

Ukraine's Progress Report On The Promotion And Use Of Energy From Renewable Sources in Ukraine in the years of 2016-2017

1. Sectoral shares, overall shares and actual consumption of energy from renewable sources in the preceding 2 years (Article 22(1)a of Directive 2009/28/EC).

The share of energy from renewable sources in the final consumption in Ukraine in the years of 2016-2017 was calculated pursuant to the SHARES program, developed by Eurostat.

Table 1. Sectoral (electricity, heating and cooling systems, and transport) shares of energy from renewable sources and overall shares of energy from renewable sources

	2016	2017
Renewable sources in heating and cooling systems (%)	6,18	7,56
Renewable sources in power industry (%)	7,91	8,65
Renewable sources in transport sector = (%)	2,10	2,44
Overall share of renewable sources (%), including:	5,83	6,66
<i>Borrowings within the framework of interstate cooperation (%)</i>		
<i>Surplus for interstate cooperation (%)</i>		

*- including the data on capacity and energy production by heat pumps (calculated in accordance with the Methodology for calculation of the share of energy produced by heat pumps from renewable sources approved by the order of the Ministry of Regional Development, Construction and Communal Services of Ukraine dated March 12, 2018, No. 52, registered in the Ministry of Justice of Ukraine from 03.04.2018 No. 395/31847)

Table 1a. Calculation table of sectoral share of energy from renewable sources in the gross final energy consumption (ktoe)

	2016	2017
(A) Gross final consumption of energy from renewable sources in heating and cooling systems	2 191,8	2 457,5
(B) Gross final consumption of energy from renewable sources	1 038,9	1 062,4
(C) Gross final consumption of energy from renewable sources in the transport sector*	81,7	94,6
(D) Gross final consumption of energy from renewable sources	3 312,4	3 614,5
(E) Transmission of energy from renewable sources to other Contracting Parties or Member States		
(F) Transmission of energy from renewable sources from other Contracting Parties or Member States		
(G) Target-adjusted consumption of energy from renewable sources (D)-(E)+(F)		

*- including the coefficient of renewable energy use by railway transport - 2,5.

- including the data on capacity and energy production by heat pumps (calculated in accordance with the Methodology for calculation of the share of energy produced by heat pumps from renewable sources approved by the order of the Ministry of Regional Development, Construction and Communal Services of Ukraine dated March 12, 2018, No. 52, registered in the Ministry of Justice of Ukraine from 03.04.2018 No. 395/31847)

The slowdown in the growth rate of renewable sources share in the electric energy sector is due to:

1. Occupation of the Autonomous Republic of Crimea (since April 2014 terminated electricity supply to the IPS by renewable energy installations of the AR Crimea with a total capacity of 494,87 MW, of which: wind power plants – 87,768 MW, solar power plants – 407,09 MW)
2. The exacerbation of the situation in the east of the country (unstable operation of wind power plants with a total capacity of 138,3 MW in the Anti-Terrorist Operation Zone);
3. Declaration of a state of emergency in the electricity market in the years of 2014-2015;
4. Repeal of tax benefits in 2015 for producers of energy from renewable sources;
5. Deterioration of overall economic environment in the years of 2014 – 2015, and consequently, deterioration of investment climate in Ukraine, resulting into:
 - Increase in interest rate for investors;
 - Increase in interest rate on risk insurance;
 - The need to provide collateral in security of a loan which may exceed the principal amount of a loan;
 - Sharp depreciation of the national currency.

Table 1.b. Overall actual share (installed capacity, gross electricity production) of each renewable energy technology in Ukraine for achievement of 2020 mandatory targets and indicative intermediate trajectory of achieving the share of energy from renewable sources in power generation

	2016		2017	
	MW	GW*h	MW	GW*h
Hydro power plants ¹ :	6 128	9 304,2	6 221	10 531,2
Non-storage ⁽²⁾ :	4 707	7 670,9 (10 948,6)	4 711	8 945,5 (10 889,1)
<i>rated below 1 MW</i>	29	86,1	37	73,9
<i>rated 1-10 MW</i>	71	116,9	57	103,0
<i>rated above 10 MW</i>	4 607	7 467,9	4 617	8 768,1
<i>storage</i>	1 421	1 633,3	1510	1 585,7
<i>mixed³</i>	-	-		
Geothermal power plants	-	-		
Solar power plants	531	490,8	759	738,5
<i>photovoltaic</i>	531	490,8	759	738,5
<i>concentrated solar power plants</i>	-	-		
Tidal power, wave, ocean power plants				
Wind power plants ⁽⁴⁾ :	438	954,0 (1 010,2)	465	983,4 (1077,8)
<i>ground-based</i>	438	954,0 (1 010,2)	465	983,4 (1077,8)
<i>offshore</i>	-	-		
Biomass:	75	136,0	122	209,9
<i>solid</i>	55	80	96	115,3
<i>biogas</i>	20	56	26	94,6
<i>bioliquids</i>	-	-		
TOTAL (including normalization)	7 172	10 885 (14 218,9)	7567	12 463 (14 501)
Without PSPPs (including normalization)	5 751	9 251,7 (12 585,6)	6057	10 877,3 (12 820,9)
<i>of which CHPPs</i>				

not including renewable energy installations located in the occupied territory of the AR Crimea, with a total capacity of 494,87 MW, of which: solar power plants – 407,09 MW, wind power plants – 87,768 MW.

¹ Normalized pursuant to Directive 2009/28/EC and Eurostat methodology.

² Normalized pursuant to Directive 2009/28/EC and Eurostat methodology.

³ Pursuant to new Eurostat methodology.

⁴ Normalized pursuant to Directive 2009/28/EC and Eurostat methodology.

