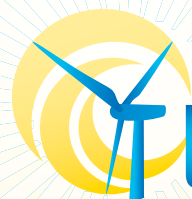


UKRAINIAN WIND POWER SECTOR 2018



UWEA
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ASSOCIATION



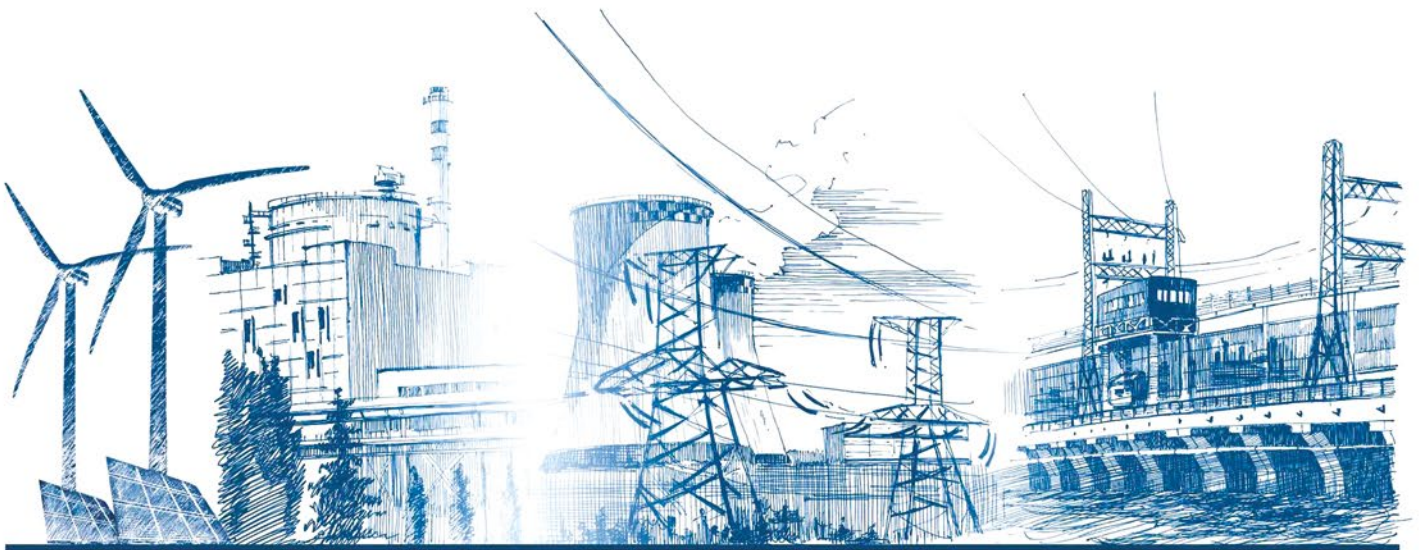


ВСЕУКРАЇНЬСКА ЕНЕРГЕТИЧНА АСАМБЛЕЯ НОРМАТИВНЕ ТА ТЕХНІЧНЕ ЗАБЕЗПЕЧЕННЯ ЕНЕРГЕТИЧНОЇ ГАЛУЗІ

*Під загальною редакцією к.т.н. І. В. ПЛАЧКОВА
та А. Є. КОНЕЧЕНКОВА*

ВІДНОВЛЮВАНА ЕНЕРГЕТИКА ВІТРОВІ ЕЛЕКТРОСТАНЦІЇ

*ОРГАНІЗАЦІЯ ЕКСПЛУАТАЦІЇ ТА ТЕХНІЧНОГО ОБСЛУГОВУВАННЯ.
НОРМИ ТА ВИМОГИ*



**СОУ ВЕА.600.1.1/01:2017 ВІДНОВЛЮВАНА ЕНЕРГЕТИКА
СТАНДАРТ ОРГАНІЗАЦІЙ УКРАЇНИ**



UKRAINIAN WIND POWER SECTOR 2018 MARKET OVERVIEW

Ukrainian Wind Market Overview 2018 has been prepared by Public Union UKRAINIAN WIND ENERGY ASSOCIATION (UWEA) in cooperation with the Kyiv office of CMS Cameron McKenna Nabarro Olswang Law Firm.

The reported statistics is based on official information published by the State Agency on Energy Efficiency and Energy Saving of Ukraine, the Ministry of Energy and Coal Industry of Ukraine, the National Energy and Utilities Regulatory Commission of Ukraine, State Enterprise Energorynok, State Enterprise National Power Company Ukrenergo, as well as information provided by the UWEA member-companies and Ukrainian Wind Energy Agency LLC.

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Public Union UKRAINIAN WIND ENERGY ASSOCIATION (UWEA) is a non-profit organisation aimed at promoting wind energy technologies and ensuring wind energy industry's interests on the national and international levels.

The UWEA brings together wind power equipment manufacturers and suppliers, utilities, construction companies, scientists and researchers, lawyers, NGOs, consumers and others involved in the wind industry – one of the world's fastest growing energy industries. 100% wind power generators active in Ukraine are members of the UWEA.



The Ukrainian Wind Energy Association cooperates with various national, regional and local authorities. The UWEA contributes greatly to information and experience exchange with all stakeholders.

The UWEA is a member of the World Wind Energy Association and the European association Wind-Europe.

CMS Cameron McKenna Nabarro Olswang is the 6th largest global law firm, with 74 offices in 41 jurisdictions, employing 4,500 lawyers. The Kyiv office of CMS Cameron McKenna Nabarro Olswang has a full-service offering, with a total of 4 partners and 23 lawyers. Kyiv office lawyers are domestically and internationally qualified and combine their understanding of the Ukrainian market with the requirements and expectations of global organizations and investors. The energy team in Kyiv is the leader in the Ukrainian energy sector and has been ranked as the country's Top Energy Practice (*Chambers Europe 2012-2018, The Legal 500, 2015-2018 and Ukrainian Law Firms 2009-2018*). In addition, according to Chambers Europe 2012-2018, the leading international directory in Europe, CMS Cameron McKenna Nabarro Olswang has been recognised for its excellence in the Energy and Natural Resources sector in Ukraine and has become the only Band 1 law firm in this practice area.



Lawyers at CMS Cameron McKenna Nabarro Olswang provide legal support for complex and large-scale energy transactions in Ukraine usually structured under English law. CMS Cameron McKenna Nabarro Olswang advises on renewable energy projects from planning to acquisition, financing, construction and commissioning. CMS Cameron McKenna Nabarro Olswang advises clients on a variety of matters, including due diligence, regulatory, PPAs, EPC-contracts, equipment purchase agreements, grid connection, taxation, land, construction and financing.

CONTENT

I. WIND POWER SECTOR OF UKRAINE	5
1.1. KEY FIGURES AND FACTS	6
1.2. FUEL AND ENERGY COMPLEX OF UKRAINE IN 2018	8
1.3. NEW ELECTRICITY MARKET MODEL	10
1.4. RENEWABLE ENERGY SECTOR	11
1.5. WIND – THE CHEAPEST RES FOR ELECTRICITY GENERATION IN UKRAINE	13
1.6. INTERNATIONAL COMMITMENTS OF UKRAINE TO SUPPORT RENEWABLE ENERGY	14
1.7. UKRAINE 2050 LOW EMISSION DEVELOPMENT STRATEGY	15
1.8. NEW RENEWABLE ENERGY SUPPORT SCHEME	16
1.9. NEW WIND TURBINE MODEL MANUFACTURED IN UKRAINE	20
1.10. DEVELOPMENT OF WIND POWER CAPACITIES IN 2018	21
1.11. FURTHER DEVELOPMENT OF WIND POWER SECTOR	27
II. WIND POWER LEGISLATION IN 2018	31
2.1. LEGISLATION CHANGES	32
2.2. REGULATORY ACTS EXPECTED TO BE APPROVED IN 2019	41
III. ACTIVITIES OF THE UWEA	46
3.1. PARTICIPATION IN THE LEGISLATIVE PROCESS	47
3.2. INTERNATIONAL CONFERENCES ORGANIZED IN COOPERATION WITH THE UWEA	50
3.3. COOPERATION WITH PROFESSIONAL STATE INSTITUTIONS AND INTERNATIONAL ORGANIZATIONS	54
3.4. PARTICIPATION IN INDUSTRY EVENTS	59
3.5. AWARDS AND HONORS	69
3.6. GROWING PARTNERSHIP	70

ACRONYMS AND ABBREVIATIONS

BioPP	Biomass Power Plant
BiogasPP	Biogas Power Plant
CC	Complexity Category
CHP	Combined Heat and Power
CMU	Cabinet of Ministers of Ukraine
DAM	Day-Ahead Market
DSO	Distribution System Operator
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EU	European Union
GW	Gigawatt
HPP	Hydro Power Plant
IEA	International Energy Agency
IFC	International Financial Corporation
IDM	Intraday Market
IRENA	International Renewable Energy Agency
kW	Kilowatt
MP	Member of Parliament
MW	Megawatt
NEURC	National Energy and Utilities Regulatory Commission of Ukraine
NGO	Non Governmental Organisation
NPC	National Power Company
NPP	Nuclear Power Plant
PPA	Power Purchase Agreement
PSH	Pumped Storage Hydroelectric Power Plant
PU	Public Union
PJSC	Public Joint-Stock Company
RE	Renewable Energy
RES	Renewable Energy Source
RPP	Renewable Power Plant
SAEE	State Agency on Energy Efficiency and Energy Saving of Ukraine
SE	State Enterprise
SHPP	Small Hydro Power Plant
SPP	Solar Power Plant
SACI	State Architectural and Construction Inspectorate of Ukraine
TC	Technical Conditions
toe	Ton of oil equivalent
TPP	Thermal Power Plant
TSO	Transmission System Operator
UES	United Energy System of Ukraine
WWEA	World Wind Energy Association
WPP	Wind Power Plant

WIND POWER SECTOR OF UKRAINE



1.1. KEY FIGURES AND FACTS

The global power sector development is one of the key issues of the sustainable development concept. Access to affordable, reliable and sustainable energy is crucial to achieving many of the sustainable development goals. Modern global energy trends are characterized by deepening integration of energy systems; growth in the share of renewable energy sources in the national energy balances and distributed generation facilities. The large-scale use of renewable energy technologies in the global electricity sector and Paris Agreement implementation are approaching the end of the “coal” era.

According to World Energy Outlook, 2018 by International Energy Agency “in power markets, renewables have become the technology of choice, making up almost two-thirds of global capacity additions to 2040, thanks to falling costs and supportive government policies. This is transforming the global power mix, with the share of renewables in generation rising to over 40% by 2040, from 25% today”.

2018 has become the most dynamic for the wind power sector of Ukraine over the past 4 years. During the last year, a number of contracts were signed with the world’s leading wind turbines manufacturers for the supply of wind energy equipment to the country; the number of projects under construction or ready for construction has increased significantly. Active position in financing wind energy projects

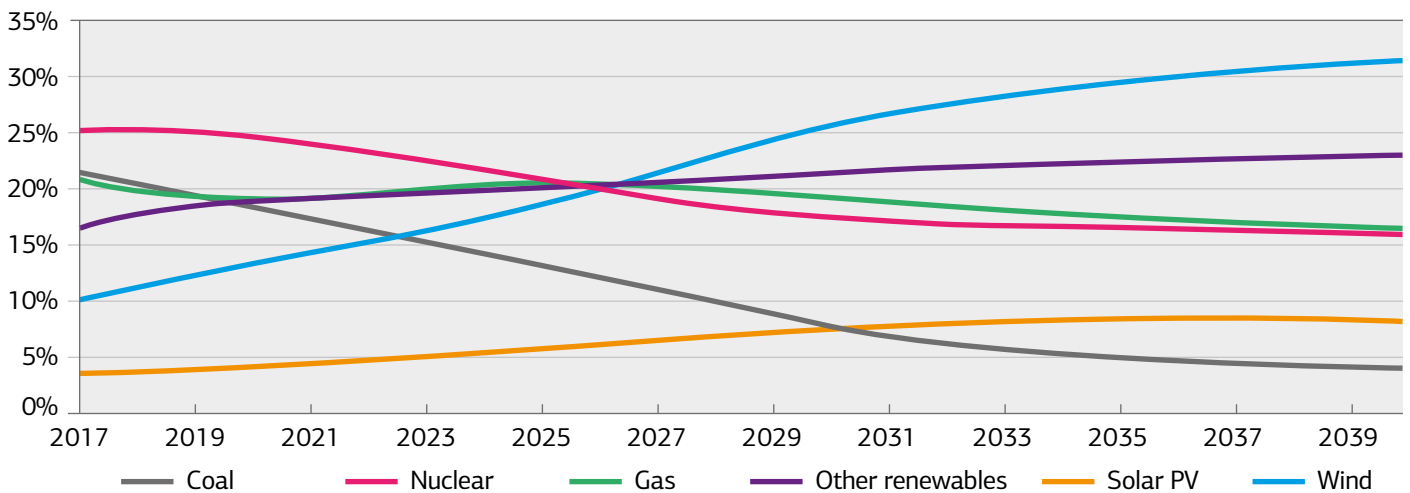
by Ukrainian state-owned banks, first of all, Joint-Stock Bank Ukrgasbank, PJSC State Savings Bank of Ukraine (*Oschadbank*), PJSC State Export-Import Bank of Ukraine (*Ukreximbank*) and international financial institutions such as EBRD, IFC, NEFCO, IFU and others, have significantly improved the investment climate in the country.

In 2018 the growth rate of wind capacities improved, showing 67.8 MW wind additions – the best result since 2015.

As of 31 December 2018, the total installed wind capacity in Ukraine reached **620.6 MW**, out of which **532.8 MW** – located on the mainland (*including 138 MW in the temporarily occupied and uncontrolled territories in the Luhansk and Donetsk regions*). The installed capacity of WPPs in the Crimea has remained unchanged and is the same as in 2013 – 87.8 MW.

As a whole, at the end of 2018, 12 wind power plants totalling 395 MW supplied clean electricity to the United Energy System of Ukraine under the feed-in (*green*) tariff. The volume of electricity generated by wind reached **1,180.751 million kWh**; this compares to 970.496 million kWh generated in 2017. Wind power plants produced enough electricity for about **246,000** typical Ukrainian households with an average consumption of 400 kWh per month.

Figure 1.1.1. Share of electricity generation by sources in the EU, 2017-2040



Source: World Energy Outlook 2018, IEA

The supply of electricity by the solar and wind power plants located in the annexed territory of the Autonomous Republic of Crimea and temporarily occupied and uncontrolled territories in Luhansk and Donetsk regions to the United Energy System of Ukraine has been suspended.

Wind energy plays a leading role in the process of decarbonisation of the Ukrainian economy. Last year green electricity generated from wind saved more than 835 million tons of CO₂ emissions.

Wind energy that gradually displaces the electricity generated by fossil fuels not only reduces CO₂ emissions but also helps to avoid the cost of buying these fuels. In 2018, wind energy avoided about 101,544 toe of fossil fuel imports or 167,915.6 tons of coal or 111.9 million m³ of natural gas.

The national wind energy sector contributes to the state and local budgets providing money in the form of taxes, fees, etc., which is an important factor for the economic development of the country. According to a survey conducted by the UWEA Secretariat, about \$1.26 billion was transferred to the country's budget by the wind energy companies.

In 2018, 611 specialists were directly employed in the wind power companies in Ukraine, while women account for 23% of the total employment in the wind energy sector. Wind energy creates jobs, and not only in the manufacture of wind energy equipment and electricity generation, but also in many other industries across the country. The total of individuals involved, directly or indirectly (*machine-building complex, engineering and design, transport, law firms, etc.*), in the country's wind power sector is estimated at more than 1,000 persons.

Zaporizhzhia Region with one of Europe's largest wind farms – 200 MW Botievskaya WPP continued to be the leader in wind power capacity in Ukraine in 2018. Company DTEK RENEWABLES, which owns the plant plans to commission several more wind power plants in the region. In terms of the number of wind power capacities being under construction, Kherson region is not lagging behind as well. Mykolaiv, Lviv, Ivano-Frankivsk regions continue to increase their wind power capacities. The first wind turbines were put into operation in Ternopil region.

Figure 1.1.2. Dynamics of wind energy development on the mainland and the Crimean peninsula, 2009-2018, MW

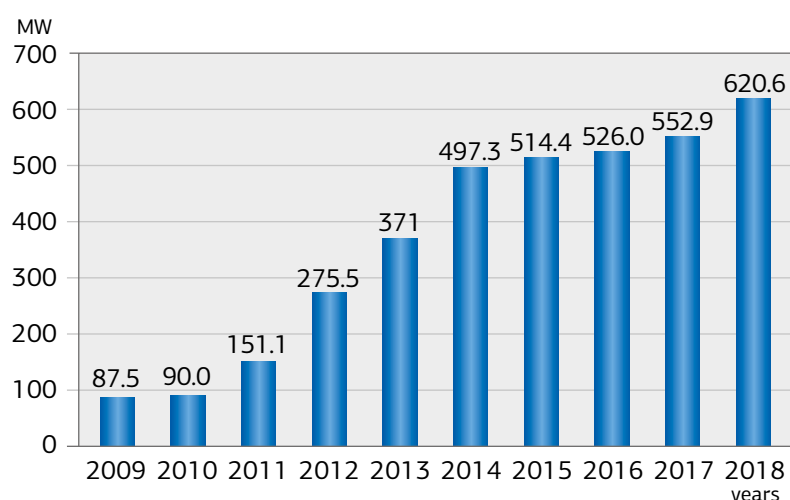


Figure 1.1.3. Annual wind power capacity additions, by years, 2009-2018, MW

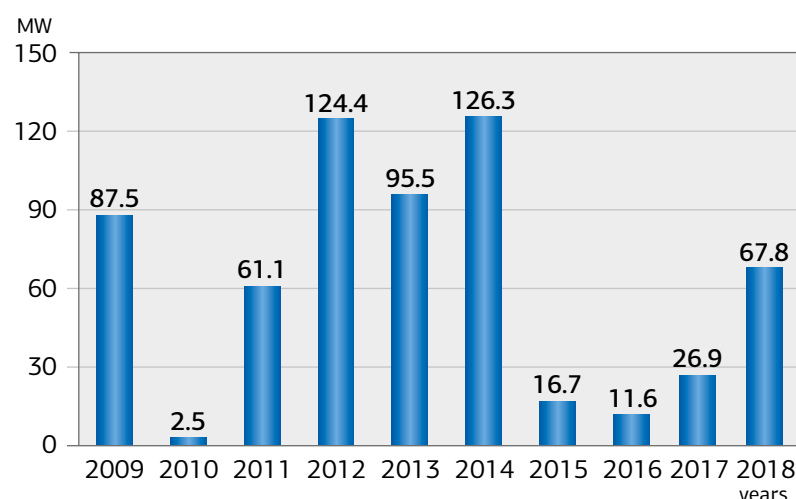
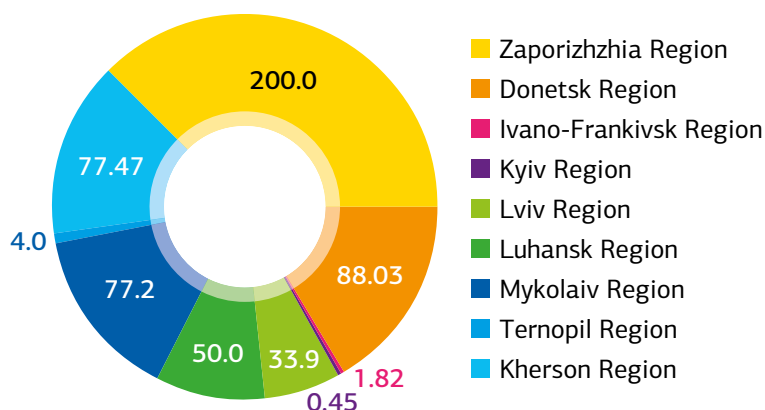


Figure 1.1.4. Wind power capacities by regions, Mainland Ukraine, MW, 2018



1.2. FUEL AND ENERGY COMPLEX OF UKRAINE IN 2018

The total installed capacity of electric power plants of the United Energy System of Ukraine (without the power generating facilities of the Crimean Electric Energy System and the uncontrolled territory of the Donbas electric power system) came to approximately 52.6 GW by the end of 2018, while thermal power plants account for 59%, nuclear power plants – 26.7%, hydro power plants and pumped storage hydroelectric power plants – 12%, RE power plants (WPP, SPP, BioPPP) – 2.3%.

