will apply in the pricing period 1 July 2012–30 June 2013.</p>

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
8. Licensing of renewable electricity producers with more than 5 MW installed capacity	Regulatory	Energy produced	Producers	Existing*	The measure is in force. It is not limited in time.
9. Certificates of origin	Regulatory	Electricity generated	Grid operators, investors and users	Existing*	<p>The measure was introduced by the ZVAEIB. Under the ZVAEIB, certificates of origin were issued by the State Energy and Water Regulatory Commission (DKEVR) in accordance with the Regulation on issuing certificates of origin for electricity produced from renewable energy sources in the period from 1 January 2008 until 31 December 2011.</p> <p>Following the adoption of the ZEVI in July 2011, certificates of origin were replaced with guarantees of origin issued by the AUER pursuant to the Regulation on the terms and procedure for the issue, transfer, cancellation and recognition of guarantees of origin for energy produced from sources for a standard quantity of 1 MWh of renewable energy.</p>
10. Obligations for persons placing petroleum-derived liquid fuels on the market for transport purposes to offer fuels for diesel and petrol engines blended with biofuels in the percentage terms	Regulatory	Biofuel production and consumption (ktoe)	Investors, traders	Existing*	<p>According to the ZVAEIB:</p> <ul style="list-style-type: none"> - after 1 September 2010: a minimum content of biodiesel of 3 % v/v; - after 1 March 2011: containing biodiesel; - a minimum 4 % v/v and fuels for petrol engines

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
laid down in the ZVAEIB and now in the ZEVI.					with minimum bioethanol content 2 % v/v. The new ZEVI provides for a stepwise approach: - biodiesel: from 1 January 2012; - bioethanol: from 1 June 2012. The measure has no time limit.
11. Reduced rate of excise duty for biofuel blends with petroleum-derived liquid fuels of a specified percentage	Financial	Biofuel production and consumption (ktoe)	Investors, traders and administration	Cancelled in 2011*	Start date of the measure: November 2009. End date of the measure: November 2011. ²⁶
12. The authority exercising control of the quality of pure biofuels and biofuel blends has been clearly designated	Administrative	Use of biofuels in transport	Distributors and end-users	Existing**	In 2007 the ZVAEIB clearly designated the Chairperson of the State Agency for Metrological and Technical Surveillance (DAMTN) as the authority exercising control of the quality of pure biofuels and biofuel blends. Pursuant to the ZEVI, the Chairperson of the DAMTN continues to be the clearly designated authority. The measure is in force. There is no time limit.
13. Testing equipment for pure biofuels provided to the State Agency for Metrological and	Administrative	Use of biofuels in transport	Distributors, end-users, administration	Completed	The equipment has been provided.

²⁶ State aid notification No N 607/2008 - Bulgaria: Tax reduction for biofuels of 23 November 2009.

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
Technical Surveillance					
14. Energy Efficiency and Renewable Energy Credit Line (EERECL)	Financial	Electricity generated (ktoe)	Investors and end-users (commercial)	Existing**	Start date: The programme started in 2004. End date: December 2014.
15. Energy Efficiency Programme of the European Investment Bank and Kozloduy International Decommissioning Support (KIDS) Fund	Financial	Production of RES energy	Investors	Existing**	The measure is in force. There is no time limit.
16. Enterprise for the Management of Environmental Protection Activities (PUDOOS)	Financial	Generation of electricity by small HPPs	Investors	Existing**	Since December 2012 the PUDOOS has not funded the construction of power plants.
17. Operational Programme 'Development of the Competitiveness of the Bulgarian Economy' 2007-2013	Financial	Production of electricity from RS	Investors	Existing**	Start date of the measure: 2010. End date of the measure: 2013. In the next programming period the activities will continue under the new Operational Programme 'Innovation and Competitiveness' 2014-2020.
18. Rural Development Programme 2007-2013	Financial	Production of electricity from RS	Investors	Existing**	Start date of the measure: 2007. End date of the measure: 2013. The programme will continue in the next programming period 2014-2020.
19. Operational Programme	Financial	Production and use	Investors, users	Existing**	Period: 2007-2013.

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
'Regional Development'		of energy from RS			In the next programming period this will continue under OP 'Growth Regions' 2014-2020.
20. Operational Programme 'Environment'	Financial	Electricity generation through the use of gas (methane) emissions from urban waste landfills	Municipalities	Existing**	Period: 2007-2013. This will continue in the next programming period 2014-2020.
21. Implementation of the measures provided for in the Investment Promotion Act (ZNI) and its implementing rules, where applicable	Administrative, Financial	Improvement of business environment	Investors	Existing**	Since August 2010 support has been provided within the general framework for priority investment projects, which applies to all economic sectors in accordance with Regulation No 800/2008. There is no time limit.
Measures relating to 'Planned measures' in Table 5 (Annex 1) of the NREAP					
1. Set up a Sustainable Energy Development Agency (AUER)	Administrative	Installed capacity, RES energy produced and used, behavioural change	Investors, energy companies, end users, planning authorities, associations and sectoral chambers, installers	Completed***	The AUER was established in 2011 by the ZEVI as successor to the Energy Efficiency Agency.
2. Set up an inter-institutional council at political level to	Administrative	Formulation of RES development	Public administration	Planned	There is no time limit.

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
coordinate RES promotion policy		policies and legislative initiatives			
3. Set up an advisory group to support the implementation of the NREAP	Soft	Installed capacity, energy generated, behavioural change, introduction of efficient technologies	Investors, energy companies, end users, public administration, associations and sectoral chambers, installers	Planned	There is no time limit.
4. Develop a Geographic Information System (GIS) for Bulgaria	Soft	Installed capacity, energy generation	Investors, public administration, end users	Planned****	The system is under development within the framework of Project 'Setting up an IT platform to ensure interoperability of spatial data and services used by the state administration and citizens in respect of renewable energy sources', Operational Programme 'Administrative Capacity', Priority axis III 'Quality administrative services and e-government development', sub-priority 3.2. 'Standard information-communication environment and interoperability'.
5. Methodological manuals outlining the steps to be taken in the investment process in renewable sources by types of source	Administrative	Investment process, installed capacity, behavioural change	Investors, public administration, end users	Planned	There is no time limit.
6. Align the concluded	Administrative	Installed capacity,	Investors, public	Completed****	The measure has been in force since the adoption

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
preliminary connection agreements with the requirements of the new ZEVI		behavioural change	administration,		of the ZEVI in 2011.
7. One-stop administrative services	Administrative	New installed capacity (MW/year)	Investors, end users	Proposed	Beginning of 2015. There is no time limit.
8. Increase the administrative competence and capacity of officials responsible for issuing permits and licenses	Administrative	Behavioural change	Authorising bodies (at all levels)	Completed****	The measure is being applied and has no time limit.
9. Funding of projects for production of energy from RS and of energy efficiency projects	Financial	Installed capacity, energy produced and consumed, emission savings	Investors, end users	Completed****	This is an ongoing measure and its application has no time limit.
10. Develop rules for the Emission Trading Scheme (ETS) and utilise ETS proceeds	Financial	Installed capacity, energy produced and consumed, emission savings	Investors, end users	Planned	2013-2020.
11. Improve the procedures applied for issuing permits and concluding connection agreements	Regulatory	Installed capacity, energy produced	Electricity companies	Completed****	2011–permanent. There is no time limit. See detailed description in sections 2b and 3.
12. Support the construction of new transmission and distribution infrastructure and	Administrative and regulatory	New installed capacity (MW/year)	Investors, end users	Completed****	In accordance with the Energy Act, if state-owned property needs to be used for the construction or expansion of on-site and/or linear energy facilities,

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
attaching to it the status of a national infrastructure asset in view of the connection of new renewable energy producers					on-ground or underground waterworks intended for production of electricity, or parts thereof, and related facilities or sites for disposal of waste from the production process, the competent state authorities will grant to the builder or operator of the site, without tendering or competitive procedure, building entitlement on the land in accordance with the procedure laid down in the State Property Act.
13. Introduce competition between renewable energy technologies	Regulatory	Installed capacity, energy produced	Electricity companies, investors	Planned	There is no time limit.
14. Facilitate the development of smart grids and storage facilities	Regulatory	Installed capacity (more efficient integration)	Grid owners, investors, end users	Existing***	Pursuant to an amendment to the Energy Act adopted in 2012, the DKEVR is required to assess the economic expediency of introducing smart metering systems based on proposals of grid operators and, if such introduction is economically justified, the DKEVR must develop schedules for the introduction of such systems. The Commission is required to ensure interoperability of the smart metering systems, taking into account the appropriate standards, the best practices and their relevance to the development of the internal market for electricity and natural gas.
15. Utilise demand-side	Regulatory	Installed capacity	Research	Existing****	Electricity trading rules issued by the DKEVR in

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
management and congestion response options		(more efficient integration)	community, industry		2010.
16. Codes/rules of conduct for installers	Regulatory/ awareness-raising	Behavioural change	Installers and suppliers of facilities, end users	Planned	There is no time limit.
17. Qualification requirements for installers	Regulatory Administrative	Behavioural change, energy produced	Installers, end users, investors, authorising bodies, financial organisations	Completed***	<p>The measure was introduced by the ZEVI in 2011 and is carried out on the basis of:</p> <ul style="list-style-type: none"> - the Vocational Education Act; - Regulation No 40/2012 on the acquisition of qualifications in the profession 'Technician at energy facilities and installations' and Regulation No 41/2012 on the acquisition of qualifications in the profession 'Installer of energy facilities and installations'. <p>Application of the measure has no time limit.</p>
18. List of qualified installers	Regulatory	Behavioural change, energy produced	Installers, end users, investors, authorising bodies, financial organisations	Completed***	<p>The measure was introduced by the ZEVI in 2011 and has no time limit. Pursuant to Article 21(3), the institutions entitled to provide vocational training in accordance with the Vocational Education and Training Act are obligated to submit every year to the AUER lists of the persons that have acquired qualification for installation and maintenance of biomass plants, solar photovoltaic converters, solar heat systems, heat pumps and surface</p>

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
					<p>geothermal systems.</p> <p>Amendments to the ZEVI in 2012 (in force since 1 April 2013) provide for keeping a register of the installers of certain types of plants.</p> <p>With a view to reducing the administrative burden, there are plans to amend the ZEVI so as to remove the regulatory regime for registration of persons carrying out activities relating to the installation, maintenance, repair and reconstruction of facilities in energy sites referred to in Article 24(1)(1) and (2) of the ZEVI.</p>
19. Make or use cost-benefit analyses	General, financial, regulatory	Improved business environment	Investors, end users, planning authorities	Completed****	Permanent, there is no time limit.
20. Public information campaign promoting the use of renewable sources	General	Behavioural change	Installers, end users, investors, authorising authorities, financial organisations	Existing****	<p>2012–ongoing.</p> <p>There is no time limit.</p>
21. List of renewable energy generation facilities	Information	Behavioural change	Investors, end users, public administration	Planned	There is no time limit.
22. Translation of national	Information	Behavioural	Investors	Existing	There is no time limit.

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
legislation		change			
23. Detailed up-to-date information on investor appetite and administrative and authorisation procedures	Information	New installed capacity (MW/year)	Investors, end users	Completed***	<p>Following the adoption of the ZEVI in 2011, the operators of electricity transmission and distribution grids are required to submit to the AUER and publish on their websites:</p> <ol style="list-style-type: none"> 1. Statements of opinion on the admissibility of applications for connection and on connection conditions and procedures; 2. Details of rejected applications; 3. Notices that the approved electric capacity in the relevant region is used up.
24. Harmonise Bulgarian legislation with the requirements of the recast Directive 2002/91/EC, Directive 2009/28/EC, Directive 2009/29/EC, and Directive 2009/30/EC	Regulatory	Installed capacity, energy production	Builders, designers public administrations	Completed***	<p>Started in 2011.</p> <p>There is no time limit.</p>
25. Replace liquid fuels and electricity used for heating in public buildings with biofuels and renewable energy	Regulatory and financial	ktoe	Energy suppliers, municipalities	Planned	<p>Started in 2011, permanent.</p> <p>There is no time limit.</p>
26. Mandatory use of RS in new	Legislative	ktoe	Investors, builders,	Completed***	The measure was introduced in the Energy

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
buildings			designers, end users, public administration		Efficiency Act and with the adoption of the ZEVI in 2011. There is no time limit.
27. Financing projects through the Energy Efficiency and Renewable Sources Fund	Financial	ktoe	End users	Existing**	Started in 2011, permanent. There is no time limit.
28. Promote the use of individual renewable energy production systems	Financial	New installed capacity (MW/year)	Investors, end users, public administration	Completed***	The measure was introduced by the ZEVI and the Energy Efficiency Act. There is no time limit.
29. Support scheme for the implementation of renewable heating and cooling technologies in industry	Financial, regulatory	Behavioural change, installed capacity (MW/year), energy produced (ktoe)	Investors, end users, public administration	Proposed	2011–permanent. There is no time limit.
30. Support scheme for the implementation of renewable heating technologies in residential and public buildings	Financial, regulatory	Behavioural change, installed capacity (MW/year), energy produced (ktoe)	Investors, end users, public administration	Existing	Started in 2011, permanent. There is no time limit.
31. Programme of financial incentives for the use of local heating systems	Financial	ktoe	Investors	Planned	2013–permanent. There is no time limit.
32. Tax incentives for investment	Financial	ktoe	End users	Existing**	2009 (Local Taxes and Fees Act)–permanent.