Table 1c. Overall actual shares (final energy consumption⁵) of each renewable energy technology of Ukraine for achievement of 2020 mandatory targets and indicative intermediate trajectory of achieving the share of energy from renewable sources in heating and cooling systems (ktoe)

	2016	2017
Geothermal (other than heat pumps)	-	
Solar	0,5	0,5
Biomass:	2 169,9	2 431,6
<i>solid</i>	2 153,2	2 411,9
<i>biogas</i>	16,3	19,7
<i>bioliquids</i>	-	
Renewable energy from heat pumps, including:	21,4	25,4
- aerothermal	15,7	18,1
- geothermal	3,6	4,6
- hydrothermal	2,1	2,8
TOTAL	2 191,8	2 457,5
<i>of which in centralized systems</i>		
<i>in private households</i>	1505,2	1676,9

*- including the data on capacity and energy production by heat pumps (calculated in accordance with the Methodology for calculation of the share of energy produced by heat pumps from renewable sources approved by the order of the Ministry of Regional Development, Construction and Communal Services of Ukraine dated March 12, 2018, No. 52, registered in the Ministry of Justice of Ukraine from 03.04.2018 No. 395/31847)

Table 1d. Overall actual shares of each renewable energy technology of [Contracting Party] for achievement of 2020 mandatory targets and indicative intermediate trajectory of achieving the share of energy from renewable sources in the transport sector (ktoe)

	2016	2017
Bioethanol/ ethyl tertiary butyl ether made of bioethanol	38,4	47,01
<i>including biofuels under Article 21.2</i>	-	-
<i>including imported</i>	-	-
Biodiesel fuel	-	-
<i>including biofuels under Article 21.2</i>	-	-
<i>including imported</i>	-	-
Hydrogen from renewable sources	-	-
Electric power from renewable sources (with 2,5 coefficient)	43,3 (97,6)	48,2 (109,85)
<i>including motor transport</i>	-	-
<i>Energy from renewable sources consumed by railway transport (with 2,5 coefficients)</i>	36,2 (90,5)	41,16 (102,9)
<i>Energy from renewable sources consumed by other types of transport</i>	7,14	6,95
<i>including non-motorized transport</i>	-	-
Other (biogas, vegetable oils, etc.) – specify	-	-
<i>including biofuels under Article 21.2</i>	-	-
TOTAL (with 2,5 coefficient for energy from renewable sources consumed by railway transport)	81,7 (136)	95,12 (156,86)

⁵ Direct use and centralized systems pursuant to Article 5.4 of Directive 2009/28/EC.

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

Table 2. Outline of key political actions and activities

Action name and designation	Action type	Expected outcome	Target group and (or) type of activity	Existing or planned	Action start and end date
2016					
The Decree of the President of Ukraine dated May 10, 2016 № 200/2016, "The issues of Ukraine's accession to the Statute of the International Renewable Energy Agency (IRENA)"	regulatory	Proper submission of an application on Ukraine's membership in the International Renewable Energy Agency (IRENA)	Investors, Ministries and other central executive authorities, producers of energy from renewable sources	existing	Enacted: May 10, 2016
The Law of Ukraine dated November 01, 2016 № 1713-VIII "On amendments to article 8 of the Law of Ukraine "On alternative fuel types"	regulatory	Facilitation of business in the area of biological fuel types production	Producers of alternative fuel types	existing	Enacted: November 24, 2016
The Law of Ukraine dated November 01, 2016 № 1711-VIII "On amendments to the Law of Ukraine "On alternative energy sources" regarding the assignment of heat pumps to equipment which uses renewable energy sources"	regulatory	Settlement of an issue whether energy generated with heat pumps belongs to energy from renewable sources	Ministries and other central executive authorities, producers of energy from renewable sources	existing	Enacted: December 10, 2016

The Law of Ukraine dated July 14, 2016 № 1469-VIII “On the ratification of the Paris Agreement”	regulatory	Economic growth of Ukraine with due consideration of greenhouse gas emissions reduction	Investors, Ministries and other central executive authorities, producers of energy from renewable sources	existing	Enacted August 13, 2016
The Law of Ukraine dated September 22, 2016 № 1540-VIII “On the National Commission for State Regulation of Energy and Public Utilities Sector”	regulatory	Ensuring preconditions of sustainable public regulatory influence on the activity of entities of natural monopolies in the energy sphere via resolutions of the Regulator. Ensuring transparency of resolutions made by the Regulator.	Ministries and other central executive authorities, investors, producers of energy from renewable sources	existing	Enacted: November 26, 2016
NKREKP Resolution dated December 10, 2015 № 2932 “On the Approval of the procedure for determining the level of use of equipment manufactured in Ukraine at power plants, including the commissioned construction stages of power plants (start-up facilities) producing electricity from alternative sources of energy (with the exception of blast furnace and coke gas, and using hydropower – only micro, mini and small hydropower plants) and setting an appropriate green tariff premium”	regulatory	Ensuring favorable conditions for renewable energy sector growth	Investors, producers of energy from renewable sources	existing	Enacted: February 02, 2016

<p>The Law of Ukraine dated July 14, 2016 № 1472-VIII «On amendments to certain legislative acts of Ukraine regarding settlement of certain issues of a legal regime for the area affected by radioactive pollution resulting from Chernobyl disaster»</p>	<p>regulatory</p>	<p>Legal grounds have been defined to allocate land plots for use in the exclusion zone and unconditional (compulsory) evacuation zone for deployment of alternative energy facilities</p>	<p>Investors, producers of energy from renewable sources</p>	<p>existing</p>	<p>August 04, 2016</p>
<p>Resolution of the Cabinet of Ministers of Ukraine dated October 23, 2016 № 912 “On specific matters regarding stimulation of growth of the exclusion zone and unconditional (compulsory) evacuation zone”</p>	<p>regulatory</p>	<p>Ensuring favorable conditions for renewable energy growth in the exclusion zone and unconditional (compulsory) evacuation zone through establishment of the lowest ratio for calculating the rent rate with the use of state property</p>	<p>Investors, producers of energy from renewable sources</p>	<p>existing</p>	<p>December 10, 2016</p>
<p>Government program “Tepli kredyty” (“Warm loans”) State support for thermal modernization of dwellings in Ukraine (Resolution of the Cabinet of Ministers of Ukraine dated October 17, 2011 № 1056 “On certain issues of funds use in the area of energy efficiency and energy saving”, as amended, and Resolution of the Cabinet of Ministers of Ukraine dated March 1, 2010 № 243 “On approval of the State target economic program for energy efficiency and development of the</p>	<p>Financial</p>	<p>Stimulation of population to undertake energy efficient activities</p>	<p>Manufacturers and suppliers of equipment producing thermal energy from renewable sources of energy, population, apartment building co-owners associations, house development cooperatives</p>	<p>existing</p>	<p>Enacted: 06.05.2015 Validity period: 2020</p>