The main generating facilities of the UES of Ukraine are located at:

- 4 nuclear power plants (15 power units, 13 of which have a capacity of 1.000 MW and 2 power units with a capacity of 415 and 420 MW);
- cascades of 8 hydro power plants on the Dnipro River and the Dniester River with a total of 103 hydro units, as well as at 3 pumped storage plants (11 hydro units with a capacity ranging from 33 MW to 324 MW). The construction of the Dniester and Tashlyk PSHs is still in progress;

Table. 1.2.1. Installed capacities of electric power plants in 2017 and 2018, GW

Year	Cumulative installed capacity	NPPs	%	TPPs	%	TPPs & CHPs	%	HPPs & HPSPs	%	WPPs, SPPs, BioPPs	%
2017*	51.7	13.8	26.7	24.6	47.5	5.9	11.5	6.2	11.2	1.2	2.3
2018*	52.6	13.8	26.2	24.6	46.8	5.9	11.2	6.2	11.2	2.1	4.0

* Excluding statistics for the temporarily occupied and uncontrolled territories in the Luhansk and Donetsk regions

Figure 1.2.1. Location of main generating facilities of the UES of Ukraine



Source: SE NPC Ukrenergo, Report on conformity assessment (adequacy) of generating capacities, 2018

- 12 TPPs with power units, each with a capacity of 150, 200, 300 and 800 MW (75 power units, including: 150 MW – 6 units, 200 MW – 31 units, 300 MW – 32 units, 800 MW – 6 units and 3 turbine generators), as well as 3 large TPPs with power units of 100 (120) MW and 250 (300) MW.

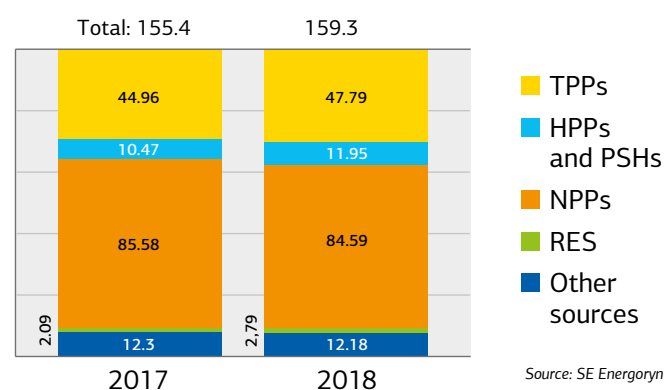
Nine nuclear power units have already completed their 30-year project life and their lifetime has been extended for another 10-20 years. In the near future, the design lifetimes of three more nuclear power units will expire.

Large Hydro Power Plants plays an exceptionally important role in the functioning of the Ukrainian power grid as the HPPs and the PSHs are in fact the only source of its peak capacities. In addition, Pumped Storage Hydro Power Plants contribute to the flattening the night's "power failures" in electricity consumption. The UES also includes the Dniester PSH and Tashlyk PSH, the construction of which is still in progress.

According to SE Energorynok, the UES of Ukraine produced 159.3 billion kWh in 2018, which is by 3.9 billion kWh or 2.5%, more than in 2017. Producers operating on the Wholesale Electricity Market of Ukraine generate the main share of electricity – 98.93% in 2018 and 99.19% – in 2017.

During this period, the nuclear power plants reduced power generation by 1.4% to 84.593 bil-

Figure 1.2.2. Electricity generation structure in 2018, bln kWh



lion kWh while electricity generation by the TPPs and HPPs increased by 6.3% and 13.6%, respectively. The TPPs have increased production of electricity to 47.792 billion kWh, HPPs – to 11.951 billion kWh.

Electricity generation from renewable energy sources (WPP, SPP, biomass) over the past year increased by 34% – to 2.792 billion kWh.

Started in 1878, electricity production in Ukraine gradually reached considerable heights with its peak in 1990. The dynamics of electricity production is presented in the table below.

In 2018 Ukraine exported about 6,166.7 million kWh of electricity.

Table 1.2.2. Structure and volumes of electricity production in Ukraine in 2017-2018

	2017		2018	
	Electricity generation, bln kWh	Share in total electricity generation, %	Electricity generation, bln kWh	Electricity generation, bln kWh
Electricity generation, total including:	155.4	100.0	159.3	100.0
TPPs	44.96	29.1	47.79	30.0
HPPs	10.47	6.7	11.95	7.5
NPPs	85.58	55.0	84.59	53.1
Renewables (WPPs, SPPs, BioPPs)	2.09	1.3	2.79	1.75
Others	12.3	7.9	12.18	7.65

Source: SE NPC UKrenergo, Report on conformity assessment (adequacy) of generating capacities, 2018

Table 1.2.3. Electricity generation dynamics in Ukraine, bln kWh

Year	2011	2012	2013	2014	2015	2016	2017	2018
Electricity generation	194.947	198.87	194.377	182.815	163.682	155.414	155.414	159.351

1.3. NEW ELECTRICITY MARKET MODEL



The Law of Ukraine “On the Electricity Market”, adopted on 13 April 2017, by the Verkhovna Rada of Ukraine to fulfil obligations of Ukraine on the EU Third Energy Package, provides for a new competitive electricity market to start functioning from 1 July 2019.

The purpose of the new electricity market is to introduce competitive mechanisms for the electricity market functioning, ensure the free choice of counterparties and the consumer’s right to choose a supplier of electricity freely. The Law provides for various mechanisms for the purchase and sale of electricity, namely bilateral agreements, a day-ahead market and an intraday market. In order to ensure sufficient amounts of electricity necessary for real-time balancing of electricity production and import and electricity consumption and export, curtailment management in the UPS of Ukraine, as well as financial settlement of electricity imbalances, the operation of the balancing market and the ancillary services market is provided.

In 2018, the National Energy and Utility Regulatory Commission adopted several regulations necessary

for efficient operation of the new electricity market including: Market Rules, Day-ahead and Intraday Market Rules, Transmission System Code and Distribution System Code, Commercial Metering Code and Retail Market Rules. According to the adopted documents, the first electricity trades in five newly created market segments should start on July 1, 2019.

According to the Law of Ukraine “On the Electricity Market”, two different companies – the distribution system operator and the electricity supply company – will provide energy services to customers in Ukraine starting 1 January 2019. The distribution system operator will be engaged exclusively in electricity distribution and grid operation. The electricity supply company will be responsible for supplying electricity to consumers and for charging payments and carrying out calculations.

The State Foreign Trade Company Ukrinterenergo was determined by the Cabinet of Ministers of Ukraine (*CMU Order from 12 December 2018*), as the supplier of “the last hope” of electricity for the next two years.

1.4. RENEWABLE ENERGY SECTOR

2018 was a record year for Ukrainian Renewable Energy sector. Thus, during the year, **742 MW** were added, including solar systems for households, which is almost 3 times more RE capacities commissioned in 2017 – about 300 MW. Wind and solar power plants make up 96% of the installed capacity. More than 730 million euro was invested in the renewable energy sector in 2018.

In particular, 163 solar power plants, 11 wind power objects, 16 facilities generating electricity from biomass and biogas and 12 small hydro power plants were commissioned last year.

In terms of installed capacities, overall 742.012 MW of RES generating capacities were commissioned during the year, including:

- 646 MW of Solar Power Plants;
- 67.8 MW of Wind Power Plants;
- 12.6 MW of Biomass Power Plants;
- 11.8 MW of Biogas Power Plants;
- 4.0 MW Small Hydro Power Plants.

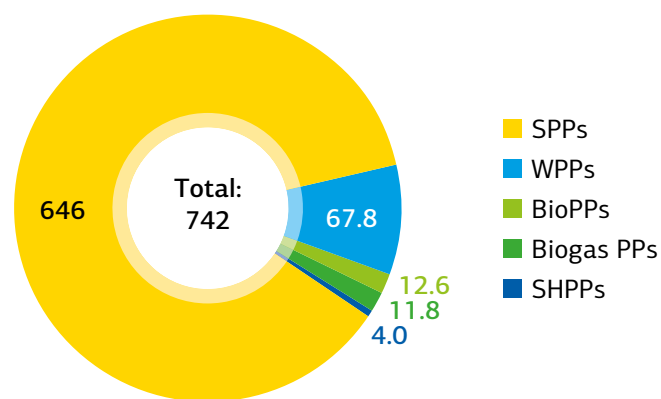
Thus, the total installed capacity of the renewable energy sector in Ukraine has increased by 51% amounting to 2,117.4 MW, which is 1.5 times more compared with about 1,400 MW in 2017. With 227.2 MW commissioned last year Kherson Region is leading among other regions of Ukraine in terms of annual RE additions. It worth saying that average unit capacity of commissioned RE facility in 2018 was 3 MW.

At the same time, it should be noted that the renewable energy share (*excluding large hydro*) in the Ukrainian national energy balance is still negligible and accounts for only 1.9%.

Wind and solar together generate the largest share of green electricity in Ukraine. According to NEURC’s data both wind and solar power delivered about 2,282.241 MWh of environmentally sound electricity in 2018, which corresponds to 82% of the national green electricity generation last year.

Overall, in 2018 renewables supplied 2,791.995 million kWh to national power system, which is 705,684 million kWh more than the last year’s achievements.

Figure 1.4.1. RES additions in 2018



In 2018, all Ukrainian wind power plants produced 1,181.077 million kWh, or 210.581 million kWh more compared to 2017.

During the 12 months of 2018, the SPPs produced 1,101.164 million kWh which is 390,422 million kWh more compared with the same period in the previous year.

The annual power generation by the SHPPs increased by 20.768 million kWh reaching 231.017 million kWh.

In 2018, biomass and biogas electricity generators delivered 278.737 kWh or 83.913 million kWh more compared to 2017.

Table 1.4.1. Electricity generation from RES in 2018

RES/YEAR	Mln kWh
WPPs	1,181.077
SPPs	1,101.164
SHPPs	231.017
BioPPs	103.111
BiogasPPs	175.626
Share in general electricity production in Ukraine, %	1.75
Total	2,791.995

Source: NEURC

Figure 1.4.2. Green electricity generation in 2018, by types of RES, mln kWh

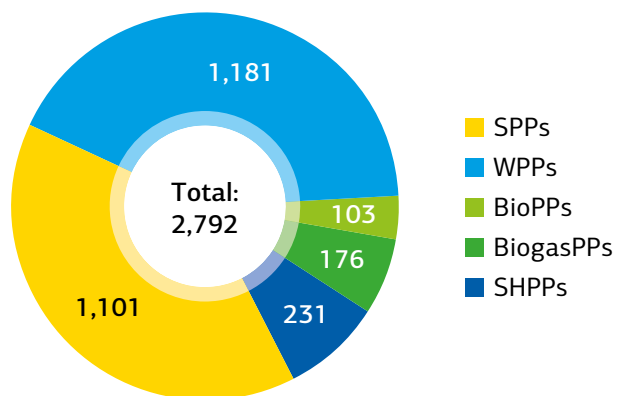
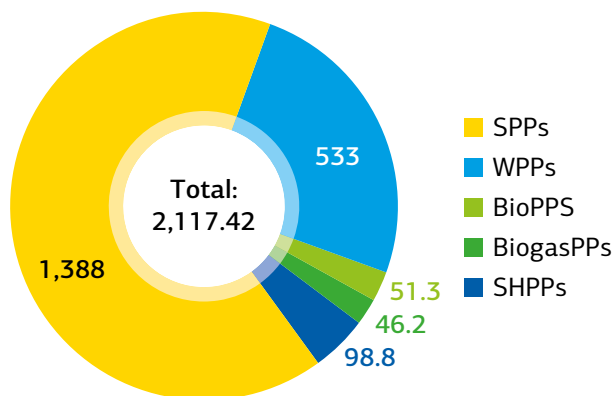


Figure 1.4.3. Structure of RES facilities, 2018, MW



Since 2011 (the year, when the first commercial-scale WPPs were commissioned in Ukraine), renewables have largely demonstrated a pattern of growth in installed capacities; however decrease in annual additions of generating capacities during 2014-2016, primarily wind, was caused by the loss of renewable energy facilities located in the annexed Crimea and temporarily occupied and uncontrolled territories in Luhansk and Donetsk regions.

Solar power was the most dynamic sector of renewable energy in Ukraine in 2017-2018. The installed power of solar power plants in 2018 amounted to 1,388.3 MW, which is 646 MW more compared to the previous year. The development of solar energy is stimulated by a high green tariff which is 15 euro cents per kWh for commercial SPPs commissioned in 2017-2019 and 18 euro cents per kWh for private solar systems for households.



1.5. WIND – THE CHEAPEST RES FOR ELECTRICITY GENERATION IN UKRAINE

Wind energy continues to be the cheapest renewable energy sources of electricity in Ukraine and worldwide. In 2018 wind and solar power account for the largest share in RES electricity generation in Ukraine covering 82%. Last year 2,282.241 MWh was generated at the wind and solar power plants.

According to SE Energoynok, the share of electricity generated from wind in the cost of electricity purchased at the Wholesale Electricity Market in Ukraine is just 2.6% that is almost twice less than the share of solar power – 4.76%.

Meanwhile “wind” covers 0.81% in the national electricity supply in contrast to solar, which accounts for 0.75%.



Table 1.5.1. Electricity generation from RES, 2018

RES	Installed capacity, MW	Installed capacity, Share in RE capacity, %	Electricity generation, mln kWh	Electricity generation, share in RE electricity, %
WPP*	394.7	18.6	1,181.077	42.3
SPPs*	1,388.276	65.6	1,101.164	39.4

*Excluding Annexed Crimea and the temporarily occupied and uncontrolled territories in the Luhansk and Donetsk regions

Table 1.5.2. Electricity generation from RES in 2018

Energy Source	Share in electricity generation, %	Share in electricity cost, %
Nuclear Power Plants	53.1	26.60
Thermal Power Plants utilities	30.0	47.10
Hydro Power Plants (large)	7.5	5.28
Thermal Power Plants & Combined Heat and Power Plants	6.9	12.42
Small Hydro Power Plants	0.16	0.56
Wind Power Plants	0.75	2.60
Solar Power Plants	0.69	4.76
Biomass Power Plants	0.07	0.25
Others	0.83	0.43
Total	100	100

Source: SE “Energoynok”

1.6. INTERNATIONAL COMMITMENTS OF UKRAINE TO SUPPORT RENEWABLE ENERGY



On 31 October 2018, the Energy Community Secretariat published its “Annual Implementation Report on the of the Acquis under the Treaty Establishing the Energy Community” (“Report”). Regarding the renewable energy sector of Ukraine, the Report indicates moderate progress made by Ukraine in the implementation of legislation, with a score of 59%. With respect to state support for renewable energy, the Report states that since 2018 Ukraine is in the process of reforming its current support schemes for feed-in tariffs. The score for the implementation of the state’s renewable energy support schemes is currently 66%. However, to finish the reform of state support schemes, Ukraine must adopt the required amendments to the Electricity Market Law and Alternative Sources Law during 2019. These amendments aim to introduce auctions for renewable energy sources to grant state support in the form of a premium to new renewable energy producers.

The Energy Community Secretariat pays special attention to the National Renewable Energy Action Plan and fulfillment by Ukraine of its obligations regarding renewable energy. As of 2016, Ukraine reached the level of 5.8% of energy produced from renewable energy sources (*including large hydroelectric plants*) in the overall structure of Ukrainian energy consumption, from a planned target of 8%. According to the Decision D/2012/04/MC-EnC, Ukraine has an obligation to reach 11% of energy produced from renewable energy sources (*including large hydroelectric plants*) in the overall structure of energy consumption of the country by 2020, which will serve as a powerful incentive for the further de-

velopment of the use of renewable energy sources in Ukraine. This set rate is unlikely to be achievable, so it is important to focus on reaching targets by 2030. With this in mind, the Energy Community conducted a study on 2030 renewable energy targets, according to which the possible renewable energy target for Ukraine by 2030 is 16.6% according to the established method of calculating.

According to the Report, the level of implementation of legislation on the grid integration of renewable energy producers is 70%. It states that transmission and distribution system operators have to ensure transparent and clear technical specifications for grid connection. It is necessary to introduce a system of compensation for renewable energy producers for curtailments regarding transmission of electricity by operators. Network operators must develop network investment plans in order to accommodate the future increase of renewable energy generation. The issue of self-consumption of electricity by renewable energy producers, acknowledged in the legislation, requires further implementation.

The issue of administrative procedures also requires attention. Administrative procedures for permits, construction and licensing are lengthy and burdensome despite several rounds of simplification. A significant drawback is the lack of a one-stop shop for issuing permits and licenses.

The report emphasizes that coordination among various institutions as well as clarification and simplification of procedures for both small and large renewable energy developers must continue to create a conducive climate for investors.

Therefore, it can be stated that Ukraine is fulfilling its international obligations to support renewable energy and implementing the necessary changes in legislation. At the same time, certain issues need to be improved, and this is what the Report of the Energy Community Secretariat underlines.

1.7. UKRAINE 2050 LOW EMISSION DEVELOPMENT STRATEGY

On 18 July 2018, at a meeting of the Cabinet of Ministers of Ukraine, Government members adopted a strategic document for the transition of Ukraine's economy to the low carbon development model, which provides for reducing the amount of greenhouse gas emissions, abolition of fossil fuels, and start of investments in renewable energy sources.

The 2050 Low Emission Development Strategy of Ukraine aims to fulfill Ukraine's international obligations pursuant to paragraph 19 of Article 4 of the Paris Agreement, paragraph 35 of Decision 1/CP.21 of the Conference of the Parties to the United Nations Framework Convention on Climate Change, as well as for the execution of the Decrees of the Cabinet of Ministers of Ukraine "On Approving the Concept for the Implementation of State Policy in the Field of Climate Change up to 2030" and "On Approving the Government Priority Action Plan for 2018".

After the protocol decision to support the proposal of the Ministry of Ecology and Natural Resources of Ukraine, the Low Emission Development Strategy of Ukraine up to 2050 was sent to the Secretariat of the United Nations Framework Convention on Climate Change for its adoption at the international level.

The purpose of the Ukraine 2050 Low Emission Development Strategy is to determine the strategic directions of the transition of Ukraine's economy to the low carbon development trajectory based on sustainable development in accordance with national priorities. In particular, it provides for transition to a power system using low carbon energy sources, the development of sources of electric and ther-

mal energy, improving energy efficiency and energy conservation in all sectors of the economy and at facilities of housing and communal infrastructure, encouraging the use of alternatives to petroleum motor fuels, and the transition of freight and passenger transportation through more environmentally friendly modes of transport.

According to the Strategy, the emission of greenhouse gases in Ukraine in 2015 accounted for 323.36 million tons of CO₂. According data from the same year, the carbon intensity of the gross domestic product of Ukraine is 1.9 times above the world figure and 3.3 times higher than the average figure for the 28 EU member countries. The Strategy states that the use of renewable energy sources can achieve a reduction of greenhouse gas emissions of 2,430 million tons of CO₂ (*cumulatively for the period 2012-2050*).

Proposed policies and measures in the field of renewable energy provide for:

- increase of production and consumption of electrical energy from renewable sources;
- ecologically sustainable production and expansion in the use of biomass (*biofuels*);
- production of biogas and expansion of its use for the production of heat and electric power;
- development of international integration of Ukraine in the field of renewable energy.

Unlike the determined national contribution of Ukraine to the Paris Agreement, the provisions and indicators of the Strategy are not legally binding and will be subject to review every five years, taking into account national circumstances and opportunities.

Table 1.7.1. Forecast of the greenhouse gases emission in Energy and Industrial Processes sectors, Energy Efficiency and Renewable Energy Scenario.

Scenario	Unit	2012	2015	2020	2025	2030	2035	2040	2045	2050
Energy Efficiency and Renewable Energy	mln tons of CO ₂ – equivalent	367	265	282	315	312	291	299	288	278
	%	44	31	33	37	37	34	35	34	33

1.8. NEW RENEWABLE ENERGY SUPPORT SCHEME

To develop renewable energy and increase investment in RES, states use different supportive schemes. In previous years, one of the main drivers for investment was the feed-in tariff. In Ukraine, the feed-in tariff also applied to electricity produced from RES. At the same time, the size of the feed-in tariff in Ukraine is quite high, but it does not promote competition in the RES sector.

Current approaches for the stimulation of RES development focus on competition and cost-effectiveness. Recent research identifies increased application of auctions for RES around the world. For instance, according to IRENA data, 80 countries have already introduced auctions for renewable energy. European Union countries also rely on auctions as an economically profitable mechanism for RES development until 2030.