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
in renewable energy generation for household purposes					There is no time limit.
33. Establish assessment procedures requiring the obligatory marking of biomass incineration equipment	Regulatory, financial	ktoe	Energy suppliers	Completed***	2012. Markings are applied in accordance with the Technical Requirements for Products Act, in relation to ecodesign requirements.
34. Gradual increase in the share of biomass fuels in the 'energy benefits' programme	Regulatory, financial	ktoe	Energy suppliers	Planned	2012–permanent.
35. Develop a programme for accelerated switchover to biofuels for the public and municipal transport	Regulatory, financial	ktoe	Energy suppliers	Completed***	The ZEVI sets out requirements for municipal authorities concerning the adoption of programmes promoting the use of renewable energy and biofuels.
36. Quality control system for biofuels	Regulatory, financial	ktoe	Energy suppliers	Existing**	The measure was initially introduced by the ZVIAEB in 2007 and then improved. The measure was carried forward to the ZEVI adopted in 2011.
37. Requiring distributors and retailers of petroleum-derived liquid fuels to have available pumps which sell pure biofuels	Regulatory	ktoe	Energy suppliers	Planned	2015–permanent.
38. Promotion and marketing programme for electric cars	General	Installed capacity (more efficient integration)	Research community, industry	Completed***	National action plan for promoting the production and accelerated penetration of environment-friendly vehicles, including electric mobility in Bulgaria, 2012-2014. Council of Ministers Decision

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Name and reference of the measure	Type of measure	Expected result	Target group and/or activity	Existing or planned	Start and end dates of the measure
					of 17 October 2012.

* The measure appears as 'Existing' in Table 5 of the NREAP and was modified in the reporting period;

** The measure appears as 'Existing' in Table 5 of the NREAP and continued to apply during the reporting period without modification;

*** The measure appears as 'Planned' in Table 5 of the NREAP and its application began in the reporting period;

**** The measure appears as 'Planned' in Table 5 of the NREAP and its implementation began, but did not end in the reporting period.

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

The Renewable Energy Act (ZEVI), which transposes the provisions of Directive 2009/28/EC on the promotion of the use of energy from renewable sources, entered into force on 3 May 2011. The ZEVI is the main legislative document regulating public affairs relating to the production and use of renewable energy to achieve the national target for the share of renewable energy in the gross final consumption of Bulgaria.

The ZEVI contain some of the fundamental principles of the preceding ZVAEIB, improves existing measures and introduces new renewable energy promotion measures. The measures take into account the development of the sector during recent years, the new binding targets laid down in Directive 2009/28/EC and the priorities of the new energy policy of the EU.

The Act introduces standard rules for assessing the cost of connecting renewable electricity production sites to the transmission and distribution grids, for building the infrastructure and electrical capacity required to regulate the electricity system and for developing the infrastructure required to produce renewable district heating and cooling energy. The ZEVI sets out mechanisms aimed at encouraging the use of renewable energy in administrative, industrial and residential buildings. The biofuels sustainability criteria, laid down in the Act, are crucial for achieving the target in the transport sector.

As concerns the production and use of heat, the ZEVI provides for the:

- support and implementation of projects for the construction of heat transmission networks and small decentralised heating and/or cooling systems;
- connection of renewable heat production sites to the heat transmission network and purchase by the heat transmission operator of heat produced by other producers.

The production of gas from RS is encouraged by:

- guaranteed access to the transmission and distribution grids;
- guaranteed gas transmission and distribution services;
- mandatory purchase of the gas, etc.

The production and use of biofuels and renewable energy in transport are encouraged by:

- ensuring the affordability of transport fuels and efficient operation of vehicle engines;
- offering biofuel blends as an ingredient of petroleum-derived liquid fuels;
- introducing electric vehicles and ensuring the requisite infrastructure;
- providing financial support for the use of biofuels.

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To encourage investments and businesses at local level, the ZEVI also provides for the active participation of local authorities in the initiation and implementation of measures designed to encourage the production and use of renewable energy.

One of the key requirements of Directive 2009/28/EC is to publicise the support measures, the benefits and the practicalities of developing and reusing renewable energy, and to raise awareness among the public and relevant actors of the various phases of production and use of this type of energy. Compliance with this obligation will be ensured by the National information system for the potential, production and use of energy from renewable sources, which will be created by the Sustainable Energy Development Agency (AUER). Also being implemented is a project entitled 'Setting up an IT platform to ensure interoperability of spatial data and services used by the state administration and citizens in respect of renewable energy sources', Operational Programme 'Administrative Capacity', Priority axis III 'Quality administrative services and e-government development', sub-priority 3.2. 'Standard information-communication environment and interoperability'.

An Amending and Supplementing Act (ZID), adopted in April 2012, introduced amendments to the ZEVI that improved the investment conditions, taking into account the current status and development of the sector. The amendments relate to:

- a change in the procedures and time-limits for connecting renewable electricity production sites to the grid;

The purpose of this is to ensure that connection procedures and time-limits are aligned with both the long-term plans for development of the grids and the indicative trajectories of the NREAP. The change was needed because there were many preliminary connection agreements, which complied with the requirements of paragraph 6 of the Transitional and Concluding Provisions of the ZEVI, by the time the amendments came into force.

- FIT for renewable electricity are determined at the time of commissioning the energy site or parts thereof, not on the date of the fact-finding statement, which confirms that construction of the site is completed in accordance with Article 176(1) of the Spatial Planning Act. The ZID also establishes a procedure for control of the issued fact-finding statements;

- the addition of new rules for purchasing renewable electricity from energy sites that are commissioned in phases as well as those built with the financial support of a national or European support scheme. These amendments supplement the legal provisions in this area as they add clarity for the future application of the Act, ensure that the preferential FIT correspond to the actual production costs and provide for the proper application of other preferential conditions relating to the mandatory purchase of renewable electricity.

Additional administrative simplifications relate to connection to the distribution grids of renewable electricity sites with a total installed capacity of 30 kW or less, which are mounted on roofs or facades of urban buildings or adjacent properties that are connected to the distribution grid. The conditions for connecting these sites are determined in a statement of opinion, which must be issued within 30 days of receipt of the relevant application. In these cases, preliminary connection

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agreements are not required and the actual connection agreements are concluded in accordance with the conditions determined in the statement of opinion, as long as there is a valid building permit.

Administrative simplifications for connection to the distribution grids are also available for renewable electricity sites with a total installed capacity of 200 kW or less, if they are to be mounted on roofs or façades of industrial buildings or warehouses in urban areas, provided that they are already connected to transmission or distribution grids.

A simplified regime for connection to the grid also applies to small biomass-fired plants (up to 1.5 kW) situated in urban territories, agricultural holdings or industrial zones, and to hydropower plants (1.5 MW).

▪ **Amendments to the Spatial Planning Act**

The ZEVI introduced amendments to the Spatial Planning Act aimed at facilitating the authorisation procedure for the construction (installation) of systems and equipment for renewable energy generation with up to 30 kW installed capacity, including on the roofs and facades of existing buildings in urban areas and on private land properties.

▪ **Amendments to the Forests Act**

Amendments to the Forests Act (ZG) (State Gazette (SG) No 19 of 8 March 2011) simplified the regime for managing plantations for the accelerated production of biomass. Pursuant to Article 85(2) of the FA, plantations of wood and shrub species created for the accelerated production of biomass are not managed as forests, i.e. there are no requirements for management plans, rotation and felling intensity. This measure is expected to increase the amount of timber produced by plantations for the accelerated production of biomass (fast-growing tree and shrubs species with short cycles).

▪ **Act Amending and Supplementing the Environment Protection Act (SG No 53 of 13 July 2012)**

The Environment Protection Act was amended by a ZID adopted in 2012 (SG No 53 of 13 July 2012) in such a way that the procedures relating to environmental impact assessments (EIA) of proposed investment projects were decentralised to the Regional Inspectorates of Environment and Water (RIOSV). The Ministry of Environment and Water now deals only with procedures that concern the territory of more than one RIOSV, certain categories of protected zones, procedures with transboundary context, sites of national importance and wells for exploration or production of non-conventional hydrocarbons. The amendments improve the administrative timelines and requirements relating to EIA procedures and those for ecologic assessment of plans and programmes, including in terms of taking the environment-related administrative acts into account during the process for the approval/permission of proposed investment projects, plans and programmes on the part of investors and the relevant authorising/permitting bodies.

The amendments introduce a reduced, all-inclusive fee for a simultaneous EIA procedure, ecological assessment procedure and assessment of the compatibility of plans, programmes and

proposed investment projects with the scope and target of protection in protected zones as per Article 31 of the Biological Diversity Act.

▪ **Regulation on the use of surface waters**

By its Decree No 200 of 13 July 2011, the Council of Ministers (CM) adopted a Regulation on the use of surface waters. The Regulation improves the process for issuing permits for proposed investment projects where water use is relating to the construction of various systems and facilities, including hydropower plants. The Regulation provides for a single administrative act authorising both the catchment of water and the use of a body of water, thereby reducing the administrative burden on the investor.

▪ **Progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the production and use of biofuels in the transport sector**

As part of the steps towards the binding target of a 10 % share of renewable energy, the ZEVI provides for mandatory blending of biofuels with petroleum-derived liquid fuels and for introduction of electric vehicles in public and private transport. The measure was initially introduced by the ZVAEIB in 2007. In 2011, the mandatory content of bio-ingredients in petroleum-derived liquid fuels, according to the ZVAEIB amendments of 2009, was as follows:

- After 1 September 2010 — minimum biodiesel content of 3 % by volume;
- After 1 March 2011 — fuel for diesel engines with minimum biodiesel content of 4 % by volume and fuel for petrol engines with minimum bioethanol content of 2 % by volume;
- The content of biodiesel and bioethanol in fuels for diesel and petrol engines may not exceed 5 % by volume.

The measure was continued with the adoption of ZEVI.

Pursuant to Article 47(1) of the ZEVI, when 'releasing for use' within the meaning of the Excise Duties and Tax Warehouses Act, the persons placing petroleum-derived liquid fuels on the market are obligated to offer the fuels for diesel and petrol engines blended with biofuels in the following proportions:

- After 1 January 2012 — fuel for diesel engines with minimum biodiesel content of 5 % by volume;
- After 1 June 2012 — fuel for diesel engines with minimum biodiesel content of 6 % by volume;
- After 1 June 2012 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 2 % by volume;
- After 1 March 2013 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 3 % by volume;
- After 1 September 2013 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 4 % by volume;

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- After 1 March 2014 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 5 % by volume;

- After 1 September 2014 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 6 % by volume;

- After 1 March 2015 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 7 % by volume;

- After 1 September 2015 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 8 % by volume;

- After 1 March 2016 — fuel for petrol engines with minimum content of bioethanol or ethers derived from bioethanol of 9 % by volume.

Due to the rise in the prices of petroleum-derived fuels for the transport sector in 2011 and the need to mitigate the negative impact of this development on citizens, the obligation for blending with biofuels was introduced on 1 January 2012. The suspension of the blending obligation reduced the consumption of biofuels in 2011.

According to the ZEVl, control on the quality of biofuels and their blends with petroleum-derived fuels is exercised by the Chairperson of the DAMTN.

The ZEVl encourages the use of new technologies for the utilisation of waste, residues and other raw materials, and the deployment of the infrastructure required for the use of electric vehicles in transport.

- Criteria for sustainability of biofuels and biomass-derived liquid fuels.

As concerns biofuels and biomass-derived liquid fuels, the ZEVl introduces sustainability criteria, which have to be met for these fuels to be taken into account towards the achievement of the binding national target for the share of renewable energy in transport.

Compliance with the sustainability criteria is also a condition for the provision of financial assistance to economic operators. Provisions are made for auditing the information relating to sustainability criteria and the mass balance system so as to guarantee reduction of greenhouse gas emissions during the entire lifecycle of biofuels and biomass-derived liquid fuels.

On the basis of a proposal by the Minister of Environment and Water, in 2012 the Council of Ministers adopted a Regulation on the sustainability criteria for biofuels and biomass-derived liquid fuels²⁷. The Regulation sets out both the sustainability criteria and the conditions and procedure for collection and provision of information by economic operators, auditing the conformity of biofuels and biomass-derived liquid fuels to the sustainability criteria, issuance and withdrawal of certificates of conformity to economic operators as well as the procedure for issuing of declarations of sustainability.

²⁷ Adopted by Council of Ministers Decree No 302 of 26 November 2012, published in SG No 95 of 4 December 2012.

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The economic operators maintain mass balance systems and ensure the traceability of each batch of raw materials and biofuels at all stages of their production, processing, transport and distribution. They are required to keep logbooks with outgoing and incoming references of the issued and received declarations, the sustainability characteristics and amounts of all batches of raw materials, waste materials and residues used for the production of biofuels.

The promotion of electric vehicles in Bulgaria is supported by exempting them from tax in accordance with Article 58(1) of the Local Taxes and Fees Act. This measure has been in force since 1 January 2013.

Article 10(1) of the ZEVI provides for the application of measures to encourage the use of renewable energy at municipal level. Pursuant to Decision No 148/Minutes No 12 of 22 March 2012, electric cars and two-wheeled vehicles are entitled to free parking in the territory of Sofia Municipality and 1 % of all parking spaces in paid parking lots is allocated to two-wheeled vehicles.