energy sector for renewable energy sources and alternative fuels for 2010-2020”)					
Arrangement of the VIII International investment business forum “Energy efficiency and renewable energy – 2016”	Organizational and information	Framing conscious attitude in the society towards the need of efficient use of fuel and energy resources and renewable sources of energy.	Investors, end users, public authorities (energy generation from renewable sources and alternative fuel types)	existing	November 01-02, 2016
Arrangement of specialized exhibit “Bioenergy” within the framework of “Agro-2016” exhibition	Organizational and information	Enhancing awareness regarding modern technologies, machinery and equipment for biofuel production	- Enterprises using renewable sources of energy, - Enterprises producing biological feedstock - Academic institutions	existing	June 8-11, 2016
2017					
The Law of Ukraine dated March 21, 2017 № 1959-VIII “On amendments to the Law of Ukraine “On heat supply” regarding stimulating thermal energy	Regulatory	Stimulation of renewable thermal energy sector growth	Investors, producers of thermal energy from renewable sources	existing	Enacted: April 15, 2017

production from alternative sources of energy”					
Resolution of the Cabinet of Ministers of Ukraine dated September 06, 2017 №679 “On approval of the Procedure for calculating average weighted tariffs for thermal energy produced with the use of natural gas, for the needs of population, institutions and organizations funded from the state or local budgets, its transmission and supply”	Regulatory	Stimulation of renewable thermal energy sector growth	Investors, producers of thermal energy from renewable sources	existing	Enacted: September 09, 2017
The Law of Ukraine dated December 05, 2017 № 2222-VIII “On Ukraine's accession to the Statute of the International Renewable Energy Agency (IRENA)”	Regulatory	Ukraine's accession to the Statute of the International Renewable Energy Agency (IRENA)	Ministries and other central executive authorities, investors,	existing	Enacted: January 07, 2018
The Law of Ukraine “On electricity market” № 2019-VIII dated 13.04.2017	Regulatory	Promoting growth of alternative and renewable energy sectors	Investors, entities in the area of alternative and renewable energy	existing	Effective: June 11, 2017
The Law of Ukraine dated December 07, 2017 № 2245-VIII “On amendments to the Tax Code of Ukraine and certain legislative acts of Ukraine regarding balancing of budget revenues in 2018”	Regulatory	Transactions of importing to the customs territory of Ukraine and selling on the customs territory of Ukraine of electric cars only are temporarily, until December 31, 2018, exempted from value-added tax (16,8%) and excise tax (109,13 euro per 1	Economic entities producing electric energy by hydro power plants	existing	Enacted: 01.01.2018

		piece) imposition			
The Law of Ukraine dated May 23, 2017 № 2059-VIII “On the assessment of the impact on the environment”	Regulatory	Ensuring environmental safety, environmental protection and transparency of the decision making process impacting the economic activity, preventing adverse environmental impact as well as improving balance of public and private interests.	Investors, producers of energy from renewable sources	existing	Enacted: June 18, 2017
Ordinance of the Cabinet of Ministers of Ukraine dated August 18, 2017 № 605-p “On approval of the Energy Strategy of Ukraine until 2035 “Safety, Energy Efficiency, Competitiveness”	Regulatory	Promoting growth of renewable energy sector	Ministries and other central executive authorities, Investors, producers of energy from renewable sources	existing	Enacted: August 18, 2017
Ordinance of the Cabinet of Ministers of Ukraine dated August 18, 2017 № 569-p “On approval of the Concept of state policy in the sphere of heat supply”	Regulatory	Shaping and defining methods for implementation of efficient state policy in the sphere of heat supply, including promotion of renewable energy sector growth	Ministries and other central executive authorities, Investors, producers of energy from renewable sources	existing	Enacted: August 18, 2017
NKREKP Resolution dated September 14, 2017 № 1118 “On approval of Amendments to the Sample agreement on sale and purchase of electric energy between State Enterprise	Regulatory	Improving investment climate, including IFI, through ensuring favorable conditions for alternative energy generation growth.	State Enterprise “Energorynok” and economic entity producing electric energy with the use of alternative	existing	Enacted: October 29, 2017

“Energorynok” and economic entity producing electric energy with the use of alternative sources of energy”, approved by NKRE resolution dated October 11, 2012 № 1314			sources of energy		
NKREKP Resolution dated March 22, 2017 № 309 “On approval of licensing terms for conducting economic activity of electric energy generation”	Regulatory	Fulfilment of requirements set forth by licensing terms	License holders conducting economic activity of electric energy generation	existing	Enacted: August 20, 2017
NKREKP Resolution dated April 04, 2017 № 472 “On approval of the Procedure of commercial accounting of electricity generated by electricity generation facilities from alternative sources of energy (with the exception of blast furnace and coke gas, and using hydropower – only micro, mini and small hydropower plants)”	Regulatory	Ensuring hourly energy accounting at facilities based on the data received from automated systems and electricity commercial accounting devices	Economic entities generating electricity at electricity generation facilities	existing	Enacted: June 23, 2017
NKREKP Resolution dated 30.06.2017 № 866 “On approval of the Procedure for holding open discussion of NKREKP draft resolutions, with amendments and supplements introduced by NKREKP resolution dated October 05, 2017 № 1222.	Regulatory	Holding open discussions of draft resolutions regarding price (tariff) fixing/changes to them, endorsing/approving investment development programs/plans/changes to them	Economic entities regulated by NKREKP (license holders)	existing	Enacted: November 10, 2017
Government program “Tepli kredyty” (“Warm loans”)	Financial	Stimulation of population to engage into energy efficient activities	Manufacturers and suppliers of equipment producing	existing	Enacted: 06.05.2015