Taking into account global tendencies, Ukraine is on the path towards implementation a system of support for RES in the form of auctions instead of feed-in tariff. On 20 December 2018, the Verkhovna Rada of Ukraine passed in the first reading the Draft Law on Amendments to Some Laws of Ukraine on Ensuring Competitive Conditions for the Production of Electricity from Alternative Energy Sources (*the “Draft Law No. 8449-d”*) for the implementation of an auction scheme for RES producers. The final adoption of the Draft Law No 8449-d will have a huge impact on all market participants and, in general, on the structure of the renewable energy sector.

According to the Draft Law No. 8449-d, implementation of the auction scheme for RES producers is planned from 1 January 2020.

The Draft Law No. 8449-d provides for a support scheme for 20 years for the winners of auctions. Support for the future RES producers is in the form of the guaranteed purchase of electricity at prices determined by the auction results based on a concluded power purchase agreement between the guaranteed buyer and the economic entity that has acquired the right for support via auction.

According to the Draft Law No. 8449-d, RES producers are obliged to participate in the auction process if they intend to produce electricity from

renewable energy sources whose share of the previous year in general volume of the sale of electricity from all alternative energy sources was more than 15 percent. Herewith, participation in the auction is obligatory for the following wind generation projects:

- from 2020 to 2022 – for projects with a capacity exceeding 20 MW;
- from 2023 – for projects with a capacity exceeding 3 MW (*including for a project consisting of one wind turbine, regardless of the installed capacity of the wind turbine*).

The predictability of this support scheme is achievable through approval by the Cabinet of Ministers of Ukraine no later than 1 December of annual support quotas for the next five years. The annual support quota will include shares for separate RES segments: sun, wind and other sources. Nevertheless, the Guaranteed Buyer will be responsible for organizing and holding the auctions.

It should be noted that auctions would be held twice a year, but no later than 1 April and 1 October of the respective year. It is also provided for that auctions will be held until 31 December 2029.

To participate in auctions, future RES producers are obliged to provide:

- irrevocable bank guarantee of EUR 5,000 per 1 MW;
- documents confirming the right of ownership or the lease right to the land plot;
- grid connection agreement;
- information about the ultimate beneficiary owner.

Under the terms of the auction, participants must submit closed offers that contain a technical proposal (the intended amount of capacity subject to support) and a price offer (*price per 1 kilowatt hour of electricity*). During the auction, the simultaneous disclosure of proposals of all auction participants takes place. The main criterion for selecting the winner is price.

The most important guarantee for investors is fixing the auction price by transferring into euro on the date of the auction according to the official exchange rate of the National Bank of Ukraine on the specified date.

The winner of the auction and the guaranteed buyer are obliged no later than 10 business days from the date of announcement of the results of the auction to conclude a power purchase agreement between the guaranteed buyer and the economic entity that has acquired the right for support based on the results of the auction. The contract must stipulate the obligations of the winner of the auction regarding construction and commissioning of the RES object. For wind power plants, the construction period will be three years.

Despite the effectiveness of the proposed support scheme in the form of auctions, the feed-in tariff option will be available until 2030. However, from 2020, its size for wind generation will decrease by 10% with a further decrease of 1.5% each year during the subsequent three years.

At the same time, the auction price will be limited by the size of the feed-in tariff. However, the auction price will be provided for 20 years. Therefore, in comparison with the feed-in tariff until 2030, the auction support scheme is more attractive for investors.

UWEA expects that the second reading of the Draft Law No. 8449-d by the Verkhovna Rada of Ukraine will take place in the first half of 2019. However, the Draft Law could still be subject to substantial change until its final adoption in the second reading.

The main provisions of the Draft Law, which passed the first reading in the Parliament of Ukraine, feature in the table below.

Table 1.8.1. Main provisions of the Draft Law No. 8449-d

Issue	Provisions
AUCTIONS	
1. Date for introduction of the new renewables generation support system	1 January 2020.
2. Model of support	State support will be provided under the auction support scheme through guaranteed purchase of all electricity produced by the renewable energy source project within the limits of the quota purchased at the auction at the established fixed tariff.
3. Duration of fixed tariff support for the auction winner	20 years.
4. Size of the quota	Size of the yearly quota is adopted by the Cabinet of Ministers decision. The draft of this decision is prepared by the Ministry of Energy and Coal Industry of Ukraine based on a proposal from the Transmission system operator.
5. Principles for yearly quota formation	Yearly quota shall be split into 3 categories: <ul style="list-style-type: none"> • wind; • solar; • other types of RES technologies. Share of the quota of a category that was not allocated during auction can be (by a decision of the CMU) transferred to another category for allocation during the next auction.
6. Quota forward planning	The quotas will be established yearly for the next five years.
7. Auction model (design)	Single stage static sealed bid auction. Bidders will submit sealed bids that should contain a technical proposal (size of the capacity sought) and price proposal (price the bidder is ready to accept for 1 kWh of the generated electricity). The sealed bids will be opened simultaneously with the winning bids. The only criterion for selection of the winner is the lowest price.

Issue	Provisions
8. Auctions will be mandatory for	RES technology projects that (<i>according to the Regulator</i>) reached 15% in the total amount of electricity from RES sold during previous year (<i>e.g., as of today only solar and wind technologies have reached the 15% threshold</i>) with the following capacity: <ul style="list-style-type: none"> • in 2020 – for wind above 20MW, and for other types of RES technologies above 10 MW; • in 2021 and 2022 – for wind above 20MW, and for other types of RES technologies above 5 MW; • from 2023 – for wind above 3MW or 1 wind turbine, for other RES technologies above 1 MW.
9. Eligible renewable energy technologies that can opt-in for auctions support scheme voluntarily	All types of RES technologies.
10. Pilot auctions	CMU to conduct pilot auction(s) within six months from the date the law becomes effective.
11. Platform for auctions	Ukraine's public procurement platform PROZORRO
12. Auction price	Auction price is fixed in EUR as of the date of the auction in accordance with the official exchange rate of National Bank of Ukraine.
13. Ensuring the competition at the auction	Competition is the mandatory requirement for the auction. The total capacity to be awarded to the winners as of the result of the auction cannot exceed 80% of the total capacity that all the bidders have requested in their bids for the auction.
14. Restrictions to prevent monopolisation of the market	The maximum share of the yearly quota that can be awarded to a single bidder (<i>including related parties</i>) cannot exceed 25% of the yearly quota (<i>i.e., in total as per two yearly auctions</i>).
15. Ceiling price for the auction	The green tariff rate for the respective technology at the date of the auction
16. Bank guarantee to participate in the auction	EUR 15,000 per 1 MW of capacity, which includes: <ul style="list-style-type: none"> • EUR 5,000 per 1 MW as a bid bond to participate in the auction; • EUR 10,000 per 1 MW to be provided on top in the case of winning the auction as the performance bond (<i>to ensure construction of the project</i>).
17. Pre-qualification requirements to the bidders in the auction	<ul style="list-style-type: none"> • proof of the land ownership / use rights; • grid connection agreement.
18. Contract set-up	PPA with the Guaranteed Buyer, whereby the latter is obliged to buy the electricity from the winner of the auctions at the auction price. Payment terms – full settlement for the month of delivery (<i>M</i>) by the twentieth day of the month following the month of delivery (<i>M+1</i>).
19. Dispute resolution under PPA	Upon the application of the auction winner, which is a company with foreign investments (<i>foreign shareholding in charter capital of such company are equal or above 10%</i>), the disputes under the PPA shall be resolved in international commercial arbitration court. However, it is not clear whether such international commercial arbitration court would be a domestic one (<i>e.g., International Commercial Arbitration Court under Ukrainian Chamber of Commerce and Industry</i>), or a foreign one.
GREEN TARIFF	
20. Green tariff support for already commissioned projects	Until 1 January 2030.
21. Green tariff support system can be still used by	Projects of any capacity and type of RES technology that have been commissioned before 2020. Projects of any capacity and any type of RES technology that have executed pre-PPA by 31 December 2019, provided the project company has: <ul style="list-style-type: none"> • land lease or land purchase agreement; • agreement for grid connection; • permit for construction of the power plant for CC2-CC3 projects, or declaration for CC1 projects. Conditions for obtaining the green tariff in such case – commissioning of the power plant within two years from the date of a pre-PPA for solar power plants, three years – for other types of RES. The green tariff rate should be determined per the date of commissioning. Any projects for which auctions are not mandatory.

Issue	Provisions
22. Decrease of the green tariff rate for new solar and wind projects	<ul style="list-style-type: none"> Solar tariff to be decreased for projects commissioned in 2020 by 25% with further yearly decreases of approximately 3.5% for projects commissioned each next year for the next three years (<i>i.e. by 2023 inclusively</i>). Wind tariff to be decreased for projects commissioned in 2020 by 10% (<i>as had been planned in the current law</i>) with a further decrease of approximately 1.9% for projects commissioned each year for the next three years (<i>i.e. by 2023 inclusively</i>).
23. Green tariff rate decrease for other new RES technology projects (<i>biomass, biogas, HPP, geothermal</i>)	As planned in the current law – for projects commissioned after 2020 a decrease by 10% and another decrease of 10% for projects commissioned after 2025.
24. Green tariff bonus for local content	Allow local content bonus to apply to the auction price for power plants commissioned before 2025. Rate of the bonus 5-10% as per the current version of the law.
25. Responsibility for imbalances	<p>Full balancing responsibility will apply to RES projects that:</p> <ul style="list-style-type: none"> obtained support through auctions that will be performed after the intraday market will have been considered liquid (<i>but no later than 2024</i>); and RES projects that have green tariff support and will be commissioned starting 1 January 2024.
26. Simplified green tariff granting procedure (<i>without generation licence</i>):	<p>Applies in the following cases:</p> <p>For small wind and solar installations of up to 50 kW (<i>currently 30 kW</i>). PPA of those projects will be with the supplier of Universal Services (<i>currently a special company that was created during unbundling of the regional distribution system operator</i>).</p> <p>For solar installations from 50 kW and up to 500 kW, provided they are installed on rooftops, facades of capital buildings or structures. Single tariff for all generators of this kind. PPA for these projects will be with the Guaranteed Buyer.</p>
TECHNICAL CONDITIONS	
27. Technical conditions for grid connection	<p>The technical conditions for grid connection will now have expiry terms:</p> <ul style="list-style-type: none"> TCs held by the winners of the auction are valid for the period those winners are required to build the projects. By default – two years (<i>solar</i>) and three years (<i>all other types of RES technologies</i>), with the potential right to extend them (<i>and commissioning deadline</i>) up to one year, provided that the bank guarantee of EUR 30,000 per 1MW is provided by the winner. TCs issued more than two years before this law becomes effective will remain valid if the project has a construction permit (<i>for CC2-CC3 projects</i>) or a registered declaration on commencement of construction works (<i>for CC1 projects</i>): <ul style="list-style-type: none"> for solar – one year; for all other types of RES technologies – two years from the effective date of the Draft law. <p>Otherwise, such “old” TCs will be automatically terminated on the effective date of the Draft Law.</p> <ul style="list-style-type: none"> TCs issued less than two years before the Draft Law becomes effective will remain valid: <ul style="list-style-type: none"> for solar – two years from the effective date of this law; for all other types of RES technologies – three years from the effective date of this law.

1.9. NEW WIND TURBINE MODEL MANUFACTURED IN UKRAINE

In 2018, the Kramatorsky Plant Fuhrlaender Windtechnology LLC increased the nominal power rating of its 3 MW platform and offered the market the newest, most powerful onshore wind turbine.

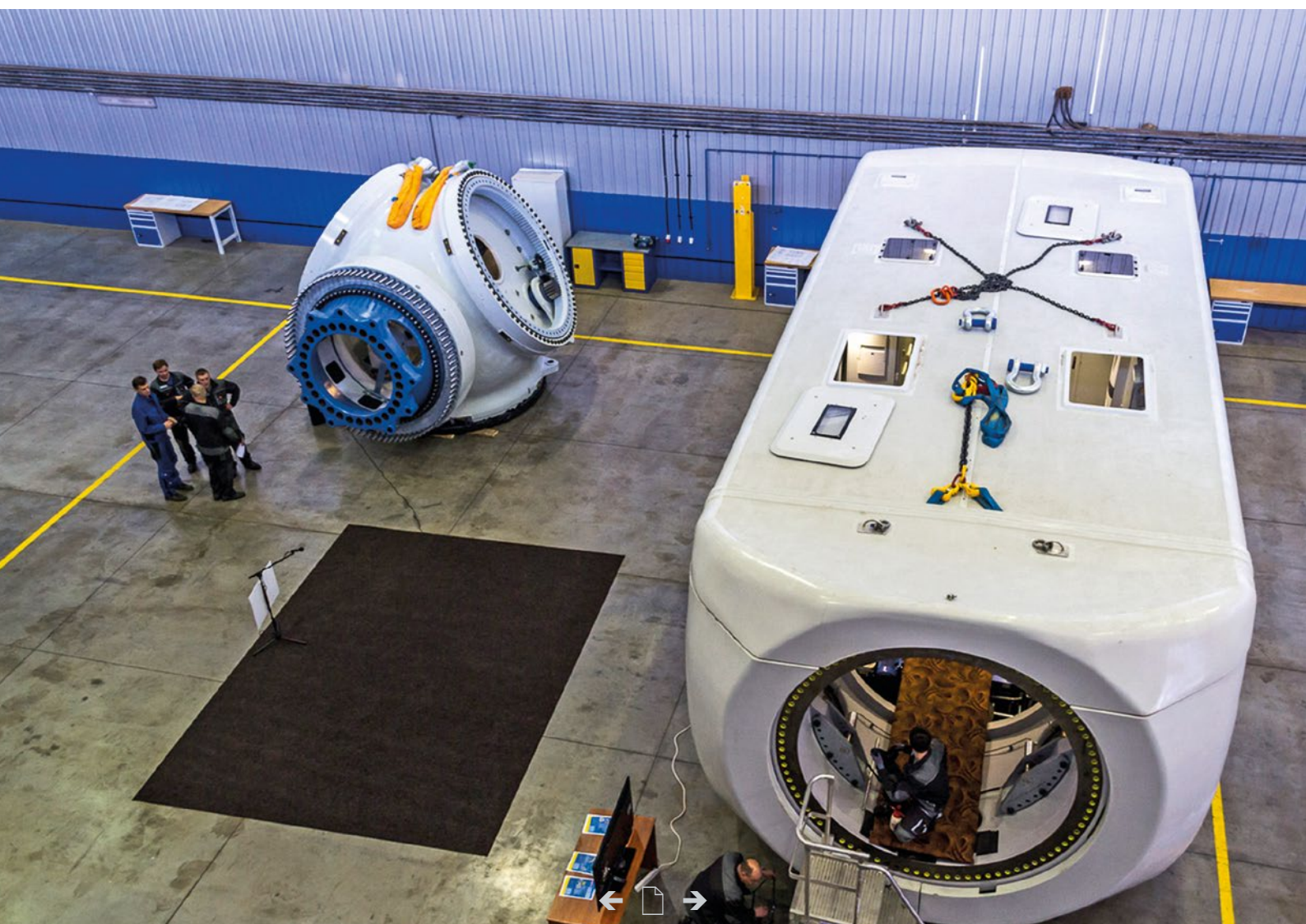
This model is designed in accordance with the latest European standards and meets the requirements of IEC 61400-1 and the IEC 3a wind class and is suitable for powering new generation turbines from 4.5 MW up to 7 MW and hub heights from 100 m up to 140 m in accordance with the tower configuration. Other technical parameters of the model include: rotor diameter – 151 m, cut-in wind speed – 3.0 m/s, temperature regime – from -20°C to +40°C.

The drive contains a spherical roller bearing, roller and three-speed gearbox. The energy conversion

system is equipped with an asynchronous doubly fed induction generator (*DFIG*) and a partial conversion system for use with a frequency of 50 Hz.

More than 15 Ukrainian enterprises will be involved in the production cycle of the 4.5 MW wind turbines, while the total localization will reach 70%. At the same time, it should be mentioned that this wind turbine will feature a gondola frame as a steel casting and the rotor shaft as a steel forging also produced in Ukraine for the first time.

In general, in 2019, Fuhrlaender Windtechnology LLC plans to install 10 wind turbines of 4.5 MW unit capacity. The first wind turbine is scheduled for installation at the ATOMWIND-Kramatorsk WPP already in March.



1.10. DEVELOPMENT OF WIND POWER CAPACITIES IN 2018



Ukraine installed 67,8 MW of additional wind power capacities in 2018, marking the best year on annual installations over the last four years. All new wind additions were commissioned and awarded with green tariff.

The number of projects being under construction or ready for construction significantly increased by the end of the year. The geography of wind energy projects also expanded.

ZAPORIZHZHIA – A LEADING WIND POWER REGION IN UKRAINE

Zaporizhzhia region remains its leading position in cumulative installed wind power capacity. 200 MW Botievska Wind Power Plant owned and operated by DTEK RENEWABLES is the largest wind farm in Ukraine. Each year of farm's operation reduces pollutant emissions by approximately 730 thousand tons of CO₂; this equals to emissions from 365 000 of cars each year.

During the past year, a number of contracts with cumulative capacity of 300 MW were concluded between DTEK RENEWABLES and the leading global wind turbines manufacturers to supply equipment for wind projects implemented by the company. In particular, contracts were signed with GE Wind Energy GmbH for the supply of wind equipment for Phase I and Phase II of Prymorska wind farm totaling 200 MW. Site work is underway on new project sites. As of the end of 2018, 7 wind turbines were installed at 100 MW Prymorska WPP. Commissioning of both phases of Prymorska WPP is scheduled for 2019.

At the end of the year, DTEK RENEWABLES also concluded an agreement with Danish company Vestas to construct 100 MW Orlyvska Wind Power Plant. This is the fourth wind project being developed by DTEK RENEWABLES. When project is implemented, the company will have 500 MW of wind power assets under operation.



NEW WIND TURBINES IN MYKOLAIV REGION

In 2018, Management Company Wind Parks of Ukraine LLC continued the implementation of the project on construction and operation Wind Park Prychornomorskyi which includes three wind power plants, namely: Ochakivska, Lymanska and Tuzlivska. Another 7 wind turbines manufactured in Ukraine with cumulative capacity of 21.7 MW were grid-connected last year. The wind turbines generate and supply clean electricity to the UES of Ukraine under green tariff. The total capacity of the WPPs operated by the Management Company Wind Parks of Ukraine LLC Wind Parks of Ukraine is equal to 240.2 MW including 25 MW located on the Crimean peninsula (*at the time of writing this report*).

CONSTRUCTION OF NEW WIND FARMS IN KHERSON REGION CONTINUES

In January 2018, the first phase of the Novotroitska WPP composing of 12 V126 – 3.65 MW wind turbines manufactured by Vestas was commissioned. In January 2019, at the time of writing this report, Vindkraft Tavria LLC, a company which implements the project, put into operation another 8 wind turbines with a total capacity of 28.8 MW.

On 29 October 2018, installation of the first wind turbine V136 with unit capacity of 3.65 MW was completed at the Overyanivska wind power plant. The project has been implemented by Vindkraft Ukraina LLC in the southern part of Kherson Region. This modern wind turbine of the Danish origin has the largest rotor diameter among wind turbines ever installed in Ukraine – 136 m, while the length of each blade is 66.7 m.

A total of 19 wind turbines will be installed at the Overyanivska WPP site. 266 million kWh of electricity is expected to be generated, enough to supply 44,300 households with environmentally sound electricity. In addition, it will save annually 264 thousand tons of CO₂ emission.





THE FIRST WIND PROJECTS IN TERNOPIL REGION

In November 2018, the first phase of 4 MW Bio-energoprodukt wind power plant was commissioned in Pavliv village, Ternopil Region. Two wind turbines E-70, hub height – 65 m, produced by the German company ENERCON, one of the world wind turbine leaders were installed on the territory of the Kuryanivska village council. The contractor was the Bio-energoprodukt LLC.

Installation of these two wind turbines with unit capacity of 2 MW each, was done by Wind Energy LLC, a member of the UWEA. Four more wind turbines are planned for installation at the project site in 2019.

In addition, two Vestas wind turbines V47 totaling 1,32 MW were installed at the territory of Zborivsky poultry farm in the city of Zboriv, Ternopil Region. It is expected that the project will generate at least 2.5 million kW of electricity, which is much more the company's electricity consumption. Therefore, Zboriv residents will be able to consume electricity generated by wind turbines as well.

According to the head of the Zborivskyi District, Igor Yavorsky: "Today, wind power plant is one of the most advantageous alternative for energy generation. They require little space, naturally incorporated in the landscaping, perfectly combined with other commercial activities. In addition, wind unlike fossil fuels is inexhaustible".

ODESA REGION TURNS TO WIND ENERGY

Given the number of projects announced during the past year, Odesa region has become one of the leaders in wind energy development in Ukraine. Overall, new projects with a total capacity exceeding 750 MW were announced in the region.