▪ **Adoption of new, and amendment of existing, regulatory and administrative acts in 2011 and 2012**

– Regulation No RD-16-869 of 2 August 2011 on the calculation of the total share of energy from renewable sources in the gross final energy consumption and of the consumption of biofuels and energy from renewable sources in transport, issued by the Minister of Economy, Energy and Tourism, published in SG No 70 of 9 September 2011;

– Regulation No RD-16-1117 of 14 October 2011 on the conditions and procedure for issuing, transferring, cancelling and recognising the guarantee of origin of the energy from renewable sources, issued by the Minister of Economy, Energy and Tourism, published in SG No 84 of 28 October 2011, in force as from 1 January 2012; amended and supplemented SG No 54 of 17 July 2012, in force as from 17 July 2012; and amended SG No 24 of 12 March 2013, in force as of 12 March 2013;

– Regulation No RD-16-558 of 8 May 2012 on the collection and provision of information through the National information system for the potential, production and use of energy from renewable sources in Bulgaria, issued by the Minister of Economy, Energy and Tourism, published in SG No 39 of 22 May 2012, in force as of 22 May 2012;

– Regulation No 40 of 9 January 2012 on the acquisition of qualifications in the profession 'Technician in energy facilities and installations', issued by the Minister of Education, Youth and Science, published in SG No 17 of 28 February 2012, in force as of 28 February 2012; amended SG No 62 of 14 August 2012;

– Regulation No 41 of 9 January 2012 on the acquisition of qualifications in the profession 'Installer of energy facilities and installations', issued by the Minister of Education, Youth and Science, published in SG No 17 of 28 February 2012, in force as of 28 February 2012; amended SG No 62 of 14 August 2012;

– Regulation on the sustainability criteria for biofuels and biomass-derived biofuels, Council of Ministers Decree No 302 of 26 November 2012, published in SG No 95 of 4 December 2012, in force

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as of 3 January 2013, adopted by the Council of Ministers upon a proposal from the Minister of Environment and Water;

– Regulation No RD-16-317 of 27 February 2013 on the procedure for issuing certificates and inclusion in the register of the persons performing activities relating to the installation, maintenance, repair and reconstruction of facilities at energy sites for production of electricity from renewable sources, issued by the Minister of Economy, Energy and Tourism, published in SG No 24 of 12 March 2013, in force as of 1 April 2013;

– Regulation No 3 of 21 March 2013 on the licensing of activities in the energy sector, issued by the Chairperson of the DKEVR, published in SG No 33 of 5 April 2013;

– Regulation on the regulatory control of electricity prices, adopted by Council of Ministers Decree No 35 of 20 February 2004, published in SG No 17 of 2 March 2004; amended SG No 62 of 31 July 2007; amended and supplemented SG No 42 of 5 June 2012; repealed SG No 33 of 5 April 2013, repealed SG No 38 of 23 April 2013;

– Methodology for the calculation of the emissions of greenhouse gases throughout the entire lifecycle of biofuels and biomass-derived liquid fuels, adopted by Order No RD-854 of 23 November 2012 of the Minister of Environment and Water, jointly approved by the Minister of Environment and Water, the Minister of Economy, Energy and Tourism and the Minister of Agriculture and Food;

– DKEVR Decision No Ts-018 of 31 March 2010 on the determination of preferential selling prices of electricity from renewable energy sources and hydropower plants with a capacity of less than 10 MW;

– DKEVR Decision No Ts-010 of 30 March 2011 on the determination of preferential prices of electricity from renewable energy sources and hydropower plants with a capacity of less than 10 MW, in force as of 1 April 2011;

– DKEVR Decision No Ts-18 of 20 June 2011 on the determination of preferential selling prices of electricity from renewable energy sources and hydropower plants with a capacity of less than 10 MW, net of VAT, with effect from 1 July 2011. Published on the website of the DKEVR on 21 June 2011;

– DKEVR Decision No Ts-22 of 29 June 2011 on the approval of prices in the 'electric energy' sector, with effect from 1 July 2011,;

– DKEVR Decision No Ts-35 of 27 October 2011 on the determination of preferential prices of electricity produced from renewable sources by thermal gasification of biomass and/or biodegradable fractions of industrial and residential waste, with effect from 1 November 2011;

– DKEVR Decision No Ts-36 of 7 November 2011 on the determination of prices of electricity produced from renewable sources where the investment for the construction of the energy site is supported by a national or European support scheme, with effect from 1 December 2011;

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– DKEVR Decision No Ts-17 of 28 June 2012 on the approval of prices in the ‘electric energy’ sector as of 1 July 2012. Published on the website of the DKEVR on 29 June 2012;

– DKEVR Decision No Ts-018 of 28 June 2012 on the determination of preferential prices for purchasing electricity from renewable energy sources and hydropower plants with a capacity of less than 10 MW, with effect from 1 July 2011. Published on the website of the DKEVR on 29 June 2012;

– DKEVR Decision No Ts-019 of 28 June 2012 on the determination of preferential prices of electricity produced from renewable sources where the investment for the construction of an energy site for production of renewable electricity is supported by a national or European support scheme. Published on the website of the DKEVR on 29 June 2012;

– DKEVR Decision No Ts-28 of 29 August 2012 on the determination of preferential selling prices of electricity produced by photovoltaic plants, with effect from 1 September 2012. Published on the website of the DKEVR on 30 August 2012;

– DKEVR Decision No Ts-29 of 29 August 2012 on the determination of purchasing prices of electricity produced by photovoltaic plants where the investment for the construction of the energy site is supported by a national or European support scheme, with effect from 1 September 2012. Published on the website of the DKEVR on 30 August 2012;

– DKEVR Decision No Ts-33 of 14 September 2012 on the determination of temporary prices for access to the transmission and distribution grids by producers of renewable electricity benefiting from preferential prices. Published on the website of the DKEVR on 14 September 2012.

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

Since 3 May 2011, the public affairs relating to the production and use of renewable electricity have been governed by the Renewable Energy Act (ZEVI). Prior to that date, the rights and obligations of the participants in the market for renewable electricity were regulated by the ZVAEIB and were discussed in the First national report on Bulgaria's progress in promoting and using energy from renewable sources.

The Act provides for the following measures to encourage the transmission and distribution of renewable electricity:

- Guaranteed access of the electricity produced from renewable sources to the transmission and distribution grids, subject to the security criteria determined by the rules laid down in Article 83(1)(4) and (5) of the Energy Act;
- Guaranteed transmission and distribution of the electricity produced from renewable sources, subject to the security criteria determined by the rules laid down in Article 83(1)(4) and (5) of the Energy Act;
- Measures enabling the construction of infrastructure and electric capacity required for the regulation of the national electric system;
- Prioritised dispatch of the electricity produced from renewable sources, subject to the security criteria;
- Measures enabling the construction of infrastructure and electric capacity required for the regulation of the national electric system;
- Purchasing of the electricity produced from renewable sources at preferential prices under long-term agreements.

Coordination and synchronisation of the procedures for connecting renewable electricity producers to the transmission and distribution grids is ensured by planning their development and by ex-ante coordination of the investment projects proposed by the operators of these grids for the connection of renewable electricity sites by zones and voltage levels. By its decision, the DKEVR approves the proposed electric capacities, which can be allocated for connecting renewable electricity to the transmission and distribution grid after it receives an opinion from the Minister of Economy and Energy. The operators of the relevant grids allocate capacities to the producers that have applied for connection on a 'first come first served' basis until the approved electric capacity in the region concerned is used up.

In relation to the achievement of the targets and measures set out in the NREAP, the operators of the transmission and distribution grids are obligated to include resources for development of the

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grids relating to the connection, transmission and distribution of renewable electricity in their annual investment and maintenance programmes.

The rapid increase in renewable capacity requires sizable investments by transmission and distribution operators across the country. To enable the connection of renewable electricity production sites, NEK EAD invested, in accordance with its investment programmes, in the reconstruction of existing lines, construction of new lines and in the rehabilitation and expansion of its substations during 2011 and 2012. Some of the results are:

- Reconstruction of the existing 110 kV power line 'Rakovski' from substation 'Kavarna' to substation 'Shabla', of a length of 23 kilometres. The reconstruction includes the replacement of existing lattice towers and erection of new towers, duplication of the cable line and increase in the cross-section of conductors to 400 mm²;

- Reconstruction of six existing 110 kV power lines with length of 43 km. The reconstruction includes dismantling the existing conductors and installing a new type capable of withstanding higher current loads, i.e. considerably higher transmission capacity is achieved without replacing the existing towers/poles;

- Preparation for the construction of a new duplex line 110 kV from substation 'Dobrich' to the new nodal station 'Mayak', presently under construction; the cable line will be 49 km long and will be configured in two triplets of 400 mm² conductors and lighting protection cables with embedded optical fibres. NEK has completed the consultation procedures with state and municipal authorities required for obtaining a building permit as well as the procedure for acquisition of land entitlements for the footprints of the new towers/poles and rights of way;

- In view of the commissioning of many wind parks in the area of Kavarna, a contract for the construction of new nodal station 'Mayak' was concluded in the end of 2011. Part of the project is financed by the Kozloduy International Decommissioning Support Fund (EUR 257 million) and the rest by NEK from its own resources. Construction of the site began in 2012;

- A contract for the reconstruction of substation 'Kavarna' 110/20 kV was concluded at the end of 2011. Part of the project is financed by the Kozloduy International Decommissioning Support Fund (EUR 2.9 million) and the rest by NEK from its own resources. Completion and commissioning of the site is expected at the end of 2013.

When implementing their investment programmes, the distribution operators carried out the following investment projects: reconstruction of existing grids, construction of new power lines and nodal stations, construction of new switchgears, renovation and construction of transformer stations for connecting renewable electricity systems, construction of new medium voltage (MV) cable lines, reconstruction of overhead MV lines, and installation of remote control and online data transmission systems at the electricity generation site connection points (2011 and 2012).

In 2011 and 2012, the transmission system operator invested more than BGN 33 744 000 in facilities for connecting renewable electricity sites. The NEK EAD investment programme includes an

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additional budget of BGN 62 412 000 for connecting renewable electricity sites. Distribution grid operators have spent around BGN 24 228 114 on connecting such sites.

The ZEVI introduces standard rules for assessing the cost of connecting renewable electricity sites to the transmission and distribution grids.

Pursuant to Article 25(1) of the Regulation on the regulatory control of electricity prices, the prices for connecting electricity producers to the relevant grids are individual and include the actual costs associated with the construction of the facilities for connection to the grid of the transmission or distribution operator. The connection price also includes the cost of extending or reconstructing the transmission or distribution grid required to connect the producer.

Until 3 May 2011, the renewable electricity production sites were connected to the relevant grids in accordance with the procedure laid down in the ZVAEIB and in the regulation referred to in Article 116(7) of the Energy Act. Pursuant to Article 15(1) of the ZVAEIB, the cost of connecting the site of a renewable electricity producer to the relevant electric grid, to the boundary of ownership of the electric facilities, was borne by the producer. Article 15(2) provided that the cost of connecting the site of a renewable electricity producer from the boundary of ownership of the electric facilities to the connection point was to be borne by the transmission or distribution operator. For the connection of its site, the producer had to pay a price determined in accordance with the Regulation on the regulatory control of electricity prices, which included only the direct costs incurred by the transmission or distribution operator for the connection. Pursuant to Article 15(3), the cost of extending or rebuilding the transmission and/or distribution grid, relating to the connection of renewable electricity production sites, was borne by the transmission or distribution operator and was not included in the connection price.

Since 3 May 2011, the renewable electricity production sites have been connected in accordance with the procedure laid down in ZEVI and in the regulation referred to in Article 116(7) of the Energy Act. The cost of building the facilities connecting the producer's energy site (ES) to the relevant electric grid, to the boundary of ownership of the electric facilities, is borne by the producer, while the cost of building the facilities connecting the producer's ES from the boundary of ownership of the electric facilities to the connection point, and the cost of developing the electric grids for the purpose of such connection, including reconstruction and modernisation, is borne by the owner of the relevant grid.

Upon conclusion of a preliminary connection agreement (Article 29 of the ZEVI), the renewable electricity producer is required to make an advance payment to the transmission or distribution operator of BGN 50 000/MW (for installed capacity greater than 5 MW) or BGN 25 000/MW (for installed capacity of 5 MW or less). The advance payment is part of the connection price and will be retained by the owner of the transmission or distribution grid if the site of the renewable electricity producer is not built by the deadline in the connection agreement, for reasons attributable to the producer.

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The connection agreement provides for the payment of the remaining part of the connection price if it is higher than the advance payment. The purpose of the connection price is to cover the cost of building the connection facilities and the planned development, including reconstruction, modernisation and management of the grids relating to the connection of the particular renewable electricity producer.

The connection prices are individual, they include the costs associated with the construction of the facilities for connection to the relevant distribution grid and they are determined by a methodology, which the DKEVR approves in accordance with the regulation referred to in Article 36(3) of the Energy Act for the following categories of energy sites:

- Sites with installed capacity of 30 kW or less, which will be mounted on roofs or facades of urban buildings or adjacent properties that are connected to the distribution grid;
- Sites with installed capacity of 200 kW or less, which will be built on roofs or façades of industrial buildings or warehouses in urban areas, provided that they are already connected to transmission or distribution grids;
- Sites of an installed electric capacity of 1.5 MW or less, which will be built in urban territories, agricultural holdings or industrial zones;
- Hydropower plants of an installed electric capacity of 1.5 MW or less.

In order to comply with the provisions of Article 29(11) of the ZEVI, by 30 June 2011 and every two years thereafter the DKEVR produces a report on the compliance with the cost-based rules laid down in Articles 27, 29(1) to (4) and 29(9) of the ZEVI, and proposes revisions of the rules where appropriate. The report is published on the Commission's website.