State support for thermal modernization of dwellings in Ukraine (Resolution of the Cabinet of Ministers of Ukraine dated October 17, 2011 № 1056 “Some issues of funds use in the area of energy efficiency and energy saving”, as amended, and Resolution of the Cabinet of Ministers of Ukraine dated March 1, 2010 № 243 “On approval of the State target economic program for energy efficiency and development of the energy sector for renewable energy sources and alternative fuels for 2010-2020”)			thermal energy from renewable sources of energy, population, apartment building co-owners associations, house development cooperatives		Validity period: 2020
Arrangement of the IX International investment business forum “Renewable energy and energy efficient industrial modernization”	Organizational and information	Framing conscious attitude in the society towards the need of efficient use of renewable sources of energy.	Investors, end users, public authorities (energy generation from renewable sources and alternative fuel types)	existing	November 23, 2017
Arrangement of specialized exhibit dedicated to development of bioenergy and holding a conference “Growing energy crops in Ukraine” within the framework of “Agro-2017” exhibition	Organizational and information	Enhancing awareness regarding modern technologies, machinery and equipment for biofuel production	- Enterprises using renewable sources of energy, - Enterprises producing biological feedstock - Academic institutions	existing	June 7-10, 2017

According to the Action Plan for implementation of Directive 2009/28/EC, the official websites of ministries and regional state administrations continuously highlight information about the support provided to implementation of activities aimed at generation of energy from renewable sources, as well as the benefits, cost, and energy efficiency of the equipment and systems operating with the use of renewable sources of energy.

The central and local executive authorities as well as local self-governance authorities are reporting on a quarterly basis to the State Agency on Energy Efficiency and Energy Saving about the renewable energy promotional activities conducted, as well as the meetings, roundtables, public hearings, forums, conferences, public service announcements arranged with the aim of increasing the amount of energy obtained from renewable sources and alternative fuels in the country.

In addition, in the years of 2016-2017 the international technical assistance programs promoted elaboration of manuals for highlighting technical, legal, organizational, environmental, financial and economic, and social aspects of renewable energy projects implementation, including:

- Series of manuals on use of biomass as fuel in a municipal sector (UNDP Project “Development and commercialization of bioenergy technologies in the municipal sector of Ukraine”);
- Manuals on comprehensive analysis of the Ukrainian markets of pellets and biomass boilers (UNDP Project “Development and commercialization of bioenergy technologies in the municipal sector of Ukraine”);
- Guidance on technologies selection “The best available technologies for housing and utilities sector of Ukraine”, 2016 (USAID Project “Municipal energy reform in Ukraine”);
- Practical guide “Preparation and implementation of projects on replacement of natural gas with biomass for heat generation in Ukraine”, 2016 (prepared by NGO “Agency for renewable energy” (ARE) within the framework of USAID Project “Municipal energy reform in Ukraine”).

2.a. 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)

During the years of 2016-2017 the following regulatory acts were adopted to promote growth of renewable energy sphere and improve administrative procedures:

1. The Law of Ukraine dated July 14, 2016 № 1472-VIII «On amendments to certain legislative acts of Ukraine regarding settlement of certain issues of a legal regime for the area affected by radioactive pollution resulting from Chornobyl disaster” the purpose of which is to establish legal grounds to allocate land plots for use in the exclusion zone and unconditional (compulsory) evacuation zone for deployment of alternative energy facilities.

2. With the help of Resolution of the Cabinet of Ministers of Ukraine dated October 23, 2016 № 912 “On specific matters regarding stimulation of growth of the exclusion zone and unconditional (compulsory) evacuation zone” there have been ensured favorable conditions for renewable energy growth in the exclusion zone and unconditional (compulsory) evacuation zone through establishment of the lowest ratio (0,15) for calculating the rent rate with the use of state property.

3. The Law of Ukraine dated September 22, 2016 № 1540-VIII “On the National Commission for State Regulation of Energy and Public Utilities Sector”, which amended the Law of Ukraine “On heat supply” as to transfer of a function on licensing the generation of thermal energy at installations with the use of unconventional or renewable sources of energy and, consequently, fixing tariffs for thermal energy generation at such installations from NKREKP to regional state administrations and local self-governance authorities.

4. The Law of Ukraine dated November 01, 2016 № 1713-VIII “On amendments to article 8 of the Law of Ukraine “On alternative fuel types” defines conditions for facilitation of business in the area of biofuel types production, in particular, cancels requirements:

- Regarding keeping the state register of producers of liquid biological types of fuels and biogas by the authority approved by the Cabinet of Ministers of Ukraine;
- Regarding registering economic entities conducting economic activity in the sphere of production, storage and introduction of liquid biological types of fuels and biogas.

5. The Law of Ukraine dated March 21, 2017 № 1959-VIII “On amendments to the Law of Ukraine “On heat supply” regarding stimulating thermal energy production from alternative sources of energy” introduces the simplified and transparent procedure of fixing a stimulating tariff for thermal energy from alternative sources.

The tariff for thermal energy from alternative sources is fixed at the level of 90% of the acting tariff for thermal energy from gas (in case of its absence – at the level of average weighted tariff for thermal energy produced from natural gas in the context of regions).

In order to fix a tariff for thermal energy and a tariff for generation of thermal energy, the economic entity producing thermal energy at installations with the use of alternative sources of energy, including combined heat and power plants, thermal power plants and cogeneration units, submits an application specifying the tariff level to the authority empowered to fix such tariffs.

6. The Law of Ukraine dated April 13, 2017 № 2019-VIII “On electricity market”, in particular, anticipated the possibility to enter into long-term agreements on purchase of electricity produced at “green” tariff rate until 2030.