Regional and local authorities support wind development in Odesa region. A good example is signing the Memorandum of Cooperation between the Odesa Regional State Administration and two Ukrainian wind power companies, namely Ukraine Power Resources and Yuzhne Energy on 23 June 2018. The company with American investors is planning to construct 120 MW Wind farm, while a developer from Lithuania – 72 MW wind farm. 270 million EUR will be invested in both wind projects.

In the autumn, construction of the Phase I of Ovid Wind 1 WPP with installed capacity of 32.4 MW was completed in Ovidiopolsky District. This project is implemented by the Turkish company Güriş İnşaat ve Mühendislik A.Ş., a division of Güriş Holding Co. Inc. In total, 9 wind turbines produced by GE Renewable Energy, GE 3.6-131 with unit capacity of 3.6 MW, hub height – 131 m, were installed on the project site. WPP commissioning is expected in the first quarter of 2019.



As of December 31, 2018 the total installed capacity of the Ukrainian national wind energy sector amounts to 620.6 MW, including 532.8 MW located on the mainland of Ukraine including 138 MW loca-

ted in the temporarily occupied and uncontrolled territories in the Luhansk and Donetsk regions. The installed capacity of WPPs in the Crimea has remained unchanged and is the same as in 2013 – 87.8 MW.

Table 1.10.1. Wind Power Plants that supply electricity at the green tariff, 31 December 2018

# #	Wind Power Plant	Wind Power Plant Operator / Owner	Installed capacity, MW	Number & model of WTG	WPP status
MYKOLAIV REGION					
1	Wind Park Ochakivskiyi	Management Company Wind Parks of Ukraine LLC	49.1	19 x 2.5 MW WTU2.5 2 x 3.3 MW WTU3.3	in operation
2	Wind Park Blagodatnyi	Management Company Wind Parks of Ukraine LLC	5.0	2 x 2.5 MW WTU2.5	in operation
3	Wind Park Prychornomorskyi	Management Company Wind Parks of Ukraine LLC	23.1	3 x 2.5 MW WTU2.5 2 x 3.0 MW WTU3.0 3 x 3.2 MW WTU3.2	in operation
LUHANSK REGION					
4	Wind Park Krasnodonskyi	Management Company Wind Parks of Ukraine LLC	25	10 x 2.5 MW Fuhrlaender FL2500-100	located in the temporarily occupied and uncontrolled territories, do not supply electricity to the Power System of Ukraine
5	Wind Park Lutuginskyi	Management Company Wind Parks of Ukraine LLC	25	10 x 2.5 MW Fuhrlaender FL2500-100	located in the temporarily occupied and uncontrolled territories, do not supply electricity to the Power System of Ukraine
DONETSK REGION					
6	Wind Park Novoazovskiyi	Managemnet Company Wind Parks of Ukraine LLC	57.5	23 x 2.5 MW Fuhrlaender FL2500-100	located in the temporarily occupied and uncontrolled territories, do not supply electricity to the Power System of Ukraine
7	Wind Power Plant Vetroenergoprom	Managemnet Company Wind Parks of Ukraine LLC	30.53	204 x 0.1075 MW USW56-100 6 x 0.6 MW Turbowinds T600-48 2 x 2.5 MW Fuhrlaender FL2500-100	located in the temporarily occupied and uncontrolled territories, do not supply electricity to the Power System of Ukraine

#	Wind Power Plant	Wind Power Plant Operator / Owner	Installed capacity, MW	Number & model of WTG	WPP status
KHERSON REGION					
8	Novorosiiska WPP	Vindkraft Tavria LLC	9.225	3 x 3.075 MW VESTAS V112	in operation
9	Stavky WPP	Vindkraft Tavria LLC	9.225	3 x 3.075 MW VESTAS V112	in operation
10	Beregova WPP	Vindkraft Tavria LLC	12.3	4 x 3.075 MW VESTAS V112	in operation
11	Novotroitska WPP First Phase	Vindkraft Tavria LLC	43.8	12 x 3.65 MW VESTAS V126	in operation
12	Syvaska WPP	Syvashenergoprom LLC	2.92	16 x 0.1075 MW USW56-100 2 x 0.6 MW Turbowinds T600-48	in operation
ZAPORIZHZHIA REGION					
13	Botievaska WPP	Wind Power (DTEK) LLC	199.875	65 x 3.075 MW VESTAS V112	in operation
LVIV REGION					
14	Staryi Sambir 1 WPP First phase	Eco-Optima LLC	6.6	2 x 3.3 MW VESTAS V112	in operation
	Second phase		6.6	2 x 3.3 MW VESTAS V112	
15	Staryi Sambir 2 WPP	Karpatskyi Viter LLC	20.7	6 x 3.45 MW VESTAS V136	in operation
KYIV REGION					
16	Bonus WTG	Production– Commercial Firm Ligena LLC	0.45	1 x 0.45 MW Bonus 450/37	in operation
IVANO-FRANKIVSK REGION					
17	Shevchenkove -1 WPP First Phase	Wind Energy LLC	0.6	1 x 0.6 MW NORDEX N43	in operation
TERNOPIIL REGION					
18	Zborivska WPP	Zborivska Poultry Firm LLC	1.32	2 x 660 kW Vestas V47	in operation
19	Bioenergoproduct WPP	Bioenergoproduct LLC	4.0	2 x 2.0 MW Enercon E70	in operation
TOTAL:			526.545 MW	407 WTGs	

Table 1.10.2. Wind Power Plants Located in the annexed Crimea territory, 31 December 2018

#	Wind Power Plant	WPP status	Installed capacity, MW	Number & model of WTG
1	Donuzlavskaja WPP	Nationalized by the occupation authorities	6.7725	63 x 0.1075 MW USW56-100
2	Sudakskaja WPP	Nationalized by the occupation authorities	3.7625	35 x 0.1075 MW USW56-100
3	Chornomorskaja WPP	Nationalized by the occupation authorities	1.2	2 x 0.6 MW Turbowinds T600-48
4	Presnovodninskaja WPP	Nationalized by the occupation authorities	7.39	52 x 0.1075 MW USW56-100
5	Sakskaja (Myrninskaja) WPP	Nationalized by the occupation authorities	18.4625	155 x 0.1075 MW USW56-100 3 x 0.6 MW Turbowinds T600-48
6	Vorobivskaja WPP	Nationalized by the occupation authorities	2.365	22 x 0.1075 MW USW56-100
7	Tarkhankutskaja WPP	Nationalized by the occupation authorities	20.05	127 x 0.1075 MW USW56-100 4 x 0.6 MW Turbowinds T600-48 2 x 2 MW UNISON
8	Eastern Crimea WPP	Nationalized by the occupation authorities	2.813	15 x 0.1075 MW USW56-100 2 x 0.6 MW Turbowinds T600-48
9	Wind Park Kerchenskiy	Managemnet Company Wind Parks of Ukraine LLC	25	10 x 2.5 MW Fuhrlaender FL2500-100
TOTAL:			87.81 MW	492 WTGs

1.11. FURTHER DEVELOPMENT OF WIND POWER SECTOR



According to the Ukrainian wind energy market survey conducted by UWEA experts, over 350 MW of new wind power capacities are planned to be commissioned in 2019 (*depending on the wind turbine delivery schedules and time when green tariff for electricity is awarded*) which will allow to reach about 880 MW of wind power capacity by the end of 2019 on the mainland of Ukraine.

In particular, the DTEK RENEWABLES portfolio of projects being under construction amounts to 300 MW.

Vindkraft Tavria and Vindkraft Ukraina plan to commission their two wind power plants in Kherson region by the end of 2019 – Novotroitska WPP and Overyanivska WPP correspondingly, with a total capacity of 140 MW. In addition, construction works at 163 MW Myrnenska WPP site have been started by Vindkraft Kalanchak LLC in Kherson Region.

The Management Company Wind Parks of Ukraine LLC continues construction of its Ochakivska WPP in Mykolayiv Region. In 2019, the compa-

ny plans to install wind turbines of 3.5 – 4.5 MW unit capacities totalling 49.1 MW on the sites of the Prychornomorskyi, Ochakivskyi and Pivdennyi wind power plants in Mykolaiv Region, as well as 3 wind turbines with unit capacity of 4.5 MW near the town of Kramatorsk in Donetsk region.

SYVASHENERGOPROM LLC that operates 2.92 MW Syvaska WPP in Kherson region is currently developing its substantial expansion to 250 MW. On 23 January 2019, at World Economic Forum in Davos, Switzerland, an agreement was signed between the Norwegian company NBT, the French company Total Eren and the European Bank for Reconstruction and Development to finance the Syvaska wind power plant project. The start of construction is preliminary planned for 2019.

The Turkish company Gürış İnşaat ve Mühendislik A.Ş. (*Gürış Holding Co. Inc.*) completed the construction of the 32.4 MW Ovid Wind WPP in Odessa Region. Its official opening is scheduled for the first quarter of 2019.

Overall, **893.31MW** of wind capacities are under construction in Ukraine, as of December 31, 2018. In addition, there are **3,330 MW** wind power projects at different development stages in ten regions of Ukraine.

The UWEA expects further steady growth of wind power capacities in Ukraine in the next two years. First of all, new wind energy projects will be developed in such regions as Zaporizhzhia, Kherson, Mykolaiv, Odesa, Lviv, Ivano-Frankivsk, Zhytomyr and Ternopil.

Table 1.11.1. Wind Power Plants under construction, 31 December 2018

#	Wind Power Plant	Wind Power Plant Operator / Owner	Installed capacity, MW	Number & model of WTG
MYKOLAIV REGION				
1	Wind Park Prychornomorskyi	Management Company Wind Parks of Ukraine LLC	10.1	2 x 3.3 MW WTU3.3 1 x 3.5 MW WTU3.5
2	Wind Park Ochakovskiy	Management Company Wind Parks of Ukraine LLC	18.5	4 x 3.5 MW WTU3.5 1 x 4.5 MW WTU4.5
3	Wind Park Pivdennyi	Management Company Wind Parks of Ukraine LLC	7.0	2 x 3.5 MW WTU3.5
DONETSK REGION				
4	AtomWind-Kramatorsk (1-3 start-up complexes)	Managemnet Company Wind Parks of Ukraine LLC	13.5	3 x 4.5 MW WTU4.5
ZAPORIZHZHIA REGION				
5	Orlivska WPP	ORLIVSKA WIND POWER PLANT LLC	100.0	26 x 3.8 MW VESTAS 3,8-V126
6	Prymorska WPP	PRYMORSKA WIND POWER PLANT LLC	100.0	26 x 3.8 MW GE 3,8-130
7	Prymorska WPP-2	PRYMORSKA WIND POWER PLANT – 2 LLC	100.0	26 x 3.8 MW GE 3,8-137
KHERSON REGION				
8	Overyanivska WPP	Vindkraft Ukraina LLC	69.35	19 x 3.65 MW VESTAS V136
9	Novotroitska WPP	Vindkraft Tavria LLC	29.2	8 x 3.65 MW VESTAS V126
10	Myrnenska WPP	Vindkraft Kalanchalk LLC	163.0	39 x 4.2 MW VESTAS V150
11	Syvaska WPP	Syvashenergoprom LLC	249.6	64 x 3.9 MW WTGs N131-3.9
ODESA REGION				
12	Ovid Wind WPP	Guris Holding Co. Inc.	32.4	9 x 3.6 MW GE 3.6-131
TERNOPIIL REGION				
13	Zborivska WPP – 2	Zborivska Poultry Firm LLC	0.66	1 x 0.66 MW VESTAS V47
TOTAL			893.31 MW	231 WTGs

Table 1.11.2. Wind Power Plants under development, 31 December 2018

# #	Wind Power Plant	Wind Power Plant Operator / Owner	Planned capacity, MW	Number & model of WTC
MYKOLAIV REGION				
1	Wind Park Mykolaivskiy	Management Company Wind Parks of Ukraine LLC	9.0	2 x 4.5 MW WTU4.5
2	Wind Park Blagodatnyi	Management Company Wind Parks of Ukraine LLC	4.5	1 x 4.5 MW WTU4.5
3	Wind Park Shchaslyvyi	Management Company Wind Parks of Ukraine LLC	4.5	1 x 4.5 MW WTU4.5
4	Pivdenno-Ukrainska WPP	Pivdenno-Ukrainska Wind Power Plant LLC	300.0	n/a
IVANO-FRANKIVSK REGION				
5	Dolynska WPP	Alternativna Energetyka Prykarpattia LLC	50.0	n/a
6	Pereginska WPP	MNG Vitry Karpat LLC	110.4	n/a
7	Pereginska WPP (Rozhniativskiy region)	Clear Energy Ivano-Frankivsk LLC	50.4	12 x 4.2 MW VESTAS V150
8	Prykarpatska WPP	WPP Prykarpattya LLC	25.2	7 x 3.6 MW Siemens SWT-120
9	Wind Park Kuriany	Wind Energy LLC	13.0	n/a
10	Shevchenkove-1 WPP	Wind Energy LLC	6.4	NORDEX N43
ZAKARPATSKA REGION				
11	Volovetska WPP	Atlas Volovets Energy LLC	120.0	n/a
ZAPORIZHZHIA REGION				
12	Kamianska WPP	Ukrainian Wind Group LLC	63.0	n/a
13	Azovska WPP	Azovinvestprom LLC	42.5	n/a
14	Wind Park Eurocape Ukraine	EuroCape Ukraine I LLC	500.0	141 (including: 62 x 3.6 MW 137 GE. 16 x 3.45 MW V 112. 63 x 3.45 MW V126)
KYIV REGION				
15	Wind Park Poliskyi (first phase)	Wind Parks of Ukraine LLC	4.5	1 x 4.5 MW WTU4.5
ZHYTOMYR REGION				
16	Wind Park Ovruch	Wind Solar Energy LLC	25.2	n/a
17	Wind Park Lisna – 1	Wind Solar Energy LLC	96.0	n/a
18	Wind Park Lisna - 2	Wind Solar Energy LLC	66.0	n/a
LVIV REGION				
19	IG Synergy UA 1 WPP	IG Synergy UA 1 LLC	14.0	n/a
20	YAROM-6 WPP	YAROM-6 LLC	6.6	n/a
21	YAROM WPP	YAROM LLC	7.0	n/a
22	YAROM-1 WPP	YAROM-1 LLC	10.0	n/a
23	YAROM-4 WPP	YAROM-4 LLC	18.0	n/a
24	Wind Power GSI WPP	Wind Power GSI LLC	50.0	n/a
25	Ferozit Wind Energy WPP	Ferozit Wind Energy LLC	15	n/a
26	Sokalska WPP	Sokalskyi Wind Park LLC	39.6	11 x 3.6 MW VESTAS V126-3.6
27	Skolivska WPP	Atlas Global Energy LLC	60.0	NORDEX 4000 TS-125
28	Skolivska WPP	Orivska WPP LLC	49.4	13 x 3.8 MW VESTAS V136-3.8
29	Wind Park Verblyanskyi	Wind Power GSI LLC	30.0	n/a
30	Wind Park Zaluzkyi	Wind Power GSI LLC	70.0	n/a

#	Wind Power Plant	Wind Power Plant Operator / Owner	Planned capacity, MW	Number & model of WTG
KHERSON REGION				
31	Chaplynska WPP	Vindkraft Kalanchak LLC	300.0	VESTAS
32	Kalanchakaska WPP	Vindkraft Kalanchak LLC	300.0	VESTAS
33	Dnipro-Buzka WPP	Dnipro-Buzka Wind Power Plant LLC	110.0	n/a
ODESA REGION				
34	Ovidiopol Energy WPP	Ovidiopol Energy LLC	120.0	n/a
35	Roksolanivska WPP	Ovid Wind II LLC	57.6	NORDEX
36	Ovid Wind III WPP	Ovid Wind III LLC	91.0	NORDEX
37	Lymanska WPP	Lymanska Wind Power Plant LLC	90.0	GE
38	Lymanska WPP 2	Lymanska Wind Power Plant 2 LLC	40.0	GE
39	Yuzhne Energy WPP	Yuzhne Energy LLC	76.5	17 x 4,5 MW NORDEX
40	Dnistrovska WPP	Dnistrovska Wind Power Plant LLC	150.0	GE
41	Baltska WPP	GABRYS LLC	25.0	n/a
42	Artsyzska WPP	Artsyzska WPP LLC	33.0	10 x 3.3 MW GE
43	Kiliyska WPP	Kiliyska WPP LLC	16.5	5 x 3.3 MW GE
44	Suvorovska WPP	Suvorovska WPP LLC	19.8	6 x 3.3 MW GE
45	Izmailska WPP	Izmailovska WPP LLC	36.3	11 x 3.3 MW GE
CHERKASY REGION				
46	Kanivska WPP	Managemnet Company Wind Parks of Ukraine LLC	4.5	1 x 4.5 MW WTU4.5
TOTAL			3330.4 MW	231 WTGs

WIND POWER LEGISLATION IN 2018



2.1. LEGISLATION CHANGES

2.1.1. CHANGES IN LEGISLATION

In general, legislative changes in 2018 can be characterised as favourable for wind power sector. First of all development of wind power plants was simplified by law On Amendments of Certain Legislative Acts of Ukraine (*in Relation to Investment Attractiveness of Construction of Renewable Energy Objects*) No. 2517-VIII dated 4 September 2018 which relaxed regulatory requirements for construction of Renewable power plants and, for wind power plants in particular. Secondly, additional support was provided for RPPs by the law No. 2628-VIII On Amendment to the Tax Code and Certain Other Legal Acts of Ukraine in Relation to Improvement of Management and Revision of Certain Taxes dated 23 November 2018 which relaxed regulatory requirements to the land plots on which RPPs are located and exempted from Ukrainian VAT import of certain RPP equipment (*in particular wind generation units*).

The National Commission for State Regulation of Energy and Public Utilities Markets ("**Regulator**") was actively preparing for implementation of the liberalised electricity market in 2019 by adopting the necessary secondary legislation (*in particular, Transmission and Distribution System Codes by its Resolutions No. 309 and 310 dated 14 March 2018 and several other Codes and Market Rules as described below*).

The Regulator by its Resolution No. 1 dated 9 January 2018 also improved bankability of the power purchase agreement that is executed with operators of RPPs.

In addition, the Regulator significantly changed principles of calculation of connection fees for industrial consumers and power producers in December 2018 by adopting on 18 December 2018 the Methodology (*procedure*) for forming of fees for connection to transmission and distribution systems by its Resolution No. 1965 and rates for non-standard connection to the power grid for 2019 for all DSOs by its Resolution No. 2069 dated 28 December 2018.

2.1.2. PPA IMPROVEMENT

The PPA, under the current structure of electricity market in Ukraine, is concluded between RPP and State Enterprise Energorynok ("**Energorynok**"), which is currently responsible for the off-take of all electricity produced by RPPs. A template form of the power purchase agreement is approved by the Regulator with the Resolution No. 1314 dated 11 October 2012 (*the "Resolution No.1314"*).

Historically, the PPA provided for a very narrow scope of its provisions, limited mostly to the off-take of electricity and procedure of settlements. The PPA also did not provide for any additional guarantees of Energorynok to the RPP as to the purchase of RPP's electricity throughout the effective green tariff term (*i.e., until 2030*), or any liability for a failure to offtake and purchase such electricity, other than those explicitly provided by law.

However, in the beginning of 2018 the Regulator adopted Resolution No. 1 dated 9 January 2018 which amended the template PPA established by the Resolution No.1314 with the aim to improve bankability of the PPAs.

The most important improvements to the standard PPA that create a more favourable financing conditions for the renewable energy projects are as follows:

(a) Direct Agreement

A concept of direct agreement of lenders is now introduced, which is supposed to be an additional remedy for the lenders, but only to those being international financial institutions, international financial fund, international export credit agency, multilateral development bank or international development financial institution and providing financing for implementation of a RPP's RE project (*the "IFI-lenders"*), if an RPP breaches the PPA terms. Energorynok and an IFI-lender can agree directly, by entering into a separate (*direct*) agreement (*at any time prior to or during the term of the PPA*), that if Energorynok chooses to terminate the PPA due to RPP's breach, such termination shall not occur earlier than the expiry of 120 days after delivery of a termination notice to the IFI-lenders;

(b) Change in Law

It is now required that the parties shall introduce amendments to the PPA to preserve the original intent of the PPA if any of the following changes occurs:

- (i) decrease in, cancellation or suspension of, the green tariff or any change in the green tariff support mechanism (*payment algorithm*);
- (ii) cancellation or refusal to extend the validity, amendment of, or a material adverse change in, the conditions applicable to any governmental approval, license, permit or other regulatory instrument granted to the RPP (*other than due to a breach by RPP*);
- (iii) enactment, adoption, cancellation (*full or partial*) of or change in any effective law or regulation applicable to the electricity sector in Ukraine (*including the right to cancel the PPA*), change in the tax regime applicable to RPPs if such change affects the design, construction, operation or maintenance of the renewable power plant or RPPs' financial position ("**Change in Law**").