3. Please describe the support schemes and other measures designed to promote energy from renewable sources, and 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)

Energy from renewable sources in Bulgaria is supported through a system of measures: administrative, financial, regulatory and awareness-raising.

▪ **Administrative measures:**

- Sustainable Energy Development Agency

The Sustainable Energy Development Agency was established in 2011 by Council of Ministers Decree No 296 of 31 October 2011 as a legal successor to the Energy Efficiency Agency. The AUER is an executive agency under the Minister of Economy and Energy and is responsible for the implementation of the state's policy to promote the production and use of renewable energy. The main functions of the AUER's Executive Director for the renewable energy policy include: organising the creation and maintenance of a National information system; organising the creation and maintenance of a system for issuing energy origin guarantees; organising the scheduled statistical transfers of specified amounts of renewable energy from Bulgaria to other EU Member States and from other EU Member States to Bulgaria; collaborating with executive bodies, sectoral organisations and non-profit stakeholders for the implementation of activities and measures aimed at promoting the production and use of renewable energy; popularising the measures aimed at promoting the production and use of renewable energy; assisting executive bodies and local authorities in performing their obligations under the ZEVI and organising awareness-raising and training campaigns on the promotional measures, benefits and practicalities of developing and using energy from renewable sources.

- Arrangements for the alignment of existing preliminary connection agreements with the requirements of the ZEVI

The measure was introduced by the ZEVI in 2011 and provides that the renewable electricity production sites, which already have concluded agreements for connection to the relevant grid, will be connected in accordance with the agreed terms and conditions once they meet the new requirements set out in ZEVI.

According to amendments to the ZEVI adopted in 2012, the transmission and distribution operators are required to develop, in accordance with the 10-year plan for development of the transmission grid and the plans for development of the distribution grids, schedules for connecting producers that are parties to agreements for connecting renewable electricity sites. An exception is made for sites producing electricity from biomass.

- Arrangements for achieving a balance of responsibilities between the investor and the connecting company

The measure was introduced in 2011 and requires a guarantee deposit for participation in the procedure for connecting renewable electricity sites to the transmission and distribution grids at the

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rate of BGN 5 000 per megawatt of capacity intended for connection. The advance payment is part of the connection price payable by the investor of the site under construction and amounts to BGN 25 000 per megawatt of installed capacity if it is 5 MW or less and BGN 50 000/MW if it is higher than 5 MW.

– Simplified procedures for investment projects depending on the installed capacity and the type of renewable sources used

The Renewable Energy Act facilitates the connection of small renewable electricity production sites, which were presented in Section 2a of this report.

– Qualification requirements for installers

The measure was introduced by the ZEVl in 2011, and was later improved by the amendments to the ZEVl adopted in April 2012, which came into force on 10 April 2012. The ZEVl provides that installation and maintenance of biomass plants, solar photovoltaic converters, solar heat systems, heat pumps and surface geothermal systems can only be carried out by persons with the appropriate professional qualification.

The state's educational requirements for the acquisition of such a qualification are laid down in:

- Regulation No 40 of 9 January 2012 on the acquisition of qualifications in the profession 'Technician at energy facilities and installations';
- Regulation No 41 of 9 January 2012 on the acquisition of qualifications in the profession 'Installer of energy facilities and installations'.

▪ **Financial measures:**

The financial measures in force during the period 2011 - 2012 were:

– Preferential prices

Preferential prices are set by the DKEVR for renewable energy plants, but exclude the energy produced by HPPs of an installed capacity above 10 MW.

Until 1 July 2011, the system used for determination of the preferential prices was based on two components, in accordance with the ZVAEIB. The preferential price was equal to 80 % of the average selling price of the public supplier or the end suppliers in the previous year plus a premium set by the DKEVR on the basis of criteria that depended on the technology and the type of primary energy. The margin could not be less than 95 % of the value applicable in the previous year.

The measure was continued in the new ZEVl adopted in 2011. The DKEVR updates the preferential prices by 30 June each year, taking into account the type of the renewable energy source, the technology used, the installed capacity of the site, the place and method of installation of the facilities as well as the following factors:

- investment costs;

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- rate of return;
- structure of the capital and the investment;
- productivity of the plant as a function of the technology and resources used;
- costs relating to the higher environment protection level;
- costs of the raw materials used for production of energy;
- fuel costs in transport;
- labour and wage costs;
- all other operational costs.

The preferential prices remain fixed throughout the entire period of purchasing the renewable electricity, and are not available thereafter.

In the case of biomass, the DKEVR updates the preferential price by 30 June each year using factors that reflect the costs of transport fuels, labour and wage costs and other operational costs.

The Act Amending and Supplement the Energy Act (ZID) of July 2012 introduced *inter alia* amendments to the ZEVI relating to the determination of the preferential purchasing price of renewable electricity. These amendments provide the DKEVR (Article 32 of the ZEVI) with the power to determine preferential prices for the purchasing of renewable electricity more than once each year where the analysis of the Commission establishes significant change of the pricing elements defined in the ZEVI.

Pursuant to Article 31(8) of the ZEVI, the DKEVR takes into account the funding, if any, received from European and national support schemes when determining the preferential prices of renewable electricity in 2011 and 2012. The decisions of the DKEVR are explained in Section 2a.

The preferential prices set by decisions of the DKEVR are presented in Annex 1 to this report.

- Programmes funded by the EU

Utilisation of RES potential can be funded by three Operational Programmes (OP):

- **OP ‘Development of the competitiveness of the Bulgarian economy’ 2007–2013**

The programme is managed by the Ministry of Economy and Energy (by the Ministry of Economy, Energy and Tourism in 2011 and 2012). In 2011 and 2012, this OP provided targeted support for improvement of energy efficiency, including for promotion of the use of renewable energy, under two grant procedures in Impact area 2.3 ‘Implementation of energy-saving technologies and use of renewable energy sources’, as follows:

BG161PO003-2.3.01 ‘Investments in green industry’

The procedure for selection of projects was launched on 17 November 2011 with a deadline for submission of project proposals of 15 February 2012. By the 31 December 2012, 30 agreements totalling BGN 77 million had been concluded. The procedure is focused on large Bulgarian enterprises,

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where the issues relating to the energy intensity of production processes and adverse environmental impacts are manifested to the highest extent. The activities eligible for funding include heating and ventilation systems using renewable sources.

Within the framework of the procedure four agreements relate to installation of solar systems for domestic hot water (solar collectors) and two others are for the acquisition of plants for production of wooden pellets. The two agreements will continue for more than 20 months and should be completed in March and April 2014, respectively. The combined budget of these projects is BGN 35 040 904, of which the grant component is BGN 17 430 794.

BG161PO003-2.3.02 'Energy efficiency and green economy'

The procedure for the selection of projects was launched 28 June 2012 and the initial deadline for submission of project proposals was 31 October 2012, which was subsequently extended to 31 January 2014. The procedure is targeted at micro, small and medium-sized enterprises. The activities eligible for funding include the procurement, supply, installation and commissioning of heating and ventilation systems using renewable sources for own purposes (solar and geothermal systems, heat pumps and secondary biomass) from products not listed in Annex I to the Treaty on the Functioning of the European Union.

At the end of 2012 there were no concluded agreements under procedure 2.3.02 'Energy efficiency and green economy' or projects funded in the area of RES-based heating and ventilation systems.

– **OP 'Regional Development' 2007–2013**

The Programme is managed by the Ministry of Regional Development and Public Works, mainly in the framework of Priority axis 1 'Sustainable and integrated urban development'.

The following projects were supported by OP 'Regional Development' in 2011 and 2012:

Production of electricity from renewable sources:

The Programme supports two projects which, besides their main activities, include installation of photovoltaic plants for production of renewable electricity with installed capacity of 48.4 kW and annual electricity output of 30 290 kWh. The aid amount is BGN 432 633.86. The target groups are children from kindergartens and personnel of the relevant educational institutions.

Production of heating and cooling energy from renewable sources:

The Programme supports 83 projects which, besides their main activities, include installation solar systems for domestic hot water. The total installed capacity is 2 322.53 kW, the energy output is 1 179 091.33 kWh/y and the aid amount is BGN 2 253 687. All the projects are aimed at the implementation of energy efficiency measures. The target groups of these projects are children, pupils and personnel of educational institutions, children with disabilities aged three or more years old and young people placed in specialised institutions.

Use of renewable energy in transport:

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The urban transport projects of OP 'Regional Development', Priority axis 1 'Sustainable and integrated urban development', operation 1.5 'Sustainable urban transport systems' aim to create more efficient and rapid mass urban transport consuming less energy, introduce environmentally-friendly modes of urban transport and intelligent traffic control systems.

– **OP 'Environment' 2007–2013**

In its Priority axis 2 'Improvement and development of waste treatment infrastructure', the Programme finances the construction of plants for utilisation of the emissions of gas (methane) from residential waste depots by production of electricity.

No projects for production of renewable energy were financed in 2011 and 2012. Some water and sewerage operators have planned projects for production of electricity from biogas released by their wastewater treatment plants, which will be implemented in the next programming period.

– **Rural Development Programme 2007–2013**

The RDP is managed by the Ministry of Agriculture and Foods. The priorities of the Rural Development Programme 2007–2013 include production and use of renewable energy as well as application of energy efficiency measures. The production and efficient use of renewable energy, improvement of energy efficiency of agricultural holdings, the food industry, the forestry sector and the rural areas and the production of heat and electricity by municipalities are all important prerequisites for sustainable development in the regions.

– **Energy Efficiency and Renewable Sources Fund (EERSF)**

The EERSF provides low-interest loans mainly for energy efficiency projects, from BGN 30 000 to BGN 3 000 000 and a repayment period of up to 5 years.

The Fund is capitalised with donations from the International Bank for Reconstruction and Development, the Bulgarian Government, the Austrian Government and private donors. The ZEVI, adopted in 2011, changed the name of the Fund to the Energy Efficiency and Renewable Sources Fund.

In 2011, 27 projects in the total amount of BGN 12 195 619 were financed, of which BGN 8 172 593 were loans provided by the Fund.

The estimated energy savings expected solely from the implementation of the projects approved by the end of 2011 are as follows:

- Electricity: 16 813 856 kWh;
- Heat: 2 882 582 kWh;
- General energy savings: 6 506 ktoe.

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– **Energy Efficiency and Renewable Energy Credit Line (EERECL)**

The Credit Line was established in 2004 by the European Bank for Reconstruction and Development (EBRD) jointly with the Ministry of Energy and Energy Resources with the objective to support energy efficiency and small RES projects in private industrial enterprises. The programme is expected to operate until the end of December 2014.

The EERECL provides loans, subsidies and pro bono consultations to RES projects in the following areas: wind energy, mini HPPs, biomass, geothermal energy, solar energy for heating and biogas.

Since its inception the Credit Line has:

- financed 274 projects;
- provided loans totalling EUR 144 million;
- provided grants to companies in the total amount of EUR 28.5 million;
- helped to reduce CO₂ emissions by more than 695 000 tonnes.

In 2011 and 2012, 13 renewable energy projects totalling EUR 27 988 000 were completed, of which 6 were SHPP projects (total installed capacity 15.421 MW), 1 was a project for production of heat from biomass (9.375 MWth), 1 for a solar system (0.143 MWth) and 5 for photovoltaic plants (total installed capacity 0.985 MW). The total amount of EERECL loans is EUR 11 680 000.

– **Residential Energy Efficiency Credit Line (REECL)**

The REECL is a EUR 40 million credit facility for energy efficiency funding in the residential sector. The facility is supported by the EBRD and provides loans to households and owners associations for energy efficiency and renewable energy projects. The loans are provided for energy efficiency measures such as efficient stoves and boilers using biomass fuel; solar water heaters; efficient gas boilers; air-conditioning systems based on heat pumps; photovoltaic systems integrated in the building; heat substations and building systems; gasification systems; and recuperative ventilation systems.

In addition to the loan, the REECL provides pro bono technical assistance and grants amounting to 35 % of the loan. The REECL will continue to provide loans until 31 July 2014.

– **Energy Efficiency Programme (EEP) of the European Investment Bank (EIB) and Kozloduy International Decommissioning Support Fund**

The objective of the EEP is to promote the development of energy efficiency and renewable energy in Bulgaria by supporting mainly municipalities and other public or private organisations. The programme combines preferential loans from the EIB, donations from the IFC (20 % of loans invested in renewable energy) and pro bono technical assistance. The loans are provided through the mediation of the partner banks participating in the programme.

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The projects eligible for funding under the programme are those for construction of small plants for combined generation of heat and electricity from renewable sources, wind farms, photovoltaic systems and thermal solar collectors as well as hydropower and geothermal plants.

– **Enterprise for the Management of Environmental Protection Activities (PUDOOS)**

The PUDOOS is a state-owned enterprise set up under the Environmental Protection Act as a separate legal entity. It provides financing for environmental protection projects, including projects for the construction of small hydropower plants, in the form of interest-free 5-year loans to enterprises, amounting to 70 % of the total project costs but not exceeding BGN 1.5 million.

The Enterprise did not finance projects for the construction of small HPPs in 2011 and 2012. Since 2012 the PUDOOS has no longer provided funds in the form of interest-free loans or grants to projects for the construction of power plants.

In 2011 the district heating company Toplofikatsia Sofia AD and the PUDOOS concluded an agreement for the sale of heat generated by the MOSV's facility for the incineration of dangerous hospital waste.