7. NKREKP Resolution dated September 14, 2017 № 1118 “On approval of Amendments to the Sample agreement on sale and purchase of electric energy between State Enterprise

“Energorynok” and economic entity producing electric energy with the use of alternative sources of energy”, approved by NKRE resolution dated October 11, 2012 № 1314, approves the new Sample agreement on sale and purchase of electric energy between State Enterprise “Energorynok” and economic entity producing electric energy with the use of alternative sources of energy. Among its key novations:

- A possibility to enter into a preliminary agreement (conclusion of an agreement prior to termination of project implementation);
- Defining duration of an agreement until January 01, 2030;
- Defining force-majeure;
- A possibility of claims assignment to protect rights of creditors;
- International arbitration of protection of investor’s rights.

Regarding regulatory support to fulfillment of sustainability criteria for production of biomass for liquid and gaseous fuel set forth in the aforementioned Directive 2009/28/EC.

Producers of biological feedstock used for biofuel production, which export the mentioned feedstock to the EU countries, undergo a certification procedure to confirm their compliance with sustainability criteria set forth in Directive 2009/28/EC. Certification schemes relevant for Ukraine and already approved (under approval) by the European Commission are applied.

At the same time, it is not compulsory to apply any certification schemes when selling biomass in the domestic market for further biofuel production, and it can be sold on a voluntary basis under the terms specified in concluded contracts.

In order to support fulfillment of sustainability criteria for biomass production, the Ministry of Agrarian Policy and Food posted on its web-site “Guidelines regarding establishment of sustainability criteria for biomass production”.

The State Agency on Energy Efficiency and Energy Saving jointly with deputies have elaborated the Draft Law of Ukraine “On amendments to certain legislative acts of Ukraine on development of the sphere for production of liquid fuel from biomass and implementation of sustainability criteria for liquid fuels from biomass and biogas for the purposes of use by the transport sector” (registration № 7348 dated November 29, 2017).

The purpose of the draft law is to establish the regulatory basis for development of liquid biofuel production, circulation and use in transport.

The key provisions of the draft law are as follows:

- fixing up quotas as to mandatory share of bio components in the total sales of motor fuel/alternative motor fuel within the customs territory of Ukraine:
 - for petrol
 - since January 1, 2019 – at least 3,4 percent (energy)
 - since January 1, 2020 – at least 4,8 percent (energy)
 - for diesel fuel
 - since January 1, 2019 – at least 2,7 percent (energy);
- introduction of standards as to compliance of motor fuel/alternative motor fuel biocomponents with sustainability criteria;
- introduction of accounting and control over biocomponents content in motor fuel/alternative motor fuel in the oil product market;
- establishing administrative liability (fines) for economic entities producing and/or importing motor fuel/alternative motor fuel for non-compliance with quotas as to mandatory share of bio components.

Adoption of the draft law will promote:

- formation of a guaranteed market of liquid biological fuel types production and use in Ukraine;
- increase of investments in this sector; construction of new plants for bioethanol and biodiesel production;
- increase of budget revenues at all levels;

- Ukraine's fulfillment of obligations to the Energy Community in the sphere of transport.

On February 07, 2018 and April 04, 2018 the Verkhovna Rada Committee on Transport and on Fuel and Energy Complex recommended the Verkhovna Rada of Ukraine to pass the draft law in its first reading.

The draft law was agreed by experts from the Energy Community Secretariat at the stage of its elaboration as a matter of routine, and also agreed via an official letter dated January 24, 2018, once again (in general, the Energy Community Secretariat support the draft law at this stage provided that respective subordinate legislation will be elaborated and endorsed and deadlines of sustainability criteria implementation will be deferred from January 01, 2020 to January 01, 2019).

2.b. 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 related to connection to the grid and grid strengthening. (Article 22(1)f of Directive 2009/28/EC)

Pursuant to Article 21 of the Law of Ukraine "On electricity market":

The transmission system operator and distribution system operators shall not be entitled to refuse the connection of electrical installations of an applicant to the transmission or distribution systems subject to observance of the requirements of the transmission system code and distribution system code by a customer.

Connection of customer's electrical installations to the transmission and distribution systems shall be a fee-based service and shall be provided by a transmission system operator or distribution system operator pursuant to the connection agreement.

Calculation of the tariff for a standard connection to grids of a distribution system operator shall comprise a component of fee for capacity connection (taking into account the power generated), which is defined as the product of the value ordered prior to capacity connection and the payment rate for standard connection.

Calculation of the tariff for a standard connection to grids of a distribution system operator shall comprise:

- a component of fee for capacity connection (taking into account the power generated), which is defined as the product of the value ordered prior to capacity connection and the payment rate for standard connection;
- a component of fee for establishment of electric grids of the linear part of connection.

Funds received by a transmission system operator, distribution system operators as a connection fee for establishing (constructing) electric grids of the linear part of connection shall be reimbursed to a customer upon the condition that a transmission system operator, distribution system operator refer such assets to a regulatory assets database upon engagement of a respective transmission system operator, distribution system operator in stimulating regulation.

Reimbursement of funds attracted as connection fee for establishment (construction) of electric grids of the linear part of connection by a transmission system operator, distribution system operator shall be done pursuant to the procedure set forth by the Regulator.

3. Please describe the support schemes and other measures to promote energy from renewable sources, and indicate any developments in the measures used with respect to those set out in your national renewable energy action plan. (Article 22(1)b of Directive 2009/28/EC)

The main tools for stimulating renewable energy growth in Ukraine are:

- setting a "green" tariff for electric energy produced from alternative sources;
- setting a stimulating tariff for thermal energy produced from alternative sources;

The Law of Ukraine "On alternative sources of energy" envisages setting a "green" tariff for stimulating generation of electric power from alternative sources of energy (with the exception of blast furnace and coke gas, and using hydropower generated only by micro, mini and small hydropower plants).

The “green” tariff shall be fixed before January 1, 2030:

- for economic entities – for electric energy generated from solar, wind, biomass, biogas power, hydropower and geothermal power.
- For private households – for electric energy generated from solar and wind power with installation rated for 30 kW and less.