However, the RPP may resort to items (ii) and (iii) above only if such changes increase the RPP's costs by an aggregate amount exceeding 5% of the RPP's revenues from the sale of electricity for the preceding 12 months.

(c) Termination Payment

Termination payment that resembles a compensation of damages incurred by the RPP, resulting from the termination of the PPA by RPP due to any legal grounds provided by law or upon occurrence of any of the following:

- Energorynok's insolvency, liquidation, and/or dissolution, prior to the transfer of its obligations to the Guaranteed Buyer;
- Energorynok does not make a payment when due under the PPA and such failure is not remedied within 90 calendar days upon the request of the RPP;

- Energorynok breached any other material obligation and has not remedied the breach within 120 days after being notified by the RPP;
- Non-recognition and non-enforcement in Ukraine of a decision or an arbitral award issued in favour of RPP against Energorynok;
- A force-majeure event that exempts either party from performing its obligations under the PPA for 180 consecutive days or longer than 365 days in aggregate;
- One or more Changes in Law that increase the RPP's costs by an aggregate amount exceeding 10% of the RPP's revenues from the sale of electricity for the last 12 months;
- Energorynok and RPP do not agree upon mutually acceptable amendments to the PPA upon occurrence of the Change in Law.

The Termination Payment Amount shall include, at minimum (but is not limited to), the sum of:

- the outstanding principal amount (*and all accrued and unpaid interest and fees payable in connection therewith*) of the indebtedness of the RPP under the loan extended to the RPP by any international financial institution, international financial fund, international export credit agency, multilateral development bank or international development finance institution (*hereinafter the "Lender"*);
- all amounts payable by the RPP to hedging counterparties (*the "Swap Banks"*), including, without limitation, for interest rate and currency hedges in connection with the indebtedness owed to the Lenders;
- all other costs and losses incurred by the Lenders and the Swap Banks in connection with the termination of the Agreement. The said amount shall be reduced by the amounts (*if any*) received by the RPP (*but not its direct or indirect equity investors*) as compensation for any expropriation/nationalisation and/or as indemnity against losses from the respective public authority.

PLEASE NOTE THAT CURRENTLY ENERGORYNOK EXECUTES THE PREVIOUS VERSION OF THE PPA (AS AMENDED BY THE REGULATOR'S RESOLUTION NO. 1118 DATED 14 SEPTEMBER 2017) THAT DOES NOT INCLUDE CHANGES INTRODUCED BY THE REGULATOR'S RESOLUTION NO. 1 DATED 9 JANUARY 2018. MOREOVER, THE RESPECTIVE PROVISIONS HAVE NOT BEEN INCLUDED IN THE DRAFT PPA WITH THE NEW STATE-OWNED OFFTAKER (THE "GUARANTEED BUYER") THAT WILL BE REQUIRED BY THE LAW OF UKRAINE ON ELECTRICITY MARKET NO. 2019-VIII DATED 13 APRIL 2017 ("**ELECTRICITY MARKET LAW**") TO PURCHASE ELECTRICITY FROM POWER PRODUCERS HOLDING A GREEN TARIFF INSTEAD OF ENERGORYNOK AFTER IMPLEMENTATION OF THE NEW LIBERALISED ELECTRICITY MARKET ON 1 JULY 2019.

For your information we are also providing below the main characteristics of the PPA version that is currently being executed by Energorynok (version of PPA as amended by the Resolution No. 1118 dated 14 September 2017).

Table 2.1.2. Provisions of the PPA as amended by the Resolution No. 1118 dated 14 September 2017

Issue	Provisions
Parties	Energorynok and RPP
Possibility of Pre-PPA	Yes
Duration	Until 2030
Subject matter	Power Producer is obliged to sell and Energorynok is obliged to buy-out electricity produced by the Power Producer and to pay for it in accordance with the terms of PPA.
Determination of electricity value	Actual amount of electricity bought by Energorynok multiplied by the green tariff rate.
Electricity amount determination	Determined in accordance with the hourly data received from the automated system for commercial metering of electricity ("ASCAPC").
Deemed electricity concept	No
Payment	Transfer to the bank account of the Power Producer no later than 15 day of the month following the accounting month.
Payment security from Energorynok	No payment security from Energorynok
No payment security from Energorynok	Rights: <ul style="list-style-type: none"> • receive the payment for electricity sold. Obligations: <ul style="list-style-type: none"> • perform generation and sale of electricity to Energorynok • provide Energorynok with all information and data required by the legislation and the PPA • use digital signatures in communication when required by Energorynok • comply with the requirements of Ukrenergo regarding operational and dispatching control during parallel operation within Unified Power System of Ukraine • notify Energorynok regarding changes to its tax treatment scheme • not to disclose provisions of the PPA to third parties.
Rights and obligations of Energorynok	Rights: <ul style="list-style-type: none"> • request from the Power Producer to sell electricity of the proper quality in compliance with the forecasted load curve and dispatching commands. Obligations: <ul style="list-style-type: none"> • purchase electricity and pay for it on time in accordance with the PPA • pay for the actually delivered amount of electricity to Energorynok • not to disclose provisions of the PPA to third parties
Liability of the parties	Power Producer is liable for: <ul style="list-style-type: none"> • incompliance with time frames and scope of data to be provided under the PPA • arranging for operation of ASCAPC in accordance with the requirements of the legislation. Energorynok is liable for payment to Power Producer in accordance with the algorithm established by legislation. <p>In case of violation, Energorynok pays default interest in the amount of 0.2% of the non-performed payment in accordance with the algorithm (<i>but not more than the double NBU discount rate valid as of the date of such settlement</i>) for each day of delay but no more than for 30 days. Additional fine of UA 100 is charged, if the delay exceeds 30 days.</p>
Issues related to change of control (<i>change of control clause</i>)	No
Restrictions on financing of RPP (<i>including refinancing and bonds issuance</i>)	No

Issue	Provisions
Assignment	Assignment of rights and obligations under the PPA is possible only upon consent of another party. Power Producer for the purpose of financing can cede, pledge, encumber, delegate, transfer and/or assign monetary funds that are paid to it by Energorynok. Energorynok can transfer its right, obligations and liabilities under the PPA to the Guaranteed Buyer.
Step-in-rights	No
Force majeure	<p>Force majeure includes:</p> <ul style="list-style-type: none"> • threat of war, armed conflict or serious threat of such conflict, including but not limited to hostile assaults, military embargoes, acts of foreign enemy, full military mobilisation, military action, declared and undeclared war, action of a public enemy, disturbance, acts of terrorism, diversion, piracy, disorders, invasion, blockade, revolution, coup, insurrection, mass unrest, curfew restrictions, expropriation, forcible withdrawal • taking of enterprises, requisition, civil demonstration, strike, emergency, unlawful actions of third parties, fire, explosion, long disruptions in the operation of transport authorised by relevant decisions and acts issued by state authorities, closures of sea straits, embargoes, export/import bans (<i>restrictions</i>), etc. • events caused by exceptional weather conditions and natural disasters, in particular: epidemic, severe gale, cyclone, hurricane, tornado, storm, flood, snowdrifts, bare ice, hail, freezing weather, freezing of the sea, straits, ports, mountain passes, earthquake, lightning, fire, draught, subsidence and landslide, other natural calamities which make it impossible for one of the parties to fulfil its obligations under the PPA. <p>Force majeure must be certified by the relevant certificate from the Chamber of Commerce and Industry of Ukraine.</p>
Obligation of Guaranteed Buyer to pay during force majeure	Energorynok is not obliged to pay during force majeure
Governing law	Ukrainian
Dispute resolution	<p>The Parties may request the Dispute Resolution and Negotiation Centre of the Energy Community Secretariat to facilitate amicable resolution of disputes and discrepancies. All disputes and discrepancies arising out of or in connection with PPA are referred to Ukrainian Commercial Courts.</p> <p>The PPA also states that all disputes and discrepancies arising out of or in connection with PPA may be referred to arbitration in accordance with the Rules of Arbitration of the International Chamber of Commerce (<i>ICC</i>).</p> <p>Initiation of the arbitral proceedings by any party of the PPA shall be regarded as exclusion of jurisdiction of commercial courts of Ukraine over the same dispute.</p> <p>Dispute resolution provisions are not clearly worded:</p> <ul style="list-style-type: none"> • Exclusion of jurisdiction of Ukrainian courts by entering into arbitration agreement is not enforceable under Ukrainian law. • The court may also conclude that there is no express agreement of the parties to submit disputes arising out of the PPA exclusively to arbitration instead of a court, since under this version of the PPA all disputes and discrepancies arising out of or in connection with the PPA are referred to Ukrainian Commercial Courts, therefore, the arbitration agreement (<i>clause</i>) is invalid.
Waiver of sovereign immunity	No
Change in law clause	No change in law provision.
Grounds for termination	The PPA may be terminated by mutual consent of the Parties or by a court decision. Energorynok can also terminate the PPA, only if the generation license is cancelled.
Termination payment	No

2.1.3. APPROVAL OF SECONDARY LEGISLATION FOR IMPLEMENTATION OF THE NEW ELECTRICITY MARKET

On 14 March 2018 the Regulator adopted a number of important secondary legislative acts (*the “Secondary Legislation”*) to enable implementation of the new electricity market model set out by the Electricity Market Law (as described in below), namely:

- Market Rules (*Resolution No. 307*);
- Rules for the Day-Ahead Market and Intraday Market (*Resolution No. 308*);
- Retail Market Rules (*Resolution No. 312*);
- Power Transmission System Code (*Resolution No. 309*);
- Power Distribution System Code (*Resolution No. 310*); and
- Code for Commercial Accounting (*Resolution No. 311*).

Below we describe the areas of regulation covered by the adopted Secondary Legislation.

(a) Market Rules

The Market Rules regulate the following markets:

- the market of bilateral contracts – a market for “over the counter” bilateral electricity trading between power generators on the one hand and other market players (*mostly power suppliers*) on the other;
- the balancing market – a market for the sale and purchase of electricity, for balancing daily supply and demand and for handling any imbalances; and
- the market for ancillary services – a market for various types of energy and capacity products to meet the reliability requirements of the market players.

The Market Rules define the general rules for participation, work and settlement of payments between the respective submarkets’ participants, namely in relation to:

- market management system and its audit;
- bilateral contracts and their registration;
- accounting entries and registers;
- work of the balancing market;
- creation, registration and termination of the balancing groups;
- settlement of imbalances;
- ancillary services and their acquisition;
- settlement of payments and issuance of invoices;
- requirements for financial guarantees; and
- functioning of the market in case of an emergency situation with the Unified Power System of Ukraine.

The Market Rules also contain standard agreements for the provision of ancillary services, participation in the balancing market and the settlement of imbalances.

Market participants may initiate amendments to the Market Rules by submitting them to the transmission system operator, which must review the proposal and either forward it to the Regulator for consideration or return it to the market participant.

(b) DAM and IDM Market Rules

The sale of electricity on the DAM and IDM is carried out in accordance with the Rules for the Day-Ahead Market and Intraday Market (*the “DAM and IDM Market Rules”*).

DAM is based on a competitive pricing mechanism and is basically a bidding auction, which is held one day before the actual delivery of electricity. IDM allows market participants to update their trading positions, taking into account the existing supply and demand and current system conditions, as they approach real time. Both DAM and IDM are managed by the market operator, which accepts bids to sell or buy electricity and holds the auctions.

In particular, the DAM and IDM Market Rules define procedures for:

- functioning of DAM and IDM;
- DAM and IDM audit;
- participation in DAM and IDM;
- securing the obligations under bilateral agreements;
- organisation and performance of auctions;
- establishing prices;
- settlement of payments and payment to the market operator;
- disclosure of information;
- dispute resolution;
- functioning of DAM and IDM in case of an emergency situation with the Unified Power System of Ukraine.

The DAM and IDM Market Rules also provide templates of agreements for participation in DAM and IDM, agreements for the sale and purchase of electricity on DAM and IDM and applications for the sale and purchase of electricity. These documents serve as a basis for participation in the relevant submarkets.

Market participants may initiate amendments to the DAM and IDM Market Rules by submitting them to the market operator. The market operator reviews the submissions and forwards them, with its recommendations, to the Regulator for consideration.

(c) Retail Market Rules

The Retail Market Rules regulate the respective submarket on which electricity is traded between the power suppliers and the consumers. Thus, these rules are the baseline for the supply of electricity to the end consumers.

The Retail Market Rules establish the following:

- general conditions for the supply of electricity to the consumers;
- principles of contractual relations between the participants;
- rights and obligations of the participants;
- procedure for changing supplier;
- procedures for termination and resumption of electricity supply to the consumers;
- special conditions that apply to the suppliers of generic (“universal”) services (*i.e. the guaranteed supply of electricity to households and small non-household consumers*) and the “last resort” suppliers;
- settlement of payments;
- disclosure of information;
- rules for identification of distribution points; and
- accounting of the supplied electricity.

The Retail Market Rules, among others, also introduce standard template agreements for the supply of electricity to the consumers, the supply of electricity by the suppliers of generic services and “last resort” suppliers and for the provision of electricity transmission (*distribution*) services to the suppliers and the consumers.

(d) Code for Commercial Accounting

The functioning of the new electricity market would not be possible without regulation of basic technical matters and commercial accounting principles.

Commercial accounting (*collection, and processing, of information regarding generated, transmitted, distributed, imported/exported and consumed electricity*) is organised and managed by the administrator of commercial accounting and is performed by the suppliers of the respective services in accordance with the Code for Commercial Accounting.

The Code for Commercial Accounting defines the following:

- requirements for the organisation of commercial accounting, including technical aspects;
- rights and obligations of the participants of the electricity market, administrator and suppliers of commercial accounting services, as well as their liability;
- procedure for obtaining and gathering reliable and precise data;
- procedures for the registration and functioning of commercial accounting service suppliers, points of commercial accounting and automatic systems for the commercial accounting of electricity; and
- dispute resolution.

Amendments to the Code for Commercial Accounting may be initiated by any interested party submitting them to the administrator of commercial accounting. The administrator reviews the submissions and forwards them, with its recommendations, to the Regulator for consideration.

(e) Power Transmission System and Power Distribution System Codes

The Power Transmission System Code and the Power Distribution System Code regulate relations between transmission system and distribution system operators and users of the respective systems. The codes are based on the principle of unbundling of electricity production, transmission and distribution activities.

These codes regulate operation and development of the respective transmission (*main high-voltage power grid, including transit power lines*) and distribution (*local, lower voltage power networks*) systems, in particular:

- functioning of power transmission and distribution systems;
- conditions and procedures for access and connection to the power transmission and distribution systems;
- provision of ancillary services (*various services for the stable and reliable operation of the unified energy system of Ukraine and ensuring electricity quality in accordance with established standards*);
- procedures for management and usage of the power transmission and distribution systems in normal and emergency situations;
- standards of operational safety;
- criterion for operational control of generating and cross-border capacities;
- conditions for providing priority for objects generating electricity from alternative energy sources; and
- dispute resolution procedures.

Electricity market participants may initiate amendments to the Power Distribution System Code by submitting their proposals directly to the Regulator. As for the Power Transmission System Code, proposals may be submitted either to the Regulator or the TSO.

The codes also include various templates, including applications, agreements and technical conditions for connection with the power transmission and distribution systems.

2.1.4. UKRAINE SIMPLIFIES PROCEDURES FOR CONSTRUCTION OF RENEWABLE POWER PLANTS

The Ukrainian parliament passed the law “On Amendments of Certain Legislative Acts of Ukraine (in Relation to Investment Attractiveness of Construction of Renewable Energy Objects)” No. 2517-VIII dated 4 September 2018 (the “RPP Development Law”) which will simplify construction of the RPPs in Ukraine.

All constructions are classified in Ukraine at the designing stage in three consequence classes: objects with insignificant (CC1), medium (CC2), and significant (CC3) consequences. Ukrainian law has different regulatory requirements for each consequence class. For example, as opposed to CC2 and CC3 objects, CC1 objects:

- usually are exempt from expert examination of design documentation (except for certain WPPs as described below);
- follow simpler permitting procedures and submit a notification on commencement of construction works (prior to commencement of the construction) and a declaration of readiness of the object for operation (after completion of the construction) instead of obtaining construction permit (prior to commencement of the construction) and commissioning certificate (after completion of the construction);
- are allowed to be constructed by contractors who do not have construction licenses.

The RPP Development Law lowers the threshold for classification of construction projects so that they can be considered as CC1 objects.

In particular, the New Law changes one of the main requirements for classification – the amount of material and social damages that can be caused by the breakdown of the object that is classified. At the moment, for a construction project to be classified as CC1 object, the outlay must not exceed 2,500 statutory minimal wages (currently UAH 10,432,500 or approximately EUR 336,530).

Under the RPP Development Law, construction projects are still subject to EUR 336,530 damages threshold, but the damages of the customer (that include the cost of the project construction) are not included in this amount if no state funds or guarantees are involved in the project. Considering that the customer’s damages (that include the cost of the project construction) usually amount to the majority of the material and social damages that can be caused by the breakdown of the object that is classified, it will be much easier for construction projects to be classified as CC1 objects, and enjoy benefits listed above as cost of their construction will not be taken into account.

With respect to RPPs that usually don’t have any other material or social damages that can be caused by their breakdown except for customer’s damages this means that they will be usually considered as CC1 objects irrespective the cost of the project, if no state funds or guarantees are involved.

In relation to WPPs, the RPP Development Law also introduces the following simplifications:

- As mentioned above, currently all construction objects are classified in three consequence classes (CC1, CC2 and CC3). At the same time before June 2017 construction objects were classified by complexity categories (from I to V complexity category). In the course of transition from complexity category to consequence class classification system, all existing construction objects that had III complexity category were automatically assigned CC2 consequence class. RPP Development Law assigns existing WPPs that before implementation of the consequence class system were classified as having III complexity category to the CC1 consequence class;
- City building legislation prohibits assignment of CC1 consequence class to the construction objects that are subject to an environmental impact assessment. The RPP Development Law creates exception from this rules for WPPs and states that they can be classified as CC1 objects (even if they are subject to EIA), if they receive a positive expert view by an authorised environmental body; and
- City building legislation also requires expert examination of the designing documentation of construction objects that are subject to EIA. In line with aforementioned simplification, the RPP Development Law limits expert examination of the designing documentation of a WPP that is subject to EIA only to its compliance with the results of an EIA.

Construction projects, however, can be still classified as CC2 or CC3 objects on the basis of other requirements to consequence classes established by Ukrainian law (for instance, if they require an EIA).

2.1.5. DEVELOPMENT OF RPPS IS FURTHER FACILITATED

On 10 December 2018, the Ukrainian President signed law No. 2628-VIII On Amendment to the Tax Code and Certain Other Legal Acts of Ukraine in Relation to Improvement of Management and Revision of Certain Taxes dated 23 November 2018 (the “Simplification Law”), which among other things facilitates development of RPPs in the following ways:

(a) Development of RPPs on Industrial Lands

Once in force, the Simplification Law will allow RPPs to be developed not only on land designated as

“land for energy”, but also on land designated within the generic category “land for industry, transport, telecommunications, energy, defence and other designation”. In other words, the Simplification Law allows the development of RPPs on plots of other official use (e.g. land for machine building industry) without having to change the land’s designation.

(b) VAT Exemption for Import of RPP Equipment

Starting from 1 January 2019 and until 31 December 2022, the Simplification Law will exempt from Ukrainian VAT, among others, WPP equipment imported under the following codes of the Ukrainian Classification of Goods of Foreign Economic Activity (UCGFEA):

- wind power generation units (UCGFEA code 8502 31 00 00); and
- liquid dielectric transformers with capacity exceeding 10,000 kVA (UCGFEA code 8504 23 00 00).

To be exempt from VAT, the classification of imported RPP equipment under the UCGFEA codes must be confirmed by Ukrainian customs authorities.

The Simplification Law entered into force on 1 January 2019.

2.1.6. NEW GRID CONNECTION METHODOLOGY AND FEES APPROVED FOR POWER GENERATION FACILITIES

The Regulator significantly changed connection fees for industrial consumers and power producers in December 2018. First of all, on 18 December 2018 it adopted Methodology (*procedure*) for forming fees for connection to transmission and distribution systems by its Resolution No. 1965 (*the “Methodology”*). Secondly, the Regulator on the basis of the Methodology also adopted rates for non-standard connection to the power grid for 2019 for all DSOs by its Resolution No. 2069 dated 28 December 2018 (*the “Resolution 2069”*).