– **Join Implementation Mechanism**

One renewable energy project was approved and began in 2011–2012 for a biomass-fired plant with an installed capacity of 11.2 MW_t. The expected output will be 77 420 MWh/year. The expected greenhouse gas emissions (GGE) savings are 8 539 tCO_{2eqv} in 2011 and 17 104 tCO_{2eqv} in 2012, although these amounts have not yet been verified.

GGE savings from 7 renewable energy projects, which began in earlier periods under the Joint Implementation Mechanism, were reported in 2011–2012.

– **Tax preferences**

- A reduced rate of excise applied for the period November 2009 to November 2011 following notification of the European Commission.

Reduced rates on biofuels are financial instruments introduced with the amendments to the Excise Duties and Tax Warehouses Act (SG No 109/2007 of 20 December 2007). The scheme entered into force following the EC's positive opinion of 24 November 2009. The scheme was subject to notification, because reduced tax rates are forms of state aid and as such, in accordance with Article 88(3) of the Treaty establishing the European Community, can be applied only and exclusively when the European Commission confirms by its decision that they are compatible with the common market.

During the period January — November 2011, which is part of the two-year reporting period (November 2009– November 2011), the reduced rate applied to blends of biofuels with petroleum-derived liquid fuels with biocomponent content 4 to 5 % inclusive. According to the Excise Duties and Customs Warehouses Act (published in SG No 91 of 15 November 2005, last amended SG No 99 of 16 December 2011), the rates of excise on motor fuels are lower if the biofuel content is at least 4 % by volume. In the case of unleaded petrol, the excise rate was reduced from BGN 710 to BGN 688 per

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1 000 litres. The excise rate on gasoil (diesel fuel) containing at least 4 % biodiesel was reduced from BGN 630 to BGN 596 per 1 000 litres.

After the expiry of the period for which the measure was approved (24 November 2011), reduced excise rates on biofuels used in transport were no longer applied.

- Exemptions from property tax

The Local Taxes and Fees Act states that buildings put into use before 1 January 2005 which have received a Class A certificate under the Energy Efficiency Act are exempted from tax for a period of 7 years. This period can be extended to 10 years if the owners apply measures for the utilisation of renewable energy sources in order to meet the energy demand of building. Similarly, the tax exemption periods for Class B buildings are 3 and 5 years if the building uses renewable energy.

- Exemptions from vehicle tax

In 2012 the Local Taxes and Fees Act was amended (SG No 102/2012) and now states that electric vehicles are exempt from tax as of 1 January 2013.

- **Specific measures:**

Article 10(1) of the ZEVI states that municipalities shall undertake specific measures of their own. For example, pursuant to Decision No 148/Minutes No 12 of 22 March 2012, electric cars and two-wheeled vehicles are entitled to free parking in the territory of Sofia Municipality and one percent of all parking spaces in paid parking lots is allocated to two-wheeled vehicles.

- **Regulatory measures:**

The regulatory measures govern the relations between the parties participating in the production, transmission and distribution of renewable energy. Pursuant to the ZEVI, the measures concerning the various types of energy are the following:

- **Renewable electricity**

- guaranteed access to the transmission and distribution grids;
- guaranteed transmission and distribution of renewable electricity;
- enabling the construction of infrastructure and electric capacity required to regulate the national electric system;
- priority dispatching;
- off-take of the electrical output for a specified period depending on the type of source.

- **Renewable energy for heating and cooling**

The production of heating and cooling from renewable sources is promoted through soft measures:

- support for, and implementation of, projects for the construction of renewable heating transmission networks in residential areas;

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- support for and implementation of projects for the construction of small-scale decentralised heating and/or cooling systems;
- connection of heat generation facilities using renewable sources to the transmission network and off-take of the heat output of such facilities by the heat transmission company.

– **Gas from renewable sources**

As regards gas produced from renewable sources, the Renewable Energy Act provides for the following measures, subject to security requirements:

- guaranteed access to the transmission and distribution networks;
- guaranteed gas transmission and distribution;
- non-discrimination in the charging of transmission and distribution fees on gas from renewable sources;
- making public the connection tariffs of network operators;
- obligation to purchase gas produced from renewable sources of guaranteed quality and pressure on the basis of agreements with the public supplier and/or public retailers at preferential prices set by the DKEVR.

– **Rules on the allocation of the costs associated with the construction of facilities for connecting renewable electricity producers' sites to the relevant grid:** the information is provided in part 2 of Table 2 and section 26 of this report.

– **Procedure for the annual approval of electric facilities, which can be allocated for the connection of renewable electricity production sites, having regard to the capacity of the transmission and distribution grids**

The measure was introduced by the ZEVI in 2011 in order to ensure coordination and synchronisation of the procedures for connecting renewable electricity producers to the transmission and distribution grids. There are rules for planning the development of the transmission and distribution grids and ex-ante coordination of the investment projects proposed by the operators of these grids in relation to the connection of renewable electricity sites by zones and voltage levels.

▪ **Awareness-raising measures:**

During the reporting period, the MIE and the AUER had more than 70 contributions and initiatives for promoting the production of renewable energy, alternative energy sources and biofuels.

▪ **Level of support:**

The main support scheme used for promoting the use of renewable energy in Bulgaria is the preferential purchasing prices of renewable electricity. The scheme applies to all types of renewable energy except hydropower plants of an installed capacity of more than 10 MW.

The level of support provided in 2012 to renewable electricity producers is determined in the following way:

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– The calculations use a ‘baseline price’ set by the DKEVR in the justification for its Decisions Nos Ts-22 of 29 June 2011 and Ts-17 of 28 June 2012, namely BGN 75.54/MW for the pricing period 1 July 2011–30 June 2012 and BGN 90.42/MW for the pricing period 1 July 2012– 30 June 2013. The DKEVR uses the ‘baseline price’ to set the green energy premium.

– Having regard to the large number of renewable energy plants and the significant spread between the preferential prices (Annex 1 to this report), the calculations are made for the entire amount of electricity purchased in 2012, using those set for the following types of electric power plants:

- Hydropower plants (HPPs): Low-thrust run-of-river HPPs, diversion HPPs, reservoir HPPs and diversion HPPs with a yearly compensating basin with net thrust of up to 30 metres and installed capacity of 200 kW up to 10 000 kW;
- Wind power plants (WPPs): WPPs with less than 2 250 full-load hours and those with more than 2 250 full-load hours;
- Photovoltaic power plants (PVPs): PPs with photovoltaic modules from 30 kWp up to 200 kWp mounted on roofs and facades (2011); PPs with photovoltaic modules from 200 kWp up to 1 000 kWp (2011), PPs with photovoltaic modules up to 30 kWp (2012) and PVPs with installed capacity from 200 kWp to 1 000 kWp mounted on roofs or façades of industrial buildings or warehouses in urban areas, provided they are already connected to transmission or distribution grids (2012);
- Biomass-fired electric power plants: PPs up to 5 MW using thermal gasification of biomass and/or biodegradable fractions of industrial and residential wastes, without combined cycle.

– The difference between the ‘baseline price’ and the relevant preferential price is calculated and then multiplied by the amount of electricity produced in 2012.

– Separate calculations were made for the first and second half of 2012, because the values of the ‘baseline price’ and the preferential prices were different.

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Table 3: Support schemes for renewable energy

RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
Hydropower plants			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	250	38
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			38
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
WPPs with less than 2 250 full-load hours			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	174	43
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			43
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
WPPs with more than 2 250 full-load hours			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	76	5
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			5
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
PVPs of installed capacity up to 200 kW			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	624	1
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			1
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
PVPs of installed capacity above 200 kW			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	526	56
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			56
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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RES support schemes in 2012: Production of electricity from renewable sources		Per unit support, BGN/MWh	Total (€ m)*
Production of electricity from biomass			
Preferential price (FIT)	RS obligation/quota (%)	n/a	n/a
	Penalty/Buy-out option/ Buy-out price (€/unit)	n/a	n/a
	Average green certificate price	n/a	n/a
	Tax exemption/refund	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a
	Production incentives	n/a	n/a
	Feed-in tariffs	593	4
	Feed-in premiums		n/a
	Tendering	n/a	n/a
Total annual estimated support in the electricity sector			4
Total annual estimated support in the heating sector			-
Total annual estimated support in the transport sector			-

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- 4. Please provide information on how, where applicable, the support schemes have been structured to take into account renewable energy 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)**

Renewable electricity is purchased at preferential prices which, according to the ZEVI, take into account the type of the renewable energy source, the technology used, the installed capacity of the site, the place and method of installation of the facilities as well as the following factors:

- investment costs;
- rate of return;
- structure of the capital and the investment;
- productivity of the plant as a function of the technology and resources used;
- costs relating to the higher environment protection level;
- costs of the raw materials used for production of energy;
- fuel costs in transport;
- labour and wage costs;
- all other operational costs.

By 30 June each year the DKEVR updates the price of electricity produced from biomass by a factor that reflects the change of pricing elements. This factor is the multiple of the changes of the costs of the raw material used for the production of electricity from biomass, the cost of the transport fuels required to supply the raw material used for the production of electricity, the labour and wage costs incurred in producing and processing the raw material used for the production of renewable electricity, expressed as a per cent, and the share of the relevant pricing element in the overall costs expressed as a per cent.

Financial support for the production and use of biofuels and renewable energy in transport and of biomass-derived liquid fuels is only provided if they comply with the sustainability criteria.

Where financial support is provided for the production of biofuels, priority is given to that from wastes, residues, non-food cellulosic material, and ligno-cellulosic material.

Economic operators can only participate in support schemes when the criteria for sustainability of the biomass-derived liquid fuels are met, a mass balance system is in place, arrangements for auditing the information are in place and evidence of the conducted audit is provided.

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

Since 1 January 2012, the certificates of origin for renewable electricity have been replaced with guarantees of origin for renewable energy.

Pursuant to the ZEVI, the guarantee of origin is issued to the producer for a standard energy lot of 1 MWh and is valid for 12 months. Each unit of energy produced can receive only one guarantee of origin. The guarantees of origin are issued, transferred and cancelled by electronic means. The guarantee of origin is cancelled once it has been used or upon the expiration of its validity period.

The guarantee of origin is an electronic document, which proves to the end user (purchaser for own use) that part or all of the energy supplied to it is produced from renewable sources.

The conditions and procedure for the creation, maintenance and use of a system for issuing guarantees of origin are laid down in the Regulation on the conditions and procedure for issuing, transferring, cancelling and recognising the guarantees of origin of the energy from renewable sources ('the Regulation') issued by the Minister of Economy and Energy. The activities relating to the creation, maintenance and use of the system for issuing guarantees of origin are carried out by the AUER.

The electricity supplier uses the guarantees of origin of the electricity produced from renewable sources to demonstrate the share of renewable energy in its overall energy mix. The amount of renewable energy shown on guarantees of origin transferred to the electricity supplier by third parties is subtracted from the share of renewable energy in the supplier's energy mix. The guarantee of origin of the electricity produced from renewable sources is also used to determine the amount of energy that the public supplier or the end suppliers, as the case may be, purchase at the preferential price set by the DKEVR.

In order to obtain a guarantee of origin, the renewable energy producer submits an application to the AUER, which must comply with the requirements set out in the ZEVI and in the Regulation. The application can be made for the renewable energy produced in one or more months. The submitted applications and their annexes are checked to ensure that they comply the requirements within 10 days after they are received. Where it is found that the application or its annexes do not comply with requirements, the applicant is given 7 days to rectify the irregularities. If the irregularities are not rectified within the specified time, the Executive Director of the AUER closes the case by written resolution and the applicant is notified accordingly. When the application for a guarantee of origin complies with the requirements set out in the Regulation, the Executive Director of the AUER grants an order to that effect and the guarantees are issued in the form of entries in the electronic register of the guarantees of origin with 14 days after the application is received or after any irregularities are rectified.

The electronic register of the guarantees of origin is a database managed by an IT system developed in accordance with the requirements of the Electronic Government Act, and contains details of the producers, including name and location of the producer's energy site(s) and the issued,

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transferred and cancelled guarantees of origin. The guarantees of origin issued by the competent authorities of other EU Member States, which are recognised by the AUER, are also entered in the register of the guarantees of origin. The register of the guarantees of origin is kept by the AUER in a way that guarantees the security of the information contained within it. The register can be accessed at the AUER website:

http://www.seea.government.bg/index.php?option=com_content&view=article&id=9279&Itemid=234&lang=bg.

It is thus possible to check the status of a guarantee at a specified date or track the history of its transfers. The register also provides access to information regarding pending procedures for issuing guarantees of origin.

One guarantee of origin is issued for one standard unit of renewable energy, amounting to 1 MW, produced during one calendar month. If the amount of the renewable energy produced is less than the amount for which a guarantee of origin can be issued, the produced amount is added to the energy produced in the next calendar month and is shown on the application as produced in the month when the renewable energy produced reaches the level of 1 MW. If the amount of the renewable energy produced is greater than that for which a guarantee of origin can be issued, the surplus is added to the energy produced in the next calendar month and is shown on the application as produced in the month when the renewable energy produced reaches the level of 1 MW. Transfers of guarantees of origin are not taken into account for the use of statistical transfers, joint projects or joint support schemes.

On its own initiative, the AUER can carry out checks of the declared or submitted data, circumstances and documents, and carry out spot checks.

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

▪ **Biomass from timber**

The main sources of timber for energy use in Bulgaria are its forests, which cover around 32.5 % of the national territory.

The combined surface area of all forest territories as of 31 December 2011 was 4 148 114 ha: 3 774 778 ha of afforested areas, 68 308 ha of non-afforested area designated for afforestation and 305 028 ha of non-timber areas. In 2011 the forest areas were 9 967 ha (0.2 %) larger than in 2010, which was mainly due to forest territories with an undetermined status. In 2011, 1 775 ha of new forests were created.