Also, a 5 and 10% premium to the “green” tariff is envisaged for the use of equipment of Ukrainian origin at a level of 30 and 50 %;

“Green” tariff rates

Type of power plant	Power plant capacity and other factors impacting the "green" tariff rate	Tariffs for commissioned facilities, €/kW·h		
		from 01.01.2017 until 31.12.2019	from 01.01.2020 until 31.12.2024	from 01.01.2025 until 31.12.2029
Wind power plants	600kW or less	5,82	5,17	4,52*
	More than 600kW but less than 2000kW	6,79	6,03	5,28*
	2000kW or more	10,18	9,05	7,92*
Solar power plants	Ground-based power plants	15,02	13,52	12,01*
	Power plants on rooftops and/or facades of houses, buildings and constructions	16,37	14,75	13,09*
Biopower plants	Biomass is non-fossil biologically renewable substance of organic origin, in a form of products, waste and residues. Biogas is gas from biomass.	12,39	11,15	9,91*
Geothermal power plants	Geothermal energy	15,02	13,52	12,01*
Hydropower plants	Micro HPPs (rated for 200 kW or less)	17,45	15,72	13,95*
	Mini HPPs (rated for more than 200kW but less than 1000kW)	13,94	12,55	11,15*
	Small HPPs (rated for 10,000kW or less)	10,45	9,42	8,35*
Private households power plants	Solar power plants rated for 30 kW or less	18,09	16,26	14,49*
	Wind power plants rated for 30 kW or less	11,63	10,45	9,32*

The “green tariff is pegged to EUR exchange rate and fixed in a national currency

**- tariff is fixed as of the beginning of 2025 without quarterly calculations of conversions into EUR.*

8. Aimed at stimulating heat generation from renewable sources of energy, the Verkhovna Rada of Ukraine adopted the Law of Ukraine №1959-VIII dated March 21, 2017 “On amendments to the Law of Ukraine “On heat supply” regarding stimulating thermal energy production from alternative

sources of energy”, which introduces the simplified and transparent procedure of fixing a stimulating tariff for thermal energy from alternative sources.

The tariff for thermal energy from alternative sources is fixed at the level of 90% of the acting tariff for thermal energy from gas (in case of its absence – at the level of average weighted tariff for thermal energy produced from natural gas in the context of regions).

Table 3. Renewable Energy Support Systems in 2017

Year of applying renewable energy support systems (2017)		Energy production output, toe	Support amount per unit, €/toe	Total support amount (€ ths)*
1. Total annual estimated amount of support in energy generation sector:		180,2	1177,4	212 174
<i>a. Energy generated from solar radiation</i>				
Tools	Difference between the "green" tariff and wholesale market price	61,5	2095,7	128 883
<i>b. Energy generated from wind</i>				
Tools	Difference between the "green" tariff and wholesale market price	83,7	671,2	56 183
<i>c. Energy generate from biomass</i>				
Tools	Difference between the "green" tariff and wholesale market price	8,7	782,0	6 803
<i>d. Energy generated form biogas</i>				
Tool	Difference between the "green" tariff and wholesale market price	8,0	789,9	6 319
<i>2. Energy generated by small hydropower plants</i>				
Tool	Difference between the "green" tariff and wholesale market price	18,3	764,3	13 987

*The exchange rate as of December 31, 2017 was used for the calculations: EUR 100 = UAH 3349,5.

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

4. Please provide information on the structure of the support schemes 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)

Article 22(1)c of Directive 2009/28/EC states that support schemes for renewable energy applications that give additional benefits shall be provided if needed.

At this time, no such support schemes are being developed in Ukraine.

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)

Resolution of the Cabinet of Ministers of Ukraine №771 dated July 24, 2013 approved the Procedure of issuance, use, and termination of the guarantees of origin for electricity for economic entities, which generate electricity from alternative sources of energy.

At present, the State Agency on Energy Efficiency and Energy Saving is authorized to issue the guarantees of origin. However, it is lacking the technological capacity and funds for implementing an electronic register for keeping record of data on issuance, use, and termination of guarantees, and has no control and supervisory powers for conducting relevant checks.

The party responsible for performance of these functions will be appointed upon launch of electricity market (in July 2019 pursuant to the Law of Ukraine “On electricity market”).

a) Sunflower seed husks, thousand tons (for thermal energy)	1200	1250	328	328,5	-	-	-	-	-	-	-	-
b) Wheat straw, thousand tons (for production of solid biofuel)	146		38		-	-	-	-	-	-	-	-
Biomass from household waste, **					-	-	-	-	-	-	-	-
Animal and plant waste												
<i>Supply of biomass for transport:</i>												
General hoed crops for biofuel (specify main species)					-	-	-	-	-	-	-	-
a) sugar beet (in production of sugar and bioethanol from molasses), thousand tons	921,2	2539,2			-	-	-	-	-	-	-	-
Energy crops (grasses, etc.) and short-cycle trees for biofuel (specify main species)	-	-	-	-	-	-	-	-	-	-	-	-
Other (specify)	-	-	-	-	-	-	-	-	-	-	-	-

* If possible, specify the amount of raw materials **in cubic meters for forestry biomass** and **in tons for agricultural and fisheries biomass, and biomass from waste.**

** Designation of this biomass category should be understood according to Table 7 of Part 4.6.1. of Commission Decision C (2009) 5174 final on approving the template for National Renewable Energy Action Plans pursuant to Directive 2009/28/EC.