Below we capture main changes in relation to the grid connection fees.

(a) Principles Established by Methodology

The Methodology establishes that fees for standard and non-standard grid connection are established by the Regulator annually (*no later than 1 December of the preceding year*). These fees do not cover fees for implementation of the electricity commercial accounting system.

The Methodology also establishes that the respective fees will adjusted according to the expenses of the distribution system operators.

(b) Full Package Service

According to the Methodology the DSOs provide full package service for non-standard grid connection that includes:

- preparation of the grid connection agreement, technical conditions and technical order for designing of the grid connection;
- development and approval of the grid connection design;
- allocation of land plots for placement of energy objects for grid connection;
- expert examination of the designing documents (*if required by law*);
- confirmation of the compliance of the designing documentation of the entity (*which power facilities are being connected*) with technical conditions;
- grid connection construction and commissioning works; and
- initial hook-up of the power facilities.

The fee for non-standard grid connection in this case will be calculated under the following formula:

$$F = C \cdot R_{cc} + L \cdot R_{gcc}$$

Where:

C – capacity of the power facility that is being connected in kW;

R_{cc} – rate for connection of capacity per kW established by the Regulator;

L – distance between the point in power grids from which grid connection is designed to the point of connection of the power facilities;

R_{gcc} – rate for grid connection construction per meter of grid connection construction established by the Regulator

R_{cc} and R_{gcc} are established by the Regulator annually (*for the respective rates for 2019, please see below*).

(c) Connection of the Power Facilities with Voltage 110 (154) Kv at the Connection Point

In case of connection of power facilities with voltage 110 (154) kV at the connection point, the following formula is applied according to the Methodology:

$$F = V_i \cdot P_c + L \cdot R_{gcc} \cdot P_c$$

Where:

V_i – value of installation of transformer bays with voltage 110 (154) kV;

L – distance between the point in power grids from which grid connection is designed to the point of connection of the power facilities;

R_{gcc} – rate for grid connection construction per meter of grid connection construction established by the Regulator; and

P_c – coefficient of the expected price change of the manufacturers of industrial goods in comparison with 2018 (*established by the Cabinet of Ministers of Ukraine annually*).



(d) Preparation of the Grid Connection Design by the Entity (Which Power Facilities are Being Connected)

Under the Methodology, the entity (*which power facilities are being connected*) can develop grid connection design on its own. The DSO and such entity must agree on the costs of such works.

In this case the formula for calculation of the fee for non-standard connection will look as follows:

$$F = C \cdot Rcc + Vg_{cw}$$

Where:

C – capacity of the power facility that is being connected in kW;

Rcc – rate for connection of capacity per kW established by the Regulator

Vg_{cw} – value of the grid connection construction works established on the basis of the grid connection design.

As grid connection construction works are performed by the respective DSO, the Vg_{cw} will increase, if the price of services, works and goods acquired by the DSO through public procurement will be higher than the one envisaged by the grid connection design.

(e) Rates Established by the Resolution 2069

As mentioned above, the Regulator annually establishes Rcc and Rg_{cc} rates that are used in the formula for calculation of the non-standard grid connection fee. The Resolution 2069 established the respective rates for 2019 as follows:

- Rcc

The basic value of Rcc until the end of 2020 is UAH 3,480 per kW (*excluding VAT*) (the “BV”).

The Regulator calculates Rcc for each area of DSOs responsibility by adjusting the BV in accordance with:

- category of power facility reliability of power supply – Rcc is the highest for the first category and the lowest for the third category;

- voltage at the connection point of power facilities – Rcc is lower for higher voltage;
- DSO’s transformers workload in the respective area – Rcc is higher for areas with high transformers workload;
- location of power facilities (*urban or rural areas*) – Rcc is lower for rural areas; and
- type of power facilities (*power producing or power consuming*) – Rcc is lower for producing power facilities.

As a result, Rcc varies a lot from area to area. According to the Regulator, average Rcc for rural areas in 2019 for non-standard grid connection is UAH 1,840 per kW (*excluding VAT*).

- Rg_{cc}

Rg_{cc} rates established by the Resolution 2069 are presented in the table.

(f) Impact on the Existing Projects

The Methodology will enter into force on 22 January 2019. As it does not contain transitional provisions, it is unclear how it will apply to the existing uncompleted grid connection agreements. We can assume that the projects that have already fixed grid connection costs in the respective grid connection agreements are the least exposed to this risk.

THE LEGISLATIVE CHANGES IN 2018 HAVE SIGNIFICANT IMPACT ON THE WIND POWER SECTOR. THEY ESTABLISHED GROUNDS FOR IMPLEMENTATION OF THE NEW LIBERALISED ELECTRICITY MARKET (AS DESCRIBED BELOW), CREATED NEW OPPORTUNITIES FOR DEVELOPMENT OF WPPS AND BROUGHT MORE TRANSPARENCY IN RELATION TO GRID CONNECTION.

Table 2.1.6. Rg_{cc} rates established by the Resolution No.2069 for 2019

Type of grid connection	Rcc (thousand UAH per meter)							
	Connection point on the border of the land plot of the entity (<i>which power facilities are being connected</i>)				Connection point within the land plot of entity (<i>which power facilities are being connected</i>)			
	0.4 (0.23) kV	6 (10) 20 kV	35 kV	110 (154) kV	0.4 (0.23) kV	6 (10) 20 kV	35 kV	110 (154) kV
Overhead	0.785	0.683	1.499	2.138	0.746	0.648	1.424	2.031
Underground	1.720	2.346	4.301	–	1.634	2.229	4.086	–

2.2. REGULATORY ACTS EXPECTED TO BE APPROVED IN 2019

Apart from the new renewables support scheme proposed in the Draft Law 8449-D (please see chapter 1.8), the majority of legislative changes in 2019 will be focused on implementation of the new electricity market. This will be the most significant change in the Ukrainian electricity sector in 2019. Issues related to the development of Ukrainian power grid will be also considered.

2.2.1. IMPLEMENTATION OF THE ELECTRICITY MARKET REFORM

The Electricity Market Law transposes Ukraine's commitments on the liberalisation of the Ukrainian electricity market in compliance with the Energy Community Treaty and the so-called "3rd Energy Package" of the European Union. The primary goal of the Electricity Market Law is a step-by-step liberalisation of the internal electricity market of Ukraine.

Although the Electricity Market Law became effective on 11 June 2017, its numerous provisions on functioning of the electricity market will become effective only in 2019. It is expected that the full-scale liberalized market is implemented in Ukraine on 1 July 2019. On this date, current wholesale electricity market shall be reorganised and divided into the following submarkets: (1) market of bilateral contracts; (2) DAM; (3) IDM; (4) balancing market; (5) market for ancillary services; and (6) retail market.

2.2.1.1. Market of Bilateral Contracts

Bilateral electricity trading shall take place based on contracts for the sale and purchase of electricity. The Electricity Market Law does not provide for the establishment of a central platform and trading is expected to take place "over the counter" (OTC). The contracts will be executed between the power generators on the one hand and other market players (*mostly – power suppliers*) on the other hand. Their maximum period of validity may be further established by the Regulator, but should not be less than 6 months.

2.2.1.2. DAM and IDM

DAM is based on a competitive pricing mechanism and is basically a bidding auction, which is held one day before the actual delivery of electricity. The intraday market (IDM) allows market participants to update their trading positions taking into account

the existing supply and demand and current system conditions, as they approach real time. Both DAM and IDM are managed by the Market Operator, which accepts bids to sell or buy electricity and holds an auction. The Regulator may establish the minimum amounts of electricity to be sold by the power generators (*such minimum may not exceed 15% of the monthly volumes*), however RPPs shall be exempted from this requirement. In particular, according to the Electricity Market Law such minimum amount for sale of electricity at DAM during the first year of functioning of the liberalised electricity market (*i.e. 1 July 2019 – 1 July 2020*) may not be less than 10%.

2.2.1.3. Balancing Market

The balancing market (BM) is established for the sale and purchase of electricity: (i) for balancing supply and demand within a day; and (ii) for handling imbalances of the market participants responsible for the balance. The market is operated by the Transmission System Operator, who is responsible for balancing, and who will accept the bids of the market players for load increase or decrease. Acceptance of a particular bid by TSO results in the sale and purchase of the relevant amounts of electricity. The market players responsible for balancing may also join their efforts and form a group of balancing parties.

2.2.1.4. Market for Ancillary Services

The ancillary services market includes various types of energy and capacity products to meet the reliability requirements of the market players. The power generators bid for a right to deliver such ancillary services to the Transmission System Operator.

2.2.1.5. Retail Market

At the retail market the electricity is traded between the power suppliers and the consumers. The prices shall be regulated only for: (i) the suppliers of the universal services (*i.e. local power suppliers selected by the CMU for electricity supply to households and small non-households*) and (ii) the "last resort" suppliers (*i.e. local electricity suppliers selected by the Government which may not refuse execution of the electricity supply agreement with consumers under certain circumstances determined by the applicable law*).

2.2.1.6. Renewable Energy

The renewable power producers shall sell the electricity to the so-called Guaranteed Buyer (a state enterprise that will be separated from Energorynok and designated later by a separate resolution of the CMU) under the bilateral contracts at the green tariff rate. The Guaranteed Buyer then re-sells the electricity at DAM and IDM. Until 1 July 2020 the difference between the green tariff rate and the price of electricity sold at DAM and IDM will be reimbursed to the Guaranteed Buyer by nuclear power producer; later and until 1 January 2030 – by TSO as a payment for the Guaranteed Buyer’s services for the increase of the share of electricity generated from alternative energy sources.

2.2.2. PROPOSAL TO CHANGE LIFETIME OF THE TCS

On 19 December 2017 Ukrainian Parliament adopted in the first reading the draft law No. 6081 (the “TC Draft Law”), which aims to establish limitations on the duration of the TCs for RPPs. The TC Draft Law was approved by the parliamentary committees for the second reading in February 2018.

The TC Draft Law as the Draft Law 8449-D is also aimed to limit the duration of the TCs for RPPs. However, it proposes different time frames as described below.

In general the TC Draft Law envisages that TC for RPPs will be valid for a maximum term of 5 years after their issuance.

The TC Draft Law also proposes to limit duration of already issued TCs in the following way:

- TCs issued more than two years before TC Draft Law becomes effective will remain valid for 3 years.

- TCs issued less than two years before the TC Draft Law becomes effective will remain valid for 5 years.

2.2.3. PPA WITH THE GUARANTEED BUYER

For the purpose of transferring to the new off-taker (Guaranteed Buyer), the Regulator has prepared and published on its web-site on 17 September 2018 the draft of the PPA with the Guaranteed Buyer. According to the draft currently available, it is expected that this new version of the PPA should become effective on 1 April 2019 (provided the Regulator does not change this deadline), so the Guaranteed Buyer will be able to execute the respective pre-PPAs/PPAs on its basis before commencement of the new electricity market (which expected to happen on 1 July 2019).

Below we describe main characteristics of the draft PPA with the Guaranteed Buyer (differences with the version of the PPA as amended by the Resolution of the Regulator No. 1118 dated 14 September 2017 are highlighted).

2.2.4. REPORT ON COMPLIANCE (SUFFICIENCY) OF GENERATING CAPACITIES

On 20 November 2018 Ukrainian TSO published the draft of the Report on compliance (sufficiency) of generating capacities for public discussion (the “Draft Report”). The main aim of this document is to ensure satisfaction of the forecasted electricity demand and necessary reserve capacities in accordance with the supply safety requirements.

The Draft Report includes:

- the description of the development scenarios;
- methodology of forecasting demand/supply for electricity and work of unified energy system of Ukraine;
- analysis of the development tendencies of the generating capacities and workload;

Table 2.2.3. Provisions of the PPA with the Guaranteed Buyer (to be executed for the new market)

Issue	Provisions
Offtaker	Guaranteed Buyer
Parties	Guaranteed Buyer and Power Producer
Possibility of Pre-PPA	Yes
Duration	Until 2030
Subject matter	The Power Producer undertakes to sell and Guaranteed Buyer undertakes to buy all the produced electricity at the electricity metering points.
Determination of electricity value	Actual amount of electricity bought by Guaranteed Buyer multiplied by the green tariff rate.
Electricity amount determination	Determined in accordance with the hourly data received from the ASCAPC.
Deemed electricity concept	No

Issue	Provisions
Payment	Prepayments before 15 and 25 day of the accounting month. Full payment around 9 working day of the month following accounting month.
Payment security from Guaranteed Buyer	No payment security from Guaranteed Buyer.
Rights and obligations of Power Producer	Rights: <ul style="list-style-type: none"> • demand payment for the electricity from the guaranteed buyer. Obligations: <ul style="list-style-type: none"> • produce and sell all the generated electricity to Guaranteed Buyer; • provide Guaranteed Buyer with all information and data required by the legislation and the PPA; • notify Guaranteed Buyer regarding changes to its tax treatment scheme.
Rights and obligations of the Guaranteed Buyer	Rights: <ul style="list-style-type: none"> • request from the Power Producer to sell electricity of the proper quality in compliance with the forecasted load curve and dispatching commands. Obligations: <ul style="list-style-type: none"> • purchase all electricity from the Power Producer and pay for it on time in accordance with the PPA and legislation; • pay monetary funds to the Power Producer in accordance with the algorithm established by the legislation for the actually delivered electricity determined in accordance with the legislation.
Liability of the parties	Power Producer is liable for incompliance with time frames and scope of data to be provided under the PPA. Guaranteed Buyer is liable for payment to Power Producer in accordance with the algorithm established by legislation. In case of violation, Guaranteed Buyer pays default interest in the amount of 0.2% of the non-performed payment in accordance with the algorithm (<i>but not more than the double NBU discount rate valid as of the date of such settlement</i>) for each day of delay but no more than for 30 days. Additional fine of UA 100 is charged, if the delay exceeds 30 days.
Issues related to change of control (<i>change of control clause</i>)	No
Restrictions on financing of RPP (<i>including refinancing and bonds issuance</i>)	No
Assignment	Assignment of rights and obligations under the PPA is not possible without the consent of another party. Power Producer for the purpose of financing can cede, pledge, encumber, delegate, transfer and/or assign monetary funds that are paid to it by Guaranteed Buyer.
Step-in-rights	The right of Guaranteed Buyer to execute a direct agreement with lenders of Power Producer is envisaged. Under direct agreement, in case of a breach by Power Producer, Guaranteed Buyer will not be able to terminate the PPA before 120 days of delivering notice to the lenders of Power Producer of its intention to terminate it.
Obligation of Guaranteed Buyer to pay during force majeure	Guaranteed Buyer has no obligation to pay during force majeure.
Governing law	Ukrainian
Waiver of sovereign immunity	No
Change in law clause	No change in law provision

Issue	Provisions
Force majeure	<p>Force majeure includes:</p> <ul style="list-style-type: none"> • threat of war, armed conflict or serious threat of such conflict, including but not limited to hostile assaults, military embargoes, acts of foreign enemy, full military mobilisation, military action, declared and undeclared war, action of a public enemy, disturbance, acts of terrorism, diversion, piracy, disorders, invasion, blockade, revolution, coup, insurrection, mass unrest, curfew restrictions, expropriation, forcible withdrawal; • taking of enterprises, requisition, civil demonstration, strike, emergency, unlawful actions of third parties, fire, explosion, long disruptions in the operation of transport authorised by relevant decisions and acts issued by state authorities, closures of sea straits, embargoes, export/import bans (<i>restrictions</i>), etc.; • weather conditions and natural disasters, in particular: epidemic, severe gale, cyclone, hurricane, tornado, storm, flood, snowdrifts, bare ice, hail, freezing weather, freezing of the sea, straits, ports, mountain passes, earthquake, lightning, fire, draught, subsidence and landslide, other natural calamities which make it impossible for one of the parties to fulfil its obligations under the PPA. <p>Force majeure must be certified by the relevant certificate from the Chamber of Commerce and Industry of Ukraine or its territorial bodies.</p>
Dispute resolution	<p>The Parties may request the Dispute Resolution and Negotiation Centre of the Energy Community Secretariat to facilitate amicable resolution of disputes and discrepancies. All disputes and discrepancies arising out of or in connection with PPA are referred to Ukrainian Commercial Courts.</p> <p>The PPA also states that all disputes and discrepancies arising out of or in connection with PPA may be referred to arbitration in accordance with the Rules of Arbitration of the International Chamber of Commerce (<i>ICC</i>).</p> <p>Initiation of the arbitral proceedings by any party of the PPA shall be regarded as exclusion of jurisdiction of commercial courts of Ukraine over the same dispute. Please note that dispute resolution provisions are not clearly worded, as exclusion of jurisdiction of Ukrainian courts by entering into arbitration agreement is not enforceable under Ukrainian law.</p> <p>The court may also conclude that there is no express agreement of the parties to submit disputes arising out of the PPA exclusively to arbitration instead of a court, since under this version of the PPA all disputes and discrepancies arising out of or in connection with the PPA are referred to Ukrainian Commercial Courts, therefore, the arbitration agreement (<i>clause</i>) is invalid.</p>
Grounds for termination	<p>The PPA may be early terminated by mutual consent of the Parties or by a court decision.</p> <p>Power Producer can terminate the PPA at its own discretion on any legal ground provided for by Ukrainian law and in case of change of legislation or template of the PPA.</p> <p>Guaranteed Buyer can terminate the PPA, only if the generation license is cancelled.</p> <p>Pre-PPA may be also terminated, if the RPP is not commissioned within three years after commencement of the construction works.</p>
Termination payment	No

- evaluation of the risks of the UES in case of occurrence of critical conditions;
- the results of the UES work regime calculations under the worst scenarios and measures for prevention of the generating and transmission capacity deficit.

In relation to RPPs, among others, the Draft Report states the following:

- Increase of wind and solar capacities is not advantageous for Ukrainian economics and increase of their capacities should be made, only if

increase of alternative energy production is not possible from biomass, biogas and etc.

- The necessity to limit capacity of WPPs and solar power plants may arise, if measures for increase of UES possibility for their integration will not be taken.
- The most effective scenarios for development of economics and energetics in the context of sustainable development foresee development of RPPs that does not create technical risks and risks to the sustainable growth of Ukraine.

UWEA criticized the draft Report as it lagged behind the current global trends pertaining to transition to a carbon-free economy. Moreover, the adoption of the Report as currently drafted will jeopardizes the implementation of the Energy Strategy of Ukraine until 2035.

2.2.5. CHANGES TO LICENSING REGIME

(a) Changes to the Effective Licensing Conditions

Currently the National Commission for State Regulation of the Energy and Public Utilities Sector (the “Regulator”) issues power generation licences in accordance with the licensing conditions approved by the Resolution of the Regulator No. 309 dated 22 March 2017 (the “Licensing Conditions 309”).

At the moment, the Regulator is also considering amendments to the Licensing Conditions 309. Among others, the Regulator intends to introduce the following additional documents to be required for the power generation licence:

- copy of the document confirming approval by the local authorities of the placement of the RPP on the respective territory;
- documents evidencing commissioning of the RPP (or its separate launch stage/complex), which, depending on the category of complexity of the constructed object, pursuant to the Resolution of the Cabinet of Ministers of Ukraine No. 461 dated 13 April 2011, would be:
- for objects CC1 (i.e. with lower class of consequences) – a developer’s declaration of the readiness of a constructed object for operation, registered by State Architectural Construction Inspection of Ukraine; or
- for objects CC2 and CC3 (i.e. with medium or high class of consequences) – a certificate issued by SACI confirming compliance of a constructed object to the requirements of the project documentation and its readiness for operation;
- the installed capacity of the RPP will be established on the basis of the capacity stated in the declaration of readiness of a constructed object for operation (for CC1 objects) or certificate con-

firming compliance of a constructed object to the requirements of the project documentation and its readiness for operation (for CC2 and CC3 objects); and

- licensees will be able to update information about their power plant capacity in the case of its increase (commissioning of new capacities or change of the means of power production) or decrease (decommissioning of the capacities or change of the means of power production).

(b) New Licensing Conditions

According to the transitional provisions of the Electricity Market Law, licences issued under the Licensing Conditions 309 will be valid until 1 July 2019 (the date on which full-scale liberalized market will be implemented in Ukraine). Starting from 1 July 2019, power producers will be required to operate on the basis of the new license issued under the licensing conditions approved by the Resolution of the Regulator No. 1467 dated 27 December 2017 (which were approved for the new electricity market) (the “Licensing Conditions 1467”). It will be possible to apply for the new power generation license under the Licensing Conditions 1467 already starting from April 2019, subject to compliance with their requirements.