Felling of timber from forest areas in 2011 amounted to 7 414 215 m³ of standing timber, which was 90.4 % of the target level set in the various forest management plans and forest engineering projects and 10.2 % more than that felled in 2010. Regeneration felling produced 4 147 374 m³ or 55.9 % of the total amount of timber felled during the year, and liberation felling produced 3 266 841 m³ (44.1 %). The actual regeneration and liberation felling reached 94.5 % and 85.7 %, respectively, of the targets set in the forest management plans and forest engineering projects²⁸.

The tendencies and perspectives are as follows²⁹:

- Continuous increase in forest areas mainly through afforestation and natural processes;
- The forest areas created by afforestation are shrinking from 4 591 ha in 2006 to 1 498 ha in 2011;
- The areas occupied by coniferous forests and coniferous crops are diminishing. This process is likely to continue under the impact of certain factors, including natural regeneration, which favour broadleaf species;
- The area of tall-tree broadleaf forests is expected to increase in a sustainable manner due to the evolution of offshoot forests into tall-tree forests.

The amount of timber used for energy purposes in 2011 was 8 379 824 stacked cubic meters (762 ktoe), of which 8 187 361 was used for heating by households. In comparison, the timber used for energy purposes in 2010 was 7 961 150 stacked cubic meters, of which 7 918 006 was used in households.

In 2012, 8 487 753 stacked cubic meters (772 ktoe) were used for energy purposes, including 8 300 000 stacked cubic meters for heating in households (755 ktoe).

▪ **Biomass from agriculture**

Areas for agricultural use (PSSP) include farmed land, plantations, grasslands used for farming purposes, family gardens and farmlands not tilled for more than three years. In 2012, PSSP accounted for 5 481 222 ha or 49.4 % of the national territory. A decrease by 0.1 % year on year was observed.

²⁸ Agrarian report 2012, MZH.

²⁹ National strategy for the development of Bulgaria's forest sector 2013-2020, <http://www.iag.bg/docs/lang/1/cat/5/index>.

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In order to encourage the use of biomass from agriculture, in 2011 the DKEVR set preferential off-take prices of electricity from plants fired by biomass of vegetable or animal origin for the first time.

In 2011, the amount of vegetable waste used for energy purposes was 221 428 GJ (5.3 ktoe), of which 208 771 GJ (5 ktoe) was used in the 'industry' sector. Most of the vegetable waste used originated from food production (159 225 GJ/3.8 ktoe), other non-metal mineral raw materials (48 571 GJ/1.1 ktoe), timber and timber/cork products other than furniture and products of straw and wicker materials (975 GJ/0.23 ktoe). In 2011, the 'households, commerce and services' sector used around 0.3 ktoe of vegetable wastes for energy purposes. Use of biodiesel³⁰ amounted to 18 ktoe, of which the 'transport' sector consumed 17 ktoe.

In 2012, the amount of vegetable waste used for energy purposes was 716 185 GJ (17.2 ktoe), of which 13 ktoe was used in the 'industry' sector and 171 370 GJ (4.1 ktoe) in the 'households, commerce and public services' sector. Most of the vegetable waste used originated from food production (159 225 GJ/3.8 ktoe), other non-metal mineral raw materials, timber and timber/cork products other than furniture and products of straw and wicker materials.

Road transport consumed 94 925 tonnes (86 ktoe) biodiesel in 2012. The regulatory provisions concerning the criteria for sustainability of biofuels and biomass-derived liquid fuels were adopted at the end of 2012. Since 2013 was the first year that the Regulation on the sustainability criteria for biofuels and biomass-derived liquid fuels was in force, the economic operators and the certifying authorities referred to in the Regulation were not obligated to submit information pursuant to its Article 29 in 2011 and 2012.

▪ **Energy crops**

With regard to the areas used for fast-growing timber species (short-rotation plantations), such plantations intended for the production of biomass are not created in the state-owned forest territories. Fast-growing tree species in other territories across the country accounted for 587.9 ha in 2011 and on 597.1 ha in 2012.

▪ **Wood residues**

Wood residues and their derivatives have large energy potential, but these resources occur in low concentrations and typically away from populated areas. Moreover, the prevailing difficult terrain, the absence of sufficiently developed infrastructure in the forests, and the lack of traditions and appropriate technologies for the utilisation of wastes from timber felling mean that the potential developments are limited to the construction of small heating and cogeneration plants.

In order to encourage the use of wooden wastes and residues, in 2011 the DKEVR set preferential off-take prices of electricity from plants fired by biomass obtained from wood residues, biomass from forest sanitation and pruning activities and other wooden wastes, for the first time.

In 2011, the amount of wood residues used for energy purposes was 689 671 tonnes (169 ktoe), of which 678 128 tonnes (166.3 ktoe) were used in the 'industry' sector. Most of these residues originated from the production of paper/carton and paper/carton products (574 503 tonnes/140.9 ktoe), timber and timber/cork products other than furniture, products of straw and wicker materials

³⁰ Energy balances, NSI.

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(96 237 tonnes/23.6 ktoe), and furniture (6 395 tonnes/1.6 ktoe). In comparison, the overall consumption of wood residues reported in 2010 was 598 459 tonnes (146.75 ktoe).

In 2012, the amount of wood residues used for energy purposes was 854 873 tonnes (209.65 ktoe), of which 688 964 tonnes (169 ktoe) were used in the 'industry' sector and 165 909 tonnes (40.7 ktoe) were used in the 'households, commerce and public services' sector. Most of these residues originated from the production of paper/carton and paper/carton products, timber and timber/cork products other than furniture, products of straw and wicker materials and furniture.

▪ **Waste**

In Bulgaria there is significant potential for the utilisation of biomass derived from various types of waste: solid residential waste, sludge from wastewater treatment plants, and waste from the agricultural, forestry and industrial sectors. At the large waste landfills, the energy potential of biomass will be used by means of incinerators and techniques for capturing the released gas. Biogas from smaller landfills will be captured and incinerated in torch stacks. At present there is one functioning biogas-fired plant that uses landfill gas (3.2 MW) and another fired by biogas obtained from wastewater treatment sludge (3.2 MW). A medical waste incinerator operated at one Sofia hospital can generate 5 000 MWh of heat annually.

Sofia is building a modern, compliant and integrated municipal waste management system, which will comply with the EU's waste legislation. A plant for mechanical and biological treatment will be built as part of the project and will be able to produce refuse-derived fuel (RDF). The RDF produced can be used as alternative fuel by the cogeneration facility of Toplofikatsia Sofia and by the cement factories in Bulgaria. After separation of the biological and green waste, the plant will process all of Sofia's residential waste. The capacity of the plant will be around 410 000 tonnes/year.

The energy balances for 2011 and 2012 illustrate that energy utilisation of landfill waste has risen by around 100 % in 2012 (10 ktoe in 2011 and 21 ktoe in 2012). In 2012, 871 238 GJ (20.8 ktoe) of renewable landfill waste and 2 000 GJ (0.05 ktoe) of landfill gas were used for energy purposes.

The focused environmental policy in the area of waste management has resulted in lower generation of residential waste countrywide. Per capita waste generation in 2010 was 410 kg per person per year, which decreased to 380 kg per person per year in 2011. The overall amount of residential waste generated in 2011 was 2 752 000 tonnes or nearly 11 % less than the amount generated in the previous year. The average rate of accumulation of residential waste in 2011 was 380 kg per person per year³¹. Important contributors to this development were the priorities placed on energy utilisation of waste in the context of the resource-efficiency policy.

Sludge from wastewater treatment plants offers ample opportunities for energy utilisation of biomass. In 2011, the overall amount of sludge generated by urban wastewater treatment plants was 224 471 tonnes³², where the amount of non-dangerous sludge was 51 388 tonnes of dry matter. In 2011, 3 ktoe of sludge biogas were used as compared to 1.07 ktoe in 2010.

³¹ National report on the status and protection of the environment in Bulgaria in 2011 (publication 2013), <http://eea.government.bg/bg/soer/2011/waste/obrazuvani-i-tretirani-bitovi-otpadatsi>.

³² Report of the Executive Environment Agency pursuant to Article 16(2) of the Regulation on the procedure and method for agricultural utilisation of sludge from wastewater treatment processes (2012) http://eea.government.bg/bg/prev_nsmos/waste/reports/utai-11.pdf.

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During the reporting period, four water and sewerage operators were using sludge generated by wastewater treatment plants for the production of electricity and/or heat from biogas.

Details regarding the use of biomass are provided in Tables 4 and 4a.

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Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)		Primary energy, domestic raw material (ktoe)		Amount of raw material imported the from EU (*)		Primary energy, amount of raw material imported from the EU (ktoe)		Amount of raw material imported from outside the EU		Primary energy, amount of raw material imported from outside the EU (ktoe)	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings, etc.) ³³	8 379 824	8 487 753	762	772								
Indirect supply of wood biomass (residues and co-products from wood industry, etc.) ³⁴	689 671	854 873	169	210								
Energy crops (grasses, etc.) and short rotation trees (please specify)												

³³ The amount of domestic raw material for direct supply of wood biomass from forests and other wooded land energy generation is expressed in stacked cubic meters (stacked m³).

³⁴ The amount of domestic raw material for indirect supply of wood biomass is expressed in tonnes.

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	Amount of domestic raw material (*)		Primary energy, domestic raw material (ktoe)		Amount of raw material imported from the EU (*)		Primary energy, raw material imported from the EU (ktoe)		Amount of raw material imported from outside the EU		Primary energy, raw material imported from outside the EU (ktoe)	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Agricultural by-products / processed residues and fishery by-products **			5	17								
Biomass from waste (municipal, industrial, etc.) **			13	21								
Others biomass (please specify)												
Biomass supply for transport:												
Common arable crops for biofuels (please specify main types) ³⁵	18 965	94 925	18	85								
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)												
Other (please specify)												

Source: NSI

³⁵ The amount of domestic raw material from common arable crops for biofuels is expressed in tonnes.

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

Land use	Surface (ha)	
	2009	2010
1. Land used for common arable crops (wheat, sugar beet, etc.) and oilseeds (rapeseed, sunflower, etc.) (Please specify main types) ³⁶	3 227 237	3 294 685
2. Land used for short rotation trees (willows, poplars) (Please specify main types) ³⁷	587.9	597.1
3. Land used for other energy crops such as grasses (reed canary grass/ <i>Phalaris Arundinacea</i> , switch grass/ <i>Panicum Virgatum</i> , elephant grass/ <i>Miscanthus</i>), sorghum. (Please specify main types)		

³⁶ Bulgarian Agricultural and Economic Survey (BANSIK) 2012, Final data on occupancy and usage of the territory of Bulgaria in 2012, http://www.mzh.government.bg/mzh/ShortLinks/SelskaPolitika/Agrostatistics/Land_Use/Posts_copy2/Bulletini2012.asp.

³⁷ Source: the MZH and the Executive Forest Agency.

- 7. Please provide information on any changes in the preceding two years in prices of commodities based on biomass and in land use within your Member State associated with your increased use of biomass and other forms of energy from renewable sources. Please provide, where available, references to the relevant documentation on the effects in your country (Article 22(1)(h) of Directive 2009/28/EC)**

In 2011, the overall surface of arable lands had increased by 2 % as compared to 2010, occupying 3 227 237 hectares, which accounted for 63.4 % of the agricultural land in use. The increase is mainly due to larger areas planted with wheat, maize, sunflower and industrial oilseeds.³⁸

Grain crops were harvested from 97.8 % of the areas planted with cereal crops in 2011. Cereal crops occupied 1 770 034 ha, which is about the same surface area as in the previous year. Compared to 2010, the harvested areas of grain maize increased significantly by 22 %, while areas of harvested wheat rose marginally by 0.5 %. At the same time, the harvested rye areas shrank by 4.6 % and triticale and harvested barley areas dropped by 22 and 27 %, respectively. Due to the higher average yields in 2011, the overall production of cereals rose by 5.4 % year-on-year to reach 7 522 714 tonnes. Wheat and maize accounted for 59.3 % and 29.4 %, respectively, of the overall production of grain.

In 2012, the arable lands planted with cereal crops increased by 11.2 % as compared to 2011 (1 804 933 ha) and reached 1 953 272 ha. Cereal crops continued to hold the largest share of the arable land in Bulgaria with an increase from 55.9 % in 2011 to 59.3 % in 2012.

The most widespread oilseed crops grown in Bulgaria are sunflower and rape.

The amount of sunflower seeds produced in 2011 was 1 439 000 tonnes or 6.3 % less than in 2010. The average yield was 2.24 tonnes/ha or 8.5 % less than that in 2010. The areas planted with sunflower in 2011 were 795 319 ha, accounting for 22.5 % of all arable land. The expansion compared to 2010 is by 8.3 %. The harvested areas were 747 131 ha or 2.4 % more than previously. In 2012, the arable lands planted with sunflower were 854 738 ha, which accounted for 25.9 % of all arable land in Bulgaria and 85.5 % of the areas occupied by oilseed crops.

Rapeseed output in 2011 was 510 910 tonnes or 4.6 % less than the previous year. The average yield decreased by 12.6 % as compared to that in 2010 to reach 2.24 tonnes/ha. The areas planted with rape in 2011 were 232 763 ha. Of these, 231 309 ha were harvested, which is 9.1 % more than in 2010.