Table 4a. Current status of use of country's agricultural lands for cultivation of energy crops (ha)

Land use	Area (ha)	
	2016	2017
1. Land used for general crops (wheat, sugar beet, etc.) and oil crops (rape, sunflower, etc.). (Specify main species)		
<i>Sugar beet (*) for production of biofuel (Molasses - a byproduct in sugar beet processing, used for the production of bioethanol)</i>	The total areas under sugar beet cultivation – 292,4 thousand hectares, of which for bioethanol production – 19,13 thousand hectares	The total areas under sugar beet cultivation – 313,6 thousand hectares, of which for bioethanol production – 53,4 thousand hectares
<i>Sunflower seeds (*) for energy generation (sunflower seed husks are used for generation of thermal energy for the needs of vegetable oil extraction enterprises in agribusiness)</i>	The total areas under sunflower cultivation 6086 thousand hectares	The total areas under sunflower cultivation 6061 thousand hectares
<i>Wheat (*) for energy generation (straw is used for the production of solid biofuels for generation of thermal energy)</i>	34,6 thousand hectares	33,0 thousand hectares
2. Land planted with fast-growing trees (willow, poplar). (Specify main species)		
<i>Willow (**)</i>	4000	4200
3. Land used for other energy crops, such as grasses (reed canary grass, switch grass, silver grass), sorghum. (Specify main species)	580	600
<i>Silver grass (**)</i>	500	520
<i>Sorghum (**)</i>	80	80

Notes: (*) Listed in Table 4 are only the cultivation areas of crops, which have actually been used for cultivation of sunflower, sugar beet, and wheat, and their volumes (and/or of their waste and byproducts) used for the production of biofuel, electric and thermal energy are specified in table 3.

(**) The extent of cultivation of bioenergy crops (willow and silver grass) is given based on operational data of research institutions of the National Academy of Sciences of Ukraine and the Ministry of Agrarian Policy, which have pilot plantations for growing planting material, and of individual companies – economic entities, which are growing the said crops for sale or production of solid biofuel. The data are operational and could be updated or adjusted if statistical reporting is introduced.

Regarding production volumes of liquid types of biofuel and volumes of biomass use in agribusiness

According to State-Owned Enterprise “Ukrspyrnt”, during the years of 2010-2017 SOE “Ukrspyrnt” enterprises started producing bioethanol and bioethanol-based components. The overall installed capacities at these enterprises constituted 18,9 million decalitres.

During the years of 2016 – 2017, bioethanol production was ensured only by 2 state alcohol plants (in Haisyn and Zarubyntsi).

In 2017, bioethanol output constituted 23,62 thousand tons. Molasses, which is a byproduct of sugar production, is mostly used for bioethanol production at state agro-industrial enterprises.

Regarding biodiesel production

During the years of 2010-2017, areas under rapeseed cultivation (the basic raw material for biodiesel production) were within 547 – 996 thousand hectares and gathered crops were within 1204 – 2351 million tons annually in Ukraine,

Although, most of rapeseed is exported to the European countries, because national enterprises are not able to produce biodiesel from rapeseed.

During the last years, production of biodiesel and other types of biofuel in Ukraine was terminated, which resulted from introduction of excise on the said types of fuel. For example, excise on biodiesel was fixed at the level of EUR 106 per 1000 litres.

7. Please provide information on changes in commodity prices and land use within your Contracting Party during the preceding two years, associated with its increased use of biomass and other forms of energy from renewable sources. If available, provide references to the relevant documentation on this influence in your country. (Article 22(1)h of Directive 2009/28/EC)

When evaluating the influence on commodity prices, include at least the following commodities: general food and fodder crops, energy wood, pellets.

According to data provided by the State Forest Resources Agency of Ukraine.

In 2017, enterprises that used or owned forests in Ukraine harvested 21,9 mln m³ of timber from all types of logging.

Volume of merchantable wood harvested in Ukraine is 18,9 mln m³, including 16,0 mln m³ in the forests of the State Forest Resources Agency.

Within the scope of final felling, 8,5 mln m³ of merchantable wood were harvested (at the State Forest Resources Agency – 7,3 mln m³).

Within the scope of final felling, forest management scope did not exceed the calculated felling rate which, as of the year of 2017, constituted 9,7 mln m³ (at the State Forest Resources Agency - 8,2 mln m³).

Annual volume of timber which may be used for energy purposes in the forests of the State Forest Resources Agency equals to 8,3 mln m³, including:

- Non-merchantable wood - 1,6 mln m³;
- Fuel wood - 5,5 mln m³;
- Wood processing residues - 0,8 mln m³;

Given the growth of heat and power facilities towards the increased use of biomass, the free resource of energy wood is significantly reducing.

The free resource of energy wood proposed by enterprises of the State Forest Resources Agency in the domestic market and can be included to the energy balance of Ukraine constitutes about 1,6 mln m³, including:

- Non-merchantable wood (forest harvest residues) - 1,4 mln m³;
- Fuel wood (transitional residues) - 0,2 mln m³;

In view of the above, principles of sustained management and expanded forest reproduction, are applied to forestry, while the increased use of biomass does not lead to changes in land use.

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

Table 5. Biofuel production and consumption under Article 21(2) (ktoe)

Biofuel under Article 21(2) ⁶	2014	2015
Production– type X fuel (specify)		
Consumption– type X fuel (specify)		

⁶ Biofuel made from wastes, residues, non-food cellulosic material, and lingo-cellulosic material.

Total production output of biofuel under Article 21.2		
Total consumption of biofuel under Article 21.2		
Share of fuel to Article 21.2 in the total renewable sources of energy in transport, %		

9.9. Please provide information on the estimated impact of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality in your country in the preceding two years. Please provide information on how this impact was evaluated, giving references to relevant documents on this impact in your country. (**Article 22(1)j of Directive 2009/28/EC**)

In 2017, the overall scope of activities and works dedicated to forest reproduction in Ukraine was conducted on an area of 64,7 thousand hectares.

Forest enterprises belonging to the sphere of the State Forestry Agency management ensure compliance with the principles of sustainable forest management and expanded forest reproduction, which in their turn aim to protect biodiversity and natural biogeocenosis.

The National Forest Agency's enterprises rehabilitated forests on an area of 53,8 thousand hectares, including 34,8 thousand hectares of forest crops and natural regeneration over an area of 19,0 thousand hectares. 1,7 thousand hectares of new forests have been planted.

In order to ensure highly productive plantations in the forest nurseries of forest enterprises, 287 million pieces of standard planting material have been grown.

The area of forests created in 2017 is 1.03 times greater than that of the clear cutting in 2016.

The sustainable growing of raw materials and biomass production meet the stability criteria for biofuels.