Under the Licensing Conditions 1467 electricity generation activity must be subject to licensing, if:

- the installed capacity is equal to or exceeds 5 MW; or
- irrespective of the installed capacity – a RPP intends to sell the produced electricity to the Guaranteed Buyer under the green tariff.

The procedure for obtaining the license and the list of documents required to be submitted by the applicant for licensing purpose shall remain the same as under Licensing Conditions 309 (unless new changes to them as described above will be adopted). The Licensing Conditions 1467 mainly change organizational, technological, professional and special requirements to the licensee in line with the requirement of the new electricity market that will be implemented starting from 1 July 2019.

THE AFOREMENTIONED REGULATORY ACTS THAT ARE EXPECTED TO BE ADOPTED IN 2019 WILL DEFINITELY RESHAPE UKRAINIAN ELECTRICITY SECTOR, AS THEY ARE AIMED AT IMPLEMENTATION OF THE NEW ELECTRICITY MARKET MODEL AND WILL ESTABLISH PRINCIPLES THAT WILL SERVE AS LANDMARKS FOR THE YEARS TO COME.

ACTIVITIES OF THE UWEA



3.1. PARTICIPATION IN THE LEGISLATIVE PROCESS

The past year 2018 can be rightly called the year when the important prerequisites for further developing and strengthening the national renewable energy sector were created. Firstly, the groundwork for a further rapid growth in wind capacities was laid: contracts for the supply of wind power equipment totally exceeding 500 MW were signed, necessary permits were received and construction of new wind power plants started. Secondly, public entities and professional associations continued working on the development and implementation of regulations in pursuance of the Law of Ukraine “On the Electricity Market” adopted in 2017.

The most important event in renewable energy sector of Ukraine happened in 2018 was drafting a law on transforming from fixed feed-in tariff model to tendering scheme. The Verkhovna Rada of Ukraine passed in the first reading the draft law on RE auctions late December 2018. The bill will have a direct impact on the further development of both wind power sector and the entire renewable energy sector of Ukraine.

2018 year, like the previous ones, is a year of joint constructive work of all members of the UWEA. Within the year, the UWEA continued to work on stable, wide-scale implementation of wind energy technologies in the country.



Active consultations and discussions regarding transition of state support for the RES industry from the green tariff system to green auctions took place throughout the year. The UWEA’s secretariat and members actively participated in the bill drafting process, provided their proposals and comments.

On January 25-26, 2018, Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, participated in the Ukrainian government delegation to take part in a joint meeting on the further development of renewable energy in





Ukraine organized by the Energy Community Secretariat in Vienna, Austria. Participants of the meeting focused on issues related to introduction of RE auctions in Ukraine.

Following the registration of the Draft Law No. 8449 “Law on Amendments to Some Laws of Ukraine on Ensuring Competitive Conditions for the Production of Electricity from Alternative Energy Sources” and several alternative draft laws (No. 8449-1, 8449-2, 8449-3, 8449-4, 8449-5, 8449-6) in June 2018, the **Open Meeting of the UWEA Board** was held on 6 July, 2018 to develop a common position with regard to above mentioned drafts. Considering the immense implications of the auctions system for the RE market in Ukraine and wind sector in particular, a decision was made by the UWEA Secretariat to invite the UWEA’s members, other NGOs and mass media representatives to the meeting. The letter containing comments and suggestions of the UWEA’s members to the above-mentioned draft laws together with the Open Meeting minutes were submitted to the Verkhovna Rada Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety of Ukraine.

During the year, the UWEA members participated in meetings of the Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety of Ukraine, different working groups meetings devoted to the draft law on the new support system for renewable energy, stated the wind market players’ opinions and priorities. As a result, a draft bill combining all seven alternative draft laws was prepared and submitted to the Verkhovna Rada of Ukraine for first reading.

In October 2018, the UWEA was one of the initiators of signing a **Memorandum between the leading professional associations of Ukraine**, namely the Ukrainian Wind Energy Association, the Ukrainian Association for Renewable Energy, the Bioenergy Association of Ukraine, the Energy Association Ukrainian Hydrogen Council and the Association of Solar Energy. Considering that the delay in adopting the relevant law would lead to a deterioration in financing by international financial institutions and, consequently, the failure of Ukraine to fulfil its RE commitments to the European Energy Community, which in turn would adversely affect the investment climate in the energy sector, the five largest renewable energy associations in Ukraine advocated changes in the support system for green electricity generation.



“Any legislative changes related to the new support system for the renewable energy through the introduction of auctions will have a positive effect on the investment climate in Ukraine and guarantee the winners of auctions the connection of new capacities to the national grid. The volume of new RES capacities should be determined annually by the corresponding national quotas and complied with the Ukrainian Energy Strategy until 2035. At the same time, it must be clearly understood that without a transparent understanding of the quotas for new RES capacities, the market will not develop”, emphasized Andriy Konechenkov.

On 17 December 2018, UNIAN, Kyiv, hosted a press conference on the early adoption of the draft law No. 8449-d on the transition from the green tariff to a new system of renewable energy support through the introduction of the auction mechanism since 2020.

Leading associations and the stakeholders of the Ukrainian renewable energy market expressed their concern about the current situation, which may negatively affect the further development of green energy and the Ukraine's intention to strengthen its energy independence.

Head of the SAEЕ Serhiy Savchuk noted that the transition to the auction system would contribute to the sustainable development of the industry and reduce the cost of green energy for end-users. "The bill will not only strengthen the development of renewable energy, but also make this development sustainable and cheaper. The current green tariff system has already played its role in launching "renewable" energy market in the country", Savchuk said.

"Uncertainty with transition to a new support model for electricity from renewable energy sources worsens the investment climate in Ukraine. It's time to urgently adopt the relevant changes in legislation", stressed Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA.



The State Agency on Energy Efficiency and Energy Saving of Ukraine, the Ukrainian Wind Energy Association and the Ukrainian Renewable Energy Association signed an appeal to the Verkhovna Rada with a request to consider the draft law No. 8449-d and to sustain growth and development of renewable energies in Ukraine.

On 20 December 2018 the Ukrainian Parliament adopted in the first reading the draft Law "On Amendments to Some Laws of Ukraine on Ensuring



Competitive Conditions for the Production of Electricity from Alternative Energy Sources" No. 8449-d. The second reading of the Law is expected in the first quarter of 2019.

The UWEA members took an active part in the discussion of other legislative and regulatory documents regulating the development of the wind energy sector in Ukraine. Proposals have been submitted regarding the Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding the Investment Attractiveness of the Construction of Renewable Energy Projects" 2517-VIII dated 04.09.2018, Methodology (*procedure*) for forming fees for connection to transmission and distribution systems, Licensing Conditions of economic activities for the production of electric energy, etc.

During the year, the UWEA advocated the introduction of the common green tariff for small wind and solar installations of private households and a unified metering system for such combined / hybrid installations. This proposal was included into the text of the draft law No. 8449-d prepared to the Second Reading in the Verkhovna Rada of Ukraine.



3.2. INTERNATIONAL CONFERENCES ORGANIZED IN COOPERATION WITH THE UWEA

FIRST INTERNATIONAL NEW ENERGY FORUM “WIND AND HYDROGEN”

On May 17, 2018, a significant event in the modern development of the national energy sector took place in Kyiv. A New Energy Forum “Wind and Hydrogen” organized by the Ukrainian Wind Energy Association and Energy Association Ukrainian Hydrogen Council was successfully held in Ukraine. Company A7 Conferences was an event co-organizer.

The forum was attended by 300 delegates from 16 countries of the world – representatives of investment companies, manufacturers of wind power equipment, national and international wind energy developers, bankers, lawyers. For the first time in the country, the Forum focused on issues related to combination of powerful wind power and unlimited potential of hydrogen energy to ensure balanced

development of the energy complex of Ukraine and the transition to a modern carbon-free economy.

The Forum’s speakers included: Oleksandr Dombrovsky, First Deputy Head of the Verkhovna Rada Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety; Sergiy Savchuk, Head of the State Agency on Energy Efficiency and Energy Saving of Ukraine; Maxim Yefimov, First Deputy Chairman of the Verkhovna Rada Committee on Industrial Policy and Entrepreneurship; Victoria Kereslika, Advisor to Wind Energy Association WindEurope; Rodion Morozov, Director of the Environmental Projects Department of JSC UkrGasBank; Ben Vickers, Senior Editor of Bloomberg New Energy Finance; Thorsten Wellert, Head of the Energy and Ecology Subdivision of the European Commission Group for Support of Ukraine; Ivan Plachkov, Chairman of the





Council of the PU All-Ukrainian Energy Assembly, Minister of Energy of Ukraine in 1999, 2005-2006; Gulsha Altykilach, Turkish Wind Energy Association TUREB. Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA and Oleksandr Repkin, President of the Ukrainian Hydrogen Council moderated the panel sessions.

Oleksandr Dombrovsky, MP, First Deputy Head of the Verkhovna Rada Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety emphasized: “Combination of hydrogen and wind energies... is an important mission that forces the entire Ukrainian energy society to look far beyond the horizon. Today we need strong drivers for the development of green energy. We know that auction system is one of the tools to introduce competitive pricing and technologies in the country. Such forums are extremely important. The Ukrainian renewable energy efficiency policy is the driver of economic policy to allow us to concentrate on the dynamic development of high-tech GDP”.

During the panel discussions devoted to the issues of the development of the national wind energy industry, Viktoriya Syromyatova, director of DTEK Wind Power, Vladislav Yeremenko, General Director of the Management Company Wind Parks of Ukraine, Carl Sturen, CEO of the Vindkraft Ukraina LLC, Maxim Kozytsky, Director of Eco-Optima company shared their knowledge and experiences with the delegates of the Forum. At the Forum, the market participants also discussed issues related to the transition to new state support for renewable energy through the introduction of RE auctions.

Serhiy Savchuk, Head of State Agency on Energy Efficiency and Energy Saving of Ukraine presented the concept of future stimulation of renewable energy developed by the SAEE: “The gradual introduction of an effective system of auctions will enable to reduce the cost of energy from renewable sources and increase the competitiveness of business in this area. It is anticipated that the winner of the auction will be able to sell “clean” electricity for 20 years”.

Much attention was paid to the reports of representatives of companies producing wind power equipment. Igor Nus, Sales Director for CIS and Eastern Europe, Vestas, a world leader in wind turbines; Vitali Sevostianov, technical director of Management Company Wind Parks of Ukraine, the first and currently the only national company on the post-Soviet space which manufactures modern megawatt class wind turbines; Michal Glowacki, Operations Director for Nordex Poland and Larry Wang, Vice President of Chinese Ming Yang Smart Energy presented the latest wind turbine technologies.

Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA: “The main goal of the first wind-hydrogen energy forum in Ukraine was to discuss the possibility of increasing the share of renewable energy in the energy balance of Ukraine through the integrated use of powerful wind energy and unlimited resource of hydrogen energy. Today, renewable energy accounts for two thirds of global investment in generating capacity; as for many countries they become the cheapest source of next-generation energy. In the EU, 80% of the new capacities account for renewable energy, and wind power will soon become the largest





source of electricity due to the significant growth of both onshore and offshore wind power plants shortly after 2030. At the same time, the development of commercial wind power industry requires, in case of Ukraine where we have a large percentage of nuclear power units, the introduction of back-up capacities for balanced operation of the grid. It is hydrogen technologies that can solve this problem”.

The Forum ended with a reception in honor of the 10th Anniversary of the Ukrainian Wind Energy Association during which Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA awarded the UWEA Certificates of Appreciation to the leading wind developers and legal experts of Ukraine – UWEA members in recognition their enormous contribution to the development of the national wind energy sector.

III UKRAINIAN RENEWABLE ENERGY FORUM '18

From November 19 to 21, 2018, Kyiv hosted the Ukrainian Energy Week'18 which became the platform for discussion of the actual issues of the energy sector. Ukraine has all the possibilities to be an energy independent country with a developed country with a matured renewable energy and energy efficiencies sectors – this is the main outcome of the event organized by a company A7 CONFERENCES.

III Ukrainian Renewable Energy Forum '18 took place on the second day of the Ukrainian Energy Week. In his speech at the opening of the forum, Serhiy Savchuk, Head of the SAEU of Ukraine, noted that “the RE market is much wider, much larger, it cannot be reduced to the construction of only solar power stations. I’m confident that while we are holding auctions, the investor should find and increase financing for other projects that are equally valuable to the economy and in terms of returning investment”.

The UWEA acted as co-organizer of the wind energy session and information partner of the Ukrainian Energy Week'18. Management Company Wind Parks

of Ukraine sponsored the session on wind energy in Ukraine. Among the main topics discussed by session’s participants were issues related to the current conditions for the construction of wind energy facilities in Ukraine, the experience of foreign companies. Representatives of wind turbine manufacturers which turbines already generate green electricity in Ukraine were optimistic about the development of the national sector.

Vladislav Yeremenko, General Director of the Management Company Wind Parks of Ukraine: “Today we give an opportunity to any manufacturer to come to this market with a rather long-term and inexpensive money to build turbines and receive income. In line with this, any manufacturer has the opportunity to come to Ukraine, set up manufacturing here and create for potential investors an additional bonus in the form of an extra payments to the green tariff”.

Igor Nus, Sales Director for CIS and Eastern Europe, Vestas: “In 2011, we were the first to install a new 3 MW class turbine in the territory of the former USSR. A 3 MW wind turbine with a full cycle frequency converter is a completely different approach to electricity regulation. This was a positive experience in Ukraine, because you can install a turbine and it will rotate. But the main thing is to generate and deliver the electricity to the grid. Today we see a rather positive growth of the wind energy market in Ukraine”.

Vyacheslav Feklin, Director of GE Ukraine: “We are becoming the company that has the Ukrainian wind market in priority. We see many opportunities for further development”.

Commenting on the transition to a new RES support system in Ukraine through auctions, Andriy Konechenkov emphasized: “When we talk about a quick transition to auctions we must understand the main goal of this transition – it is not an artificial reduction in the tariff, it is the creation of a new scheme for renewable energy support, which would satisfy investors. We are ready to move to a new system of auctions, but at the same time we must preserve the interests of the market in order not to stop the market as it happened in Poland and prevent falling of tariff below the economically rational level”.

In his presentation, Joël Meggelaars, Head of Advocacy and Messaging, WindEurope, warned the government of Ukraine of repeating the mistakes of other countries, such as, for example, lack of flexibility in permit envelope in France, uncertainty about government policy in Germany: “It’s important to get a design right and to progressively introduce auctions into your system, because it’s better to have



an evolution that a revolution. Provide for a smooth evolution into auction, which of course, have their benefits and will enable confidence in the market, but do it in a right way”.

Mr. Maggelaars emphasized that revenue stabilisation continues to be key in the market: “In many countries, we’re trying to explain that sharing a cost, sharing a risk between society and the developer is good for all, because by sharing the cost, by sharing the risk, you will lower the cost of finance, when you go to the bank and in the end it means that you will have lower finance costs, more competitive bids in the auctions, and therefore, cheaper electricity for business and citizens”.

Mustafa Serdar Ataseven, President of the Turkish Wind Energy Association, President of the Ataseven Group noted: “The Turkish Wind Energy Association is a bridge between the government and the wind energy sector of the country. This is very important, as the government has to listen to the sector problems. If you want to grow faster you should listen to the problems of the sector”.

Carl Sturen, CEO of “Vindcraft Ukraine” LLC, remarked that the proposed draft law did not solve the main problem faced today by the renewable energy sector of Ukraine, namely balancing: “How do auctions solve the main problem – the problem of balancing? Auctions have no relation to balancing issues. Until we understand how the balancing mechanism works, auctions will not solve anything”. Mr. Sturen proposed to consider the adoption of two laws in parallel: on auctions and on balancing capacities which will enable developers to clearly understand the future prospects for generating electricity from renewable energy sources. “Today we have a great opportunity to avoid the problems faced by other countries in this sector”, added he.

Olga Yeryomina, Senior Banker at the EBRD Power and Energy Utilities Department, encouraged the Ukrainian Parliament to urgently take the necessary steps towards green auction and adopt a new law on introducing RE auctions in Ukraine.

3.3. COOPERATION WITH PROFESSIONAL STATE INSTITUTIONS AND INTERNATIONAL ORGANIZATIONS



PARTICIPATION IN THE VIII SESSION OF THE ASSEMBLY OF THE INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)

On January 13-14, 2018 in Abu Dhabi, United Arab Emirates, the Eighth session of the Assembly of the International Renewable Energy Agency was held, of which Ukraine officially became a member. Over 1,200 participants representing more than 150 countries, including Ukraine, took part in this event. Serhiy Savchuk, Head of the State Agency on Energy Efficiency and Energy Saving of Ukraine headed the Ukrainian delegation. The delegation also included: People's Deputies of Ukraine Alexander Dombrovsky and Natalia Katser-Buchkovskaya, Ambassador Extraordinary and Plenipotentiary of Ukraine to the UAE Yuri Polurez, Chairman of the Ukrainian Wind Energy Association Andriy Konechenkov, Director of the RE Department of SAEE Yuri Shafarenko and employees of the Embassy of Ukraine in the UAE.

On January 18, 2018, Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA participated in the press conference conducted in Kyiv and dedicated to the participation of the Ukrainian delegation in the Eighth session of the IRENA Assembly.



IMPLEMENTATION OF MODERN TECHNOLOGIES FOR ESTIMATING AND PRESERVING NATURAL COMPLEXES

On May 21, 2018, a Working Group meeting on implementation of modern technologies for the assessment and preservation of natural complexes in the WPPs territories was held upon the initiative of the Scientific and Training Center “Biodiversity” of the Melitopol State Pedagogical University. The UWEA Board members participated in the event.

The participants discussed the strategy of developing a scientific and information system for monitoring and evaluating the main components of biodiversity in the Azov-Black Sea region of Ukraine, as well as the issue of implementing modern developments of a comprehensive system for assessing the effects of wind farms on natural complexes in accordance with national and European requirements.

The event was attended by Maxim Striha, Deputy Minister of Education and Science of Ukraine. “We all feel effects of climate change. For Ukraine, this is a huge need to change traditional agricultural technologies in connection with the rise in temperature. Renewable energy has the big advantage over fossil fuels – it causes neither carbon emissions, no energy pollution”, said Mr. Striha.

In his speech on implementation of the Birds and the Habitats Directives in Ukraine within the framework of the EU-Ukraine Association Agreement, the Pan-European Ecological Network Regional Program (*Natura 2000/Emerald Network*), Vasyl Kostyushin, Head of the Department of Wildlife Monitoring and Protection of the I.I. Schmalhausen Insti-

tute of Zoology of National Academy of Sciences of Ukraine, said: “Ukraine has signed an agreement with the EU. Under this agreement, we have undertaken an obligation to implement a number of legislative documents in line with EU regulations. Regarding biodiversity, these are two documents, namely the Birds Directive and the Habitat Directive. What new will it provide for the country? Firstly, a list of objects of the so-called “Emerald Networks” of Ukraine will appear at the legislative level. Already 271 objects descriptions have been prepared which are included in the global list of objects of the Emerald Network of Ukraine. However, the official approval procedure for these objects is not yet available. The Ministry of Ecology and Natural Resources of Ukraine is currently finalizing a draft law devoted to the Emerald Network”.

Participants of the working group visited Botievska Wind Power Plant. Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA made a presentation on the current status and prospects of the national wind power industry.

MEETING WITH DANISH MINISTER OF ENERGY, UTILITIES AND CLIMATE

From May 30 to June 1, 2018, an official delegation from Ukraine headed by the Minister of Energy and Coal Industry of Ukraine Igor Nasalik visited Copenhagen, Denmark, within the framework of the implementation of intergovernmental cooperation on strategic energy planning between Denmark and Ukraine, in accordance with the Agreement on cooperation in the development and activities of the Ukrainian-Danish Energy Centre (*UDEC*).





The delegation included Olga Buslavets, General Director General of the Energy Markets Directorate of the Ministry of Energy and Coal industry, Olga Belkova, MP, Deputy Chairman of the Parliamentary Committee on Fuel and Energy, Nuclear Policy and Nuclear Safety, Serhiy Savchuk, Head of the SAE, and representatives of the mayor offices of Kyiv, Kalush and Chernigiv. The UWEA, the only non-governmental professional association being a part of a government delegation, was represented by Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA.