In 2011, the arable lands planted with oilseed crops were 1 029 253 ha against 999 195 ha in 2012.

While the areas planted with oilseed crops in 2012 decreased by 3 %, they still account for 30.33 % of the arable land in the country. Details regarding the use of arable land in Bulgaria between 2005 and 2012 are provided in the next table.

³⁸ Annual report on the status and development of the agricultural sector (Agrarian report 2012), the MZH.

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Arable land, agricultural areas in use and areas designed for agricultural use in 2005–2012, ha

Occupancy	2005	2006	2007	2008	2009	2010	2011	2012
Wheat	1 134 354	979 925	1 120 510	1 114 427	1 254 151	1 095 703	1 152 999	1 194 141
Barley	276 472	192 539	193 840	223 004	264 689	250 640	174 010	176 556
Maize	340 847	386 772	408 880	348 402	303 881	360 046	430 914	525 412
Other cereals	81 789	95 429	81 294	80 956	49 853	49 120	68 743	55 737
Sunflower	653 371	785 064	686 692	723 962	687 209	734 314	795 319	854 738
Industrial oilseed crops	13 094	22 012	59 389	102 899	115 013	209 347	233 934	144 457
Other industrial crops	44 217	35 325	39 954	48 824	60 629	74 536	54 458	40 989
Set aside	348 118	436 508	291 751	229 471	196 336	207 616	174 110	128 097
Other: arable land, agricultural areas in use and areas designated for agricultural use	235 948	155 957	175 430	188 598	190 755	181 204	142 750	174 558
Arable land:	3 128 210	3 089 531	3 057 740	3 060 543	3 122 516	3 162 526	3 227 237	3 294 685

Source: Bulgarian Agricultural and Economic Survey (BANSIK) 2012, Final data on occupancy and use of the territory of Bulgaria in 2012, MZH

Biofuels are produced mainly from oilseed crops (sunflower, rape), which has acted as the driver for the steady increase in the areas planted with industrial oilseed crops between 2005 and 2011. The year 2012 saw a steep decrease of the areas planted with these crops, which was probably due to the ZEVl postponing the blending of petroleum-derived fuels with biofuels until the end of 2011.

The areas used for cereal crops could not build to a steady increase in the period 2005–2010. The marginal increase observed in 2011 and 2012 is due mainly to the expansion of maize areas, while barley areas decreased sharply both in 2011 (30.6 %) and in 2012 (29.4 %) as compared to 2010.

The prices of agricultural crops experienced influences from a variety of factors such as climatic conditions, international markets, level of supply and demand, and the specific characteristics of the Bulgarian economy.

The prices of the raw materials used for the production of biofuels in Bulgaria (rapeseed, sunflower seed) and of the cereal crops are rising almost constantly, with rates that are significantly higher than the average producer price indices in the agricultural sector.

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Annual producer price indexes (2005 = 100)

Occupancy	2005	2006	2007	2008	2009	2010	2011	2012
Cereal crops	100.0	112.6	201.1	208.1	141.1	162.0	215.6	256.2
Wheat	100.0	109.8	205.0	217.1	140.7	160.4	216.1	254.2
Soft wheat	100.0	109.2	204.3	216.5	139.7	160.0	216.1	253.2
Maize	100.0	128.2	224.4	204.4	142.4	191.7	231.5	277.6
Rapeseeds and turnip rapeseeds	100.0	112.2	138.1	201.5	180.6	181.2	253.0	294.5
Sunflower seeds	100.0	95.9	145.7	152.4	103.8	150.3	186.8	236.6
Other technical crops	100.0	104.0	132.7	167.0	166.0	170.9	205.5	251.8
Fodder crops	100.0	104.6	119.2	134.4	128.4	133.3	151.0	172.3
Agriculture, total	100.0	108.2	135.8	151.8	120.4	134.0	153.2	168.4
Agriculture ex fruits and vegetables	100.0	103.8	138.3	150.5	121.4	135.2	160.9	181.8

Source: NSI (www.nsi.bg)

As illustrated by the data in the above table, after the sharp decrease in 2009 the price index of sunflower seeds quickly accelerated to 236.6 in 2012, exceeding the 2005 baseline index by 136.6 percentage points.

A brief retrospection of the market³⁹ for sunflower oil in Bulgaria during the last 13 years (1999–2012) reveals that up until the middle of 2007 the market was relatively uneventful. In 2007, sunflowers appreciated by 78 % and again by 107 % between May 2007 and May 2008. In 2009, the curve of the wholesale price of sunflower oil continued the previous downwards trend. A rise of 44 % was observed between January and December 2010. At the end of 2010 the price of sunflower oil was in an upward trend, but still remained below the 2008 level.

Until September 2012 the sunflower oil price curve was ascending slowly but steadily. In the period January–September sunflower oil appreciated by 24 %. Then the curve stabilised at around that level. In the middle of November sunflower oil prices trended downwards. As a result of the steady appreciation in 2012, sunflower oil prices surpassed the maximum values reached in 2011, but remained below the peak levels of 2008.

In 2012, the international price of crude sunflower oil at the Rotterdam commodity exchange rose sharply between January and April and then again between June and September. The price curve remained stable for the rest of the year (October–December).

The production of sugar in Bulgaria is almost fully dependent on imported raw material and the domestic prices typically follow the international markets.

Until September 2012 the sunflower oil price curve was ascending slowly but steadily. In the period January–September sunflower oil appreciated by 24 %. Then the curve stabilised at around

³⁹ Source: Analysis of the movement of wholesale prices of the commodities traded at commodity bourses and producer markets in 2012, State Commission for Commodity Bourses and Wholesale Markets.

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that level. In the middle of November sunflower oil prices fell. As a result of the steady appreciation in 2012, sunflower oil prices surpassed the maximum values reached in 2011, but remained below the peak levels of 2008.

In 2012, the international price of crude sunflower oil at the Rotterdam commodity exchange rose sharply between January and April and then again between June and September. The price curve remained stable for the rest of the year (October– December).

The production of sugar in Bulgaria is almost fully dependent on imported raw materials and the domestic prices typically follow the international markets.

From the middle of 2011 until May 2012 sugar prices dropped by around 13 %. In the middle of 2012 (July) the price jumped, giving a month-on-month increase of 5.5 %. Until the end of the year the trend was reverse, however, with sugar prices falling slowly but steadily. At the beginning of December the wholesale price of sugar was around BGN 2.03/kg.

The average selling price of one solid cubic meter of broadleaf hardwood, assortment 'firewood' produced from state-owned forest territories and sold by the state-owned enterprises ex temporary storage sites in forests in accordance with Article 163 of the Forest Act, which is actually the most commonly used timber for energy purposes, was BGN 56.58/m³ in 2011 and BGN 60.51/m³ in 2012.

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

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

Article 21(2) biofuels⁴⁰	2011	2012
Production — Fuel type X	0	0
Consumption — Fuel type X	0	0
Total production Article 21.2. biofuels	0	0
Total consumption Article 21.2. biofuels	0	0
% share of Article 21.2. fuels from total RES-T	0	0

In 2011 and 2012 these technologies were not sufficiently developed and their output was insignificant.

⁴⁰ Biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material.

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9. **Please provide information on the estimated impact of the production of biofuels and bioliquids for the transport sector on biodiversity, water resources, water quality and soil quality within your country in the preceding two years. Please provide information on how this impact was assessed and provide references to the relevant documentation (Article 22(1)(j) of Directive 2009/28/EC)**

In accordance with Article 85(1) of the Environment Protection Act, Article 31(4) of the Biodiversity Act and Decision No 1 EO-1/2009 of the Minister of Environment and Water, the NREAP was required to issue an Opinion on environmental assessment of the Plan. In Opinion on environmental assessment No 1-2/2012 of 12 August 2012, the Minister of Environment and Water consented to the NREAP, subject to certain measures and conditions. The Opinion is published on the website of the Ministry of Environment and Water:

http://www3.moew.government.bg/files/file/Industry/SEA/Statements_EO/Stanovishte_EO_1-2-2012.pdf.

Information regarding the procedure for an Opinion on the environmental assessment is published on the MOSV's website: Public register of details relating to the conduct of environmental assessment procedures (<http://www.moew.government.bg/?show=top&cid=583>).

An Environmental Assessment Report and a Report on the assessment of compatibility (AC) with the scope and target of protection in the protected zones were drawn up in the context of the procedure for an Opinion (the two reports were supplemented and revised in July 2012). The source of the information provided below is the Environmental Assessment Report, which served as a basis for the Opinion on environmental assessment.

The Environmental Assessment Report examines the likely impact on the components of the environment from the eventual implementation of the current RES technologies, including those for production of transport biofuels — bioethanol and biodiesel.

The impact of biofuel production on the components of the environment is assessed as follows:

Environment components	
Climate factors and air quality	Marginally positive
Waters	No impact identified
Soils and subsurface	Marginal pollution and impairment of soils
Landscape	No impact identified
Biodiversity	
Damaging or destroying habitats, fauna and flora species during the installation of cogeneration facilities	Marginally negative
Damaging Natura 2000 protected areas and areas of conservation or the ecological relations between them	There is no evidence of damage to Natura 2000 protected areas and areas of conservation
Loss of biodiversity due to the use of genetically modified energy crops	Genetically modified energy crops are not used

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Environment components	
Risks to fauna resulting from the excessive use of fertilisers and chemicals	Marginally negative

It is stated in the Environmental Assessment Report that the assessment was drawn up in accordance with Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, the national Regulation on the environmental assessment of plans and programmes, the existing case law in the European Union (rulings and interpretations of the European Court of Justice) as well as the requirements laid down in international environment protection agreements, to which Bulgaria is a party: Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Recommendation 130 (2007) to the Convention, Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), Convention on Wetlands of International Importance (Ramsar Convention) and Convention on Biological Diversity.

The assessment of the likely impact on the components of the environment due to the implementation of biofuel production technologies took into consideration the following project phases:

- pre-installation stage consisting of feasibility studies, manufacturing and transport of the facilities;
- installation stage consisting of site preparation, installation of the main facilities and construction of related infrastructure;
- operational stage consisting of the use of the facilities for the production of electricity, heating and cooling, along with their maintenance;
- post-operational stage consisting of the dismantling of the facilities and their transport (or leaving them where they were).

For each technology and each component of the environment, the source of impact, the process and the receptor of the impact were examined, and the impact itself was classified in accordance with the following criteria:

- direction of the impact;
- duration, i.e. the time during which the impact continues to operate on the receptors;
- frequency of the impact;
- territorial scope of the impact.

According to the Environmental Assessment, the likely negative impacts at strategic level in the framework of the NREAP are:

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Likely significant impact		Significance of the impact
Impairment and destruction of soils from unsustainable energy crop growing practices as well as soil pollution due to the use of manmade fertilizers and pesticides	Soil and subsurface	0/-
Damage or destruction of habitats of conservational significance, plant species and slow moving animal species during the construction phase	Biodiversity	-
Potential damage to Natura 2000 protected areas and areas of conservation if biofuel production plants were to be built there	Biodiversity	0/-
Loss of biodiversity and transformation of habitats valuable to biodiversity (pastures, meadows, marshes) in terrains for growing energy crops; introduction of alien species	Biodiversity	-
Loss of biodiversity due to the use of genetically modified organisms	Biodiversity	0/-
Risk to animal life due the excessive use of fertilisers and chemicals	Biodiversity	-
Effect on the final price of agricultural produce and foods	Population	-

The Opinion on environmental assessment of the NREAP sets out measures and conditions to prevent, mitigate or eliminate to the maximum possible extent the likely adverse effects from the implementation of the NREAP as well as measures to monitor and control the implementation of the Plan.

The 2020 targets will be reached in strict compliance with the measures and conditions proposed in the Opinion on environmental assessment, all of which are included in the final version of the NREAP.

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

Electricity

The net savings of greenhouse gas (GHG) emissions due to the use of electricity from renewable sources were estimated by applying a carbon emission factor for electricity, calculated on the basis of the fuel types, their calorific values and their shares in the annual electricity output in 2011 and 2012.

Thus, the calculated values of the emission factors were 0.711 t/CO₂eq/MWh for 2011 and 0.672 t/CO₂eq/MWh for 2012.

The GHG emission savings due to the increase in the renewable energies used for the production of electricity reached 3 771 176 tCO₂eq in 2011 and 4 266 502 tCO₂eq in 2012.

In percentage terms, the savings were 13.48 % in 2011 and 16.57 % in 2012.

Heating and cooling energy

GHG emission savings due to the use of heat from renewable sources were estimated by applying the comparative values, validated across the EU, of emissions generated by the use of fossil fuels (fossil fuel comparators) in the production of heat and electricity, as specified in the Report on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling.⁴¹

GHG emission savings due to the replacement of fossil fuels with solid biomass in the production of heat are calculated according to the following formula:

$$\text{Reductions (savings)} = (\text{ECF}(h) - \text{ECh})/\text{ECF}(h),$$

where:

ECF(h) — total emissions from heat generation;

ECh — total emissions from the fossil fuel comparator for heat generation.

In this case, the recommended value of the fossil fuel comparator is $\text{ECF}(h) = 87 \text{ gCO}_2\text{eq/MJ}^3$. Traditionally, biomass in Bulgaria is represented by tree species listed in the first row of Annex II to the above-referenced report, with typical default value 1 gCO₂eq/MJ. The calculated values are illustrated in Table 6.

The comparative calculations were made for two scenarios, each with a different percentage of fossil fuel contribution to the production of heat (as per the table below), in order to estimate the GHG savings due to the replacement of these fuels with biomass.