According to data provided by the Ministry of Agrarian Policy and Food

Article 17 of the Directive 2009/28/EC of the European Parliament and of the Council of April 23, 2009 on the promotion of the use of energy from renewable sources (hereinafter referred to as "Directive 2009/28/EC") defines basic sustainability criteria for biomass used for production of biofuel liquids for transport, or generation of thermal and electric energy, envisaging protection of areas with high biodiversity value and lands with high carbon stock (e.g., peatlands, grasslands, wetlands).

In Ukraine, the acting legislation provides for the protection of areas with high biodiversity value and lands with high carbon stock (e.g., peatlands, grasslands, wetlands).

In particular, the Land Code of Ukraine, the Laws of Ukraine "On Land Protection", "On Environmental Protection", "On the Nature Reserve Fund of Ukraine", "On Flora", "On Fauna", and the Water Code of Ukraine, prohibit the misuse of land with high biodiversity value, peatlands, grasslands, wetlands.

In accordance with Article 23 of the Land Code, lands used for cultivation of agricultural products (including raw materials for production of biofuels) are used for agricultural purposes and are determined based on data from the state land cadastre. At the same time, the owners or users use agricultural land plots exclusively within requirements to the land use of a certain type of use established by Articles 31, 33-37 of the Code.

Thus, the main requirements of Directive 2009/28/EC regarding fulfillment of sustainability criteria are governed by the Ukrainian legislation.

During the years of 2016-2017, there was observed neither expansion of agricultural lands areas with the use of protected lands nor withdrawal of lands with high biodiversity value and lands with high carbon stock for the purposes of biomass production.

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

For calculating the estimated net greenhouse gas emission saving due to the use of energy from renewable sources, the following methodology is proposed:

- *For biofuels: pursuant to Article 22(2) of Directive 2009/28/EC.*
- *For electricity and thermal energy, it is proposed to use the EU indicators of comparison of fossil fuels for electricity and thermal energy, as indicated in the report on requirements with regard to sustainable use of solid and*

gaseous sources of biomass in electric power generation, heating and cooling systems, if more recent evaluations are unavailable.

If the Contracting Party decides against using the proposed methodology for evaluating the net greenhouse gas emission saving, please describe any other methodology used for estimating this saving.

Table 6. Estimated greenhouse gas emission saving due to use of energy from renewable sources (tons of CO2 equivalent)

Ecological aspects	2016	2017
Total estimated net greenhouse gas emission saving due to use of energy from renewable sources		
- Estimated net greenhouse gas emission saving due to use of electricity from renewable sources of energy		
- Estimated net greenhouse gas emission saving due to use of energy from renewable sources in heating and cooling systems		
- Estimated net greenhouse gas emission saving due to use of energy from renewable sources in transport		

11. Please specify (for the preceding two years) and estimate (for subsequent years until 2020) any excess/deficit production of energy from renewable sources compared to the indicative trajectory, which could be transferred to other Contracting Parties and/or to third parties or imported from other Contracting Parties and/or third parties, as well as the estimated potential for joint projects, until 2020 (Article 22(1), m of Directive 2009/28/EC)

Table 7. The actual and estimated excess and (or) deficit (-) in the production of energy from renewable sources compared to the indicative trajectory, which could be transferred to other Contracting Parties, Member States, and (or) Third Parties, or imported from other Contracting Parties, Member States, and (or) Third Parties in [Contracting Party] (ktoe)

	2014	2015	2016	2017	2018	2019	2020
The actual/estimated excess or deficit production (with break-down by type of energy from renewable sources and by origin/import/export purpose)	0						

11.1. Please provide the data on statistical transfers, joint projects, and decision-making rules with regard to joint support system. If the Contracting Party decides to implement Article 8 and (or) Article 9 of the Resolution of the Council of Ministers, it should inform about the measures taken for the conduct of an independent external audit pursuant to Article 13 of the Resolution of the Council of Ministers.

The National Renewable Energy Action Plan until 2020 makes no provisions for statistical transfers of energy from renewable sources.

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)

Let us note that in the first progress report (for 2014) the Contracting Parties are requested to outline their intentions with regard to the questions presented in Article 22(3a-c). Also, we ask the Contracting Parties to provide any other information regarded as relevant for the specific situation of renewable energy development in each of the Contracting Parties.

The basic document providing classification of wastes in Ukraine is the State Waste Classifier ДК 005-96, approved by the order of the State Committee of Ukraine for Standardization, Metrology and Certification dated February 29, 1996 поky №89. The given document defines wastes as any substances, materials and objects formed as a result of human activity and of no further use at the place of their formation or detection, where their owner disposes, intends or has to dispose them through disposal or removal.

Also, the Decree of the Ministry of Housing and Communal Services dated February 16, 2010 № 39 approved the Methodological Guidelines for the Determination of the Morphological Composition of Solid Household Waste, aimed at introducing common approaches for research on the number of individual elements used in the composition of solid household waste with the purpose of further implementation within the communities of modern efficient technologies for the treatment of solid household waste and the long-term forecast of the volume of secondary raw materials available in the composition of solid waste.

In Ukraine, household waste is disposed by a waste incinerator in Kyiv. Also, a waste incineration installation in Kharkiv region and two mobile waste incineration installations in Kharkiv are used.

According to Ukrainian statistics in 2017, 366 million tonnes of waste were formed (excluding Crimea and part of the anti-terrorist operations area) and incinerated to generate 1064,3 thousand tonnes of energy.

According to the categories of waste incinerated for energy purposes, biomass-related materials were present, which notably represent 623,2 thousand tonnes:

- waste paper and cardboard - 0.3 thousand tonnes;
- wood waste - 373.2 thousand tonnes;
- animal waste and mixed food waste - 4.1 thousand tonnes;
- phytogenic waste - 245 600 tonnes.

As a result, the proportion of biodegradable waste in the waste incinerated for energy purposes is 58.5%.

The conversion of energy units into tons of oil equivalent as presented in this report was conducted according to Table A3.4 Conversion Equivalents between Units of Energy from the Energy Statistics Manual developed by the Energy Statistics Department of the International Energy Agency with support from the Eurostat.