⁴¹ Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling, Annex 1 – Methodology for calculating greenhouse gas performance of solid and gaseous biomass used in electricity, heating and cooling, paragraph 17.

Proportion of fossil fuels used in the overall production of heat

Sources for replacement	Scenario 1, %	Scenario 2, %
Coal	40	45
Methane gas	30	25
Electricity	15	20
Heating oil	15	10
Total	100	100

The calculated GHG emissions at these ratios show that the values of the fossil fuel comparator will be: ECF(h) = 81.95 gCO₂eq/MJ in Scenario 1 and ECF(h) = 85.00 gCO₂eq/MJ in Scenario 2.

GHG emission savings due to the use of biomass for the production of heat rose in 2012. From 24.59 % in 2011, the GHG emission savings due to the replacement of fossil fuels with biomass reached 27.21 % in 2012.

The net GHG emission savings are provided in Table 6.

Clearly, the largest GHG emission saver is biomass used for the production of heat, followed by renewable sources used for the production of electricity.

At present, there is no evidence that biofuels that comply with the sustainability criteria are being used in transport. GHG emission savings in this sector, although insignificant, come from the use of electricity.

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

Environmental aspects	2009	2010
Total estimated net GHG emission saving from using renewable energy⁴²	7 540 761	8 316 397
- Estimated net GHG saving from the use of renewable electricity	3 771 176	4 266 502
- Estimated net GHG saving from the use of renewable energy in heating and cooling	3 756 538	4 039 878
- Estimated net GHG saving from the use of renewable energy in transport	13 046	10 018

⁴² The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on their final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

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11. Please indicate for the preceding two years, and estimate for subsequent 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 Member States and/or third countries, as well as the estimated potential for joint projects, until 2020
(Article 22(1)(l) and (m) of Directive 2009/28/EC)

Table 7: Actual and estimated excess and/or deficit (-) production of energy from renewable sources compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries (ktoe)^{43 44}

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production of renewable energy		79	207	209	202	353	386	481	420	471	411	341

⁴³ Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report Member States may correct the data of the previous reports.

⁴⁴ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).

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

During the period 2009–2012, Bulgaria did not make use of the cooperation mechanisms provided in Directive 2009/28/EC: statistical transfers, joint projects and joint support schemes.

According to the projections in the NREAP, Bulgaria will achieve its binding national target of 16 % renewable energy in gross final consumption, including the binding target of 10 % renewable energy in transport until 2020 by utilisation of its local renewable sources and by applying national measures for the promotion of the use of energy from renewable sources. The only concerns relate to renewable energy in the transport sector as the higher requirements for biofuels imposed by the sustainability criteria may lead to their importation by 2020.

The progress towards the 2020 target, presented in this report, suggests that there is a potential for statistical transfers to Member States that may not have enough renewable energy to meet their binding targets.

12. Please provide information on how the share of 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)

The estimated share of biodegradable waste in waste used for producing energy is based mainly on the data made available by the NSI. According to that data, the total quantity of waste generated was around 204 million tonnes in 2011 and around 163 million tonnes in 2010.

The projections for 2015 and 2020 are based on the assumption that the share of biodegradable waste in total industrial waste will remain unchanged, yet in absolute terms its quantity will vary in line with GDP and the impact of EU (Directive 2008/98/EC on waste) and national policies on the prevention, re-use and recycling of waste, in line with the waste management hierarchy.

The publications of the NSI show how much waste is generated, reused, disposed or exported from the country each year.

The projections for 2015 and 2020 are based on the assumption that the share of biodegradable waste in total industrial waste will remain unchanged, yet in absolute terms its quantity will vary in line with the projected population size and the impact of EU (Directive 2008/98/EC on waste) and national policies on the prevention, re-use and recycling of waste, in line with the waste management hierarchy.

The estimated quantities of waste for energy purposes are based upon the assumption that a certain part of the biodegradable waste generated by the largest cities in Bulgaria with a combined population of around 3 million people will be used. To calculate the amount of energy produced by utilisation of the waste, data from the study⁴⁵ of moisture content and calorific value of each type of waste were again used.

In 2012 the MOSV approved a Methodology for the identification of the morphological composition of residential waste. The aim of the methodology is to support the assessments carried out by municipal and government bodies on Bulgaria's compliance with its waste management commitments.

The methodology would ensure a uniform approach for the identification and prognostication of the amount and morphological composition of residential waste, and will thus support all stakeholders (state institutions, municipalities, recycling organisations, etc.) in the long-term planning of waste management processes.

The requirements set out in the methodology are the minimum standards for the purpose of reporting to the competent bodies. The latter does prevent municipalities from undertaking more detailed analyses and assessments in order to address other tasks as well (e.g. include more fraction sizes, more samples, statistical processing, and chemical analysis).

The methodology describes in chronological sequence the steps that have to be taken in order to establish the quantity and morphological composition of waste:

- Establish the quantities of the waste streams in the surveyed area (municipality);
- Make a plan for morphological analysis of the mixed waste;

⁴⁵ ALARA 2000 OOD, Analysis of the quantities and the composition of waste generated by typical representatives of neighbourhoods of varying density of development and population, including aggregated data, 2008.

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- Perform the morphological analysis;
- Calculate the results and determine the composition of the waste.

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Annex 1

Preferential prices of renewable electricity set by the DKEVR decisions in 2011–2012

No	Types of RES depending on the type of primary energy source	Preferential prices excluding VAT (BGN/MWh)				
		2011-1	2011-2	2012-1	2012-2	2012*
1	Micro HPPs with up to 200 kW installed capacity	222.9	227.43	197.33		
2	Low-head run-of-river HPPs with up to 5 MW capacity					
3	Low-thrust axial-flow HPPs with up to 5 MW capacity					
4	Low-thrust run-of-river HPPs, diversion HPPs, reservoir HPPs and diversion HPPs with a yearly compensating basin with net thrust of up to 30 metres and installed capacity of 200 kW up to 10 000 kW	213.09	222.83	193.35		
5	Medium-thrust diversion, reservoir and diversion HPPs with a yearly compensating basin with net thrust of 30 up to 100 metres and installed capacity of 200 kW up to 10 000 kW	178.68	186.87	162.69		
6	High-thrust diversion, reservoir and diversion HPPs with a yearly compensating basin with net thrust of more than 100 metres and installed capacity of 200 kW up to 10 000 kW	171.18	179.04	156.01		
7	Diversion tunnels with a yearly compensating basin with up to 10 000 kW installed capacity	253.48	265.05	229.33		
8	Micro HPPs with pumps	112.48	112.1	98.15		
9	Hydropower plants of less than 10 MW capacity, placed in service before 19 June 2007	112.48				
10	WPPs with up to 2 250 full-load hours	188.29	191	148.71		
11	WPPs with more than 2 250 full-load hours	172.95	173.06	132.71		
12	WPPs with an asynchronous cage rotor generator	148.58	137.06	104.43		
13	PVPPs with up to 5 kWp capacity	760.48				
14	PVPPs with more than 5 kWp capacity	699.11				
15	PVPPs of up 30 kWp capacity mounted on roofs and facades		605.23			
16	PvPPs with more than 30 kWp up to 200 kWp capacity mounted on roofs and facades		596.5			

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No	Types of RES depending on the type of primary energy source	Preferential prices excluding VAT (BGN/MWh)				
		2011-1	2011-2	2012-1	2012-2	2012*
17	PVPPs with more than 200 kWp up to 1000 kWp capacity mounted on roofs and facades		583.77			
18	PVPPs with up to 30 kWp capacity		576.5	268.68	193.42	
19	PVPPS with more than 30 kWp up to 200 kWp capacity		567.41	260.77	188.1	
20	PvPPs with more than 200 kWp up to 1000 kWp capacity		485.6			
21	PvPPs of total installed capacity 5 kWp or less, mounted on roofs or facades of urban buildings or adjacent properties that are connected to the distribution grid				381.18	
22	PvPPs of total installed capacity more than 5 kWp up to 30 kWp, mounted on roofs or facades of urban buildings or adjacent properties that are connected to the distribution grid				289.96	
23	PvPPs of total installed capacity 30 kWp or less, mounted on roofs or facades of urban buildings or adjacent properties that are connected to the distribution grid			400.7		
24	PvPPs of total installed capacity more than 30 kWp up to 200 kWp, mounted on roofs or façades of industrial buildings or warehouses in urban areas, provided that they are already connected to transmission or distribution grids			369.08	226.87	
25	PvPPs of total installed capacity more than 200 kWp up to 1000 kWp, mounted on roofs or façades of industrial buildings or warehouses in urban areas, provided that they are already connected to transmission or distribution grids			316.11	206.34	
26	PvPPs of installed capacity more than 200 kWp up to 10 000 kW			237.05	171.37	
27	PvPPs of installed capacity more than 10 000 kW			236.26	169.85	
28	PPs with up to 5 MW capacity, using biomass from waste wood, etc.	252.73	255.51	267.07		281.85
29	PPs with up to 5 MW capacity, using waste wood, etc., with combined cycle generation	288.04	282.15	287.3		305.67
30	PPs with more than 5 MW capacity, using waste wood, etc.		227.2	232.4		246.15

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No	Types of RES depending on the type of primary energy source	Preferential prices excluding VAT (BGN/MWh)				
		2011-1	2011-2	2012-1	2012-2	2012*
31	PPs with up to 5 MW capacity, using agricultural crop residues	167.53	195.03	192.29		200.04
32	PP with up to 5 MW capacity, using energy crops	186.49	185.99	182.86		190.58
33	PPs of up 150 kW capacity, indirectly using biomass from vegetable or animal substances	425.02	432.81			446.3
34	PPs with more than 150 kW up to 1 MW capacity, indirectly using biomass from vegetable or animal substances		405.61			425.38
35	PPs with more than 1 MW up to 5 MW capacity, indirectly using biomass from vegetable or animal substances		335.19			351.92
36	PPs with more than 1 MW up to 5 MW capacity, indirectly using biomass from vegetable or animal substances, with combined generation of heat and electricity		348.61			364.58
37	PP with more than 150 kW up to 500 kW capacity, indirectly using biomass from vegetable or animal substances	398				
38	PPs with more than 500 kW up to 5 MW capacity, indirectly using biomass from vegetable or animal substances	302.73				
39	PPs of capacity 500 kW or less, indirectly using biomass from vegetable or animal substances			472.63		
40	PP with more than 500 kW up to 1.5 MW capacity, indirectly using biomass from vegetable or animal substances			452.14		
41	PPs with more than 1.5 MW up to 5 MW capacity, indirectly using biomass from vegetable or animal substances			402.66		
42	PPs with more than 500 kW up to 1.5 MW capacity, indirectly using biomass from vegetable or animal substances, with combined generation of heat and electricity			465.79		
43	PPs of capacity 5 MW or less, using thermal gasification of biomass and/or biodegradable fractions of industrial and residential waste, without combined cycle		390.76	367.88		394.74
44	PPs of capacity 5 MW or less, using thermal gasification of biomass and/or biodegradable fractions of industrial and residential waste, with combined cycle		429.42	400.97		433.03

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No	Types of RES depending on the type of primary energy source	Preferential prices excluding VAT (BGN/MWh)				
		2011-1	2011-2	2012-1	2012-2	2012*
45	PPs with more than 5 MW capacity, using thermal gasification of biomass and/or biodegradable fractions of industrial and residential waste, without combined cycle		380.45	357.98		384.39
46	PPs with more than 5 MW capacity, using thermal gasification of biomass and/or biodegradable fractions of industrial and residential waste, with combined cycle		419.11	391.06		422.68
47	PPs of capacity 150 kW or less, indirectly using energy from residential waste	265.91	263.83	243.4		
48	PPs with more than 150 kW up to 1 MW capacity, indirectly using energy from residential waste		253.03			
49	PPs with more than 1 MW up to 5 MW capacity, indirectly using energy from residential waste		243.86			
50	PPs with more than 150 kW up to 500 kW capacity, indirectly using energy from residential waste	255.98		234.09		
51	PPs with more than 500 kW up to 5 MW capacity, indirectly using energy from residential waste	246.05		226.14		
52	PPs of capacity 150 kW or less, indirectly using energy from municipal sewage sludge	150.39	158.05	143.1		
53	PPs with more than 150 kW up to 1 MW capacity, indirectly using energy from municipal sewage sludge		132.05	120.15		
54	PPs with more than 1 MW up to 5 MW capacity, indirectly using energy from municipal sewage sludge		119.27	109.83		
55	PPs with more than 150 kW up to 500 kW capacity, indirectly using energy from municipal sewage sludge	136.85				
56	PPs with more than 500 kW up to 5 MW capacity, indirectly using energy from municipal sewage sludge	120.6				
57	PPs of capacity more 5 kW for the production of electricity by direct use of biomass from forest sanitation, pruning, etc.	218.6				

The preferential prices are net of VAT and are set out in the following decisions of the DKEVR:

- Decision No Ts-010 of 30 March 2011 – 2011-1;

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- Decision No Ts-18 of 20 June 2011 – 2011-2;
- Decision No Ts-35 of 27 October 2011 – 2011-2, points 44 to 47 inclusive;
- Decision No Ts-018 of 28 June 2012 – 2012-1;
- Decision No Ts-28 of 29 August 2012 – 2012-2;
- Decision No Ts-018 of 28 June 2012 – 2012-2*;
- In its Decision No Ts-018 of 28 June 2012, the DKEVR updated the preferential prices set out in Decision Nos Ts-18 of 20 June 2011 and Ts-35 of 27 October 2011.