The Ukrainian delegation met with Danish Minister of Energy, Utilities and Climate Lars Chr. Lillholt and acting General Manager of Danish Energy Agency Martin Hansen. Further steps on energy cooperation between Ukraine and Denmark were discussed during these meetings. An Overview of the Ukrainian Wind Energy Sector for 2017, prepared by the Ukrainian Wind Energy Association, was presented to the officials.

The parties considered the possibility of conducting a joint analysis of the prospects for implementation of projects for production of energy from waste and a possibility of attracting this technology to balance renewable electricity in Ukraine.

MEETING WITH ANDERS RUNEVAD, GENERAL DIRECTOR OF VESTAS GROUP AND NILS DE BAAR, PRESIDENT OF VESTAS CENTRAL EUROPE

The development of the wind energy industry in Ukraine was discussed during a meeting with representatives of the Danish company Vestas which took place on May 30, 2018 in Copenhagen. Further development of the Ukrainian energy sector can be achieved primarily through foreign investment and creation of new jobs.

Considering number of new wind projects being implemented in Ukraine, the Minister of Energy and Coal Industry Igor Nasalik offered the President, the Director General of the Vestas Group Anders Runevad and the President of Vestas Central Europe, Nils de Baar to consider the possibility of producing towers for Vestas wind turbines in Ukraine.

“Ukraine has every opportunity to set up manufacture including raw materials of local origin. Setting up the manufacturing, in turn, will lead to a decrease in production cost and a reduction in logistics costs”, considered Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, who participated in the meeting.

The UDEC program for 2018-2020 provides for the involvement of Danish experts to assist in solving issues related to the creation of the forecasting system for wind energy production.

PROSPECTS FOR DEVELOPMENT OF RENEWABLE ENERGY FACILITIES IN WESTERN UKRAINE

On August 16, 2018, a discussion on the development of renewable energy facilities in Lviv and Ivano-Frankivsk regions, in particular with respect to the possibilities of increasing the capacities of RES on the Burshtynska TPP Island was held in the premises of the Western Power System of the NPC Ukrenergo in Lviv. This event was held with the participation of the Department of Fuel and Energy Complex and Energy Efficiency of the Lviv Regional State Administration, Ukrainian Wind Energy Association, PJSC Zakarpattiaoblenergo, JSC Prykarpattiaoblenergo, PJSC Lvivoblenergo and representatives of companies implementing renewable energy projects in Lviv and Ivano-Frankivsk regions

The participants of the meeting were acquainted with the current status of the Burshtynska TPP Island and problematic issues related to increasing the capacity of RES in the territory.

Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, proposed to take advantage of the support of the current Ukrainian-Danish Energy Centre II project under the Ministry of Energy and Coal Industry of Ukraine within the framework of implementation of intergovernmental cooperation on strategic energy planning between Denmark and Ukraine regarding development of tools and methods of short-term forecasting of electric power generation from wind and sun.



PUBLIC CONSULTATION FOR THE EBRD ENERGY SECTOR STRATEGY 2019-2023

Public consultation meeting on EBRD's new draft Energy Sector Strategy for 2019-2023 was held in Kyiv on 25 October 2018. The event was organized by the EBRD for relevant civil society organisations and selected private sector clients in the EBRD's countries of operation.

The event aimed at providing an opportunity for stakeholders to express their views and provide input for the preparation of the Strategy, which will guide the EBRD's operational priorities in the energy sector for the next 5 years.



In his presentation, Kevin Bortz, EBRD Director of Strategy, Energy and Natural Resources, EBRD London Office, highlighted strategic directions of the Bank's activities in the energy sector. Decarbonised economy that is highly efficient, powered by renewable energy and increasingly electrified was mentioned as one of the interrelated strategic directions of the Strategy.

While commenting on the EBRD's new draft Energy Sector Strategy, Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, noted a situation in the national energy sector of Ukraine with nuclear share exceeding 60% of the total electricity production. Mr. Konechenkov proposed the EBRD not to limit their activities to biomass-burning technologies for heat production but also to support the use of biogas and hydrogen energy technologies to solve grid-balancing issues.

MEETING AT THE EU REPRESENTATIVE OFFICE IN UKRAINE

On November 15, 2018, a meeting of experts and civil society representatives took place at the EU Representative office in Ukraine. At the meeting the assessment of major events and challenges that emerged in 2018 in the course of Ukraine's implementation of the Association Agreement and the general reform of the energy sector was presented. The participants also discussed draft laws on introduction of a new support system for renewable energy sources. Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, attended the meeting on behalf of the UWEA.



PRODUCTION AND USE OF HYDROGEN OFFERS ALTERNATIVE ENERGY PATHWAYS TO SUSTAINABLE DEVELOPMENT

A meeting between the Ukrainian Wind Energy Association, the Energy Association Ukrainian Hydrogen Council and the German Hydrogen and Fuel Cell Association took place in Berlin on 13 December 2018. The meeting participants discussed the opportunities for hydrogen and renewable development in Ukraine, including such issues as: use of hydrogen technologies in industry, transport (*trucks, buses, trains*), use of wind and solar energy for hydrogen production, grid balancing, etc.

During the meeting, Andriy Konechenkov, the UWEA Chairman of the Board, Vice-President of WWEA, Oleksandr Repkin, President of the Energy Association Ukrainian Hydrogen Council and Werner Diwald, Head of the German Hydrogen and Fuel-Cell Association, signed a trilateral Memorandum on cooperation and partnership between the organizations. The Memorandum is aimed at mutually beneficial partnership and cooperation between the Parties in the field of wind energy and hydrogen technologies to ensure the Ukraine's transition to a low-carbon economy. The meeting was attended by Ruslana Lyzhychko, Ambassador for RE 100%, People's Artist of Ukraine.



3.4. PARTICIPATION IN INDUSTRY EVENTS



FORUM INVEST AND TRADE IN UKRAINE' 18

On March 5-6, 2018, the Forum Invest and Trade in Ukraine' 18 was successfully held in New York, USA. Within the framework of the Forum, meetings were held between representatives of state structures and business from Ukraine and the USA. Leading industry experts made presentations on the opportunities and benefits of trade with Ukraine, investments in infrastructure and green energy projects. The following participants spoke at the forum: Volodymyr Omelyan, Minister of Infrastructure of Ukraine; Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA; Maria Barabash, Founder and President of A7 GROUP; Kateryna Soldak, Editor-in-Chief, Forbes International Editions; Oleksandr Repkin, Chairman of the Supervisory Board of Tokmak Solar Energy; Myron Rabyi, partner, Law Firm Dentons; Ilya Ponomariov, founder of Trident Acquisitions, Myroslava Gongadze, Head of the Ukrainian service Voice of America and others.

Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, draw attention of attendees to the investment attractiveness of the green energy sector in Ukraine.





UKRAINE RENEWABLE ENERGY & POWER INFRASTRUCTURE INVESTMENT CONFERENCE

On March 28, 2018, the dynamics of clean energy development in Ukraine and its investment potential were discussed at the conference “Ukraine Renewable Energy & Power Infrastructure Investment Conference” organized in Kyiv by the Slovak company Euroconvention Global.

Representatives from Ministry of Energy and Coal Industry, the EBRD and Lev Pidlisetsky, MP, the author of the new draft law concept, shared their views on the introduction of RE auctions in Ukraine. Their presentations made at the Forum raised many questions among investors. Johannes Bauer, First Counsellor, Head of the Department of Foreign Assistance Programs “Energy. Environment. Transport” of the Representative Office of the European Union to Ukraine, emphasized that any changes in the current system should take place based on sustainability and stability. He emphasized the need to raise prices for fossil fuels, to implement the ombudsman’s activities for the energy sector and to develop a strategy for transition from coal generation to RES generation.

UWEA was the information partner of the conference. The UWEA Chairman of the Board, Vice President of WWEA, Andriy Konechenkov made a presentation on the prospects for development of wind energy projects in Ukraine.

ENERGY CHINA SYMPOSIUM ON CENTRAL AND EASTERN EUROPEAN POWER MARKET

On June 12, 2018 Vilnius, the Republic of Lithuania, hosted the Symposium on the Central and Eastern European Power Market initiated by the Energy China Corporation.

The Symposium focused on international cooperation and future power market prospects for Central and Eastern European region. Representatives of Energy China Corporation, Vice-Minister of Energy of Lithuania Lina Sabaidiene, Vice-Minister of Economy and Innovation of Lithuania Eilius Civilys, the UWEA Chairman of the Board, Vice President of the WWEA, Andriy Konechenkov, Chairman of the Board of Lietuvos Energija Darius Mitstenas and other energy experts addressed participants.

Vice Minister of Energy of the Republic of Lithuania Lina Sabaidiene reported on the country’s new energy strategy aimed at reducing electricity imports and increasing electricity generation from RES: “Renewable sources should become the basis for the production of electric and thermal energy by 2050”. The share of RES is expected to reach 45% in 2030 and 80% in 2050. Wind is projected to capture the largest share of electricity generated by RES, 55% by 2030.

In his presentation, the UWEA Chairman of the Board, Vice-President of the WWEA, Andriy Konechenkov presented an overview of the Ukrainian wind energy sector and prospects for its development. Chairman of Energy China Corporation Jiangping Wang expressed deep interest in cooperation



中国能建中东欧电力市场研讨会

ENERGY CHINA SYMPOSIUM

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JOINTLY BENEFICIAL MUTUAL BENEFIT COOPERATION IN CENTRAL AND EASTERN EUROPEAN MARKET



with Ukrainian companies in clean energy, namely wind, solar, wind-hydrogen and clean coal technologies during a meeting with Andriy Konechenkov.

During the Energy Symposium, 3 cooperation agreements on cooperation between companies and associations of China, Lithuania and Ukraine were signed.

FINANCING ENERGY IN UKRAINE: GREEN FUTURE IS COMING

On 14 June 2018 Radcliffe Partners and Clifford Chance hosted a high profile gathering of green energy professionals, policy-makers, institutional investors and commercial banks representatives to discuss various opportunities in the renewable sector in Ukraine, including attracting financing for the renewable projects.

The conference was addressed by Serhiy Savchuk, Head of the SAEE, Dmytro Kovalenko, NEURC member, Andriy Konechenkov, the UWEA Chairman of the Board, Vice-President of the WWEA, Burak Pehlivan, Chairman of the International Turkish-Ukrainian Business Association, Mikhailo Bno-Airian, International Cooperation Officer of NPC Ukrenergo, representatives of EBRD, UkrGasBank as well as Renewable Energy market experts.

“It should be noted that since 2017, leading wind and investment companies from China, Turkey, Denmark and Germany expressed great interest in renewable energy sector of Ukraine. However, Ukraine is still at the initial stage of development of green energy in comparison to most European countries which already have from 10% to 44% share of wind generation in their energy mix,” said Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA.

AGROENERGY

On June 16, a professional conference devoted to the prospects of generating energy from renewable energy sources: biomass, wind, sun and water, was successfully held in Kyiv. The participants of the event discussed issues related to the development of renewable energy technologies and their application in the agrarian industrial complex of the country, investments in construction of new facilities and factories, changes in the legislative and regulatory framework of Ukraine. In his speech, Mykola Savchuk, UWEA Board member, Head of Small and Medium Wind Generation Department, General Director of GRESA-GROUP LLC, presented the advantages of using wind and solar systems in the agricultural sector of the country.





partner of GOLAW law firm, Yuri Gnatyuk, Director of SE ENERGORYNOK, Maxim Sysoev, Advisor to the law firm Dentons, Anton Gudachenko, Director of the NKREKP Energy sector Relations Department; Oleksandr Martynyuk, Head of Expert Group on Development of RES of the Energy Markets Directorate of the Ministry of Energy and Coal Industry of Ukraine.

ENERGYCRIUSE'18

The first Ukrainian Energy Investment Night organised by A7 CONFERENCES took place on board of Liner Rosa Victoria on September 14, 2018. The event gathered top managers from leading Ukrainian and international financial institutions, international investors, major energy companies and government representatives to discuss the latest legislative initiatives, their impact on the investment climate of Ukraine and the financial capabilities of the energy sector.

Andriy Konechenkov, the UWEA Chairman of the Board, WWEA Vice-President and Maria Barabash, President of A7 CAPITAL, moderated the session "Legislative Initiatives on Changes in the System for Stimulating Energy Development in Ukraine". Specialists of the industry, representatives of the governmental organizations expressed their opinions on the draft law on introduction of RES auctions in Ukraine. Among the main speakers were Serhiy Savchuk, Head of the SAEE, Max Lebedev,

INTERNATIONAL ENVIRONMENTAL FORUM "ECOLOGY, CHALLENGES, INNOVATIVE SOLUTIONS"

On September 14, 2018, an International Environmental Forum dedicated to the International Day for the Preservation of the Ozone Layer was held in the Column Hall of the Kyiv City State Administration. The forum aimed at creating a communication platform for attracting investments and establishing international cooperation in the field of environmental protection and energy efficiency in Ukraine, gathered top representatives of leading and international financial institutions, relevant ministries, international investors, energy companies, construction and agrarian firms, public organizations.

Andriy Konechenkov, the UWEA Chairman of the Board, WWEA Vice-President, presented the prospects of the wind energy sector in Ukraine and the possibility of cooperation with environmental experts.



INTERNATIONAL INVESTMENT BUSINESS FORUM 5T ODESA

On October 4, 2018, Andriy Konechenkov, the UWEA Chairman of the Board, WWEA Vice-President, presented the current state of the wind energy sector of Ukraine at the 3rd International Investment Business Forum 5T Odesa. The Ukrainian Wind Energy Association was the official information partner of this event.

ROUND TABLE "HEALTHY LIFESTYLE IS A KEY TO LONGEVITY"

On October 18, 2018, the UWEA Chairman of the Board, WWEA Vice-President, Andriy Konechenkov took part in the Round Table "Healthy Lifestyle is a Key to Longevity", where he told about world researches including those conducted in the USA, on the positive impact of wind energy on the continuation of human life owing to ecologically pure electricity generation. The organizers of the table were the NGO "Living in Harmony" and the Golda Meir Ukrainian-Israeli Institute for Strategic Studies.

GLOBAL WIND SUMMIT 2018

Over 35,000 visitors from 100 countries came to Hamburg late September for the largest business, networking and educational gathering of the entire wind energy industry.



The Global Wind Summit consisted of two events: WindEnergy Hamburg's Global On & Offshore Expo Exhibitions with more than 1,400 exhibitors, and WindEurope's Global On & Offshore Conference with over 250 speakers from around the world, including politicians, representatives of business, manufacturers of wind power equipment and developers of modern technologies.

The WindEurope 2018 Conference explored how wind energy would set to continue breaking new ground from different angles: electrification, sector-coupling, digitisation and other technology



Abstract

In Ukraine, 2017 and 2018 have seen a recovery in the wind-power sector, and the renewable energy industry in general, following two years of stagnation. International financial institutions (IFIs) and private foreign investors are showing growing interest in the Ukrainian wind market, with a number of new projects being launched or contemplated. Ukraine has remarkable potential for the development of almost every type of renewable energy, including wind-power projects (WPPs). More than 7,000 km² of land is available, which can be developed for WPPs.

STATE SUPPORT AND INCENTIVES TO BOOST RENEWABLES IN UKRAINE

An attractive state support mechanism: The feed-in tariff ("FIT") is the principal support mechanism, with fairly high rates, and is referenced to the Euro.

Fixed long-term FIT with limited risk of change: The FIT is established by law as at the date of facility commissioning, and is effective until 1 January 2030.

Limited risk of sales: A single offtaker (currently, state enterprise "Energoynok") is obliged to purchase all electricity produced from renewable sources under the FIT until 1 January 2030.

Pre-PPA. Improved bankability: A power purchase agreement ("PPA") between a producer and the offtaker can be concluded in the early stages of a project (even prior to obtaining a construction permit and grid connection).

Window of opportunity. Highest FIT: In order to obtain the highest FIT, the project should be commissioned by the end of 2019.

Bonuses for use of local content: Bonuses are paid for the use of local equipment, as a 5% or 10% surcharge on top of the FIT.

Relief or limitation of liability for imbalances: A producer is fully released from responsibility for imbalances or bears only partial responsibility, depending on the date of the plant being commissioned.

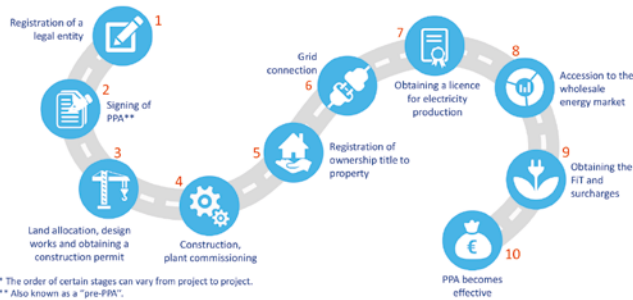
Strategic importance of renewables: The growing role of renewables is recognised amongst the key components of the country's energy security, according to Ukraine's Energy Strategy and the National Action Plan for Renewable Energy.

Ambitious renewable energy targets and undertakings: Ukraine is committed to a binding 11% share of energy from renewable sources of gross final energy consumption by 2020, compared with a share of less than 2% in 2017, requiring investment of EUR 16 billion. Ukraine's Energy Strategy foresees a further increase in this share to at least 25% by 2035.

Objects

The presentation outlines the benefits and challenges of financing WPPs in Ukraine. The topic is of both practical and scientific interest to all those interested in RE. The insight provided will assist participants with taking well-informed decisions regarding undertaking WPPs in Ukraine, and making more accurate forecasts of investment prospects. A case study and an overview of the practicalities involved will facilitate the implementation of WPPs in Ukraine for those players who are already active there.

THE MAIN STAGES OF DEVELOPMENT OF A RENEWABLE ENERGY PROJECT*



Methods

- Descriptive (qualitative and quantitative) methods to provide an overview of the current situation in the sector and its growth dynamics.
- Correlational and comparative analyses to compare the core elements of the electricity market design relevant to RE, the state support system, the RE share in the energy mix, and RE targets in Ukraine compared with those in other countries.
- Empirical data and meta-analysis to show the patterns and structures used in a WPP project financing based on a case study, and to describe how project-specific issues and risks compare with those at the macrolevel of the country and its power system in its entirety.

Results

The current support mechanism is attractive for investment. Good progress has been made toward international standards of bankability of RE projects. In particular, in 2017-2018, the template form of PPA was considerably amended, with the aim of enhancing its bankability and raising investment. The current template form of a PPA is accepted as bankable by many investors, particularly IFIs.

The trend in currency regulations is toward liberalisation and alleviation of the restrictions introduced back in 2014 during the crisis in Ukraine. A recently adopted Law of Ukraine "On Currency and Currency Transactions" provides a platform for a free circulation of capital and currency liberalisation in alignment with the European standards.

Competition, sustainability and diversity of support mechanisms are increasingly in focus. The current trend is toward an increase of competition through the contemplated introduction of auctions and CfDs.

RENEWABLE ENERGY LEGAL UPDATES

June 2017	September 2017	December 2017	December 2017	January 2018	June 2018	July 2018
Ukraine's electricity market will be redesigned in line with European practices	The template PPA is improved to help foster the bankability of renewable energy projects	Paying import VAT in instalments for certain machinery and equipment	Environmental impact assessment is enacted in Ukraine, aligned with European standards	Further amendments to the template power purchase agreement to enhance its bankability	Registration of draft bills on renewable energy auctions with the Verkhovna Rada (Parliament) of Ukraine	The law on the full-fledged currency liberalisation and free movement of capital has been adopted pursuant to the EU-Ukraine Association Agreement

Conclusions

The renewable energy sector is unsaturated in Ukraine, and there is significant potential for its further growth. There is a favourable legislative framework in place, and a strong political will to respect the relevant international commitments of Ukraine in the renewable energy acquis and achieve the targets set.

WPP projects should be thoroughly crafted and forecast to better navigate project-specific risks. Thorough due diligence of a target project, and selection of reliable and experienced local partners for a project, is key to the success of WPPs in Ukraine.

This window of opportunity, as it currently stands, is not unlimited. Existing patterns may evolve with the aim of improving competition in the industry, eliminating market distortions and providing adequate price signals for investors.

INSTALLED AND PROJECTED WIND CAPACITIES, MW



CASE STUDY: FINANCIAL RESTRUCTURING OF A WIND POWER DEVELOPMENT PROJECT

Wind farm: Botievo wind farm, the coast of the Azov sea, Zaporizhzhya region, Ukraine

Debt restructuring for LLC "Wind Power" for the total amount of EUR 228 mln

Installed capacity: 200 MW

The total project value: EUR 340 mln

Loan insured by the guarantee from EKF (Denmark's Export Credit Agency)



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developments in wind, finance and the implementation of an increasing merchant environment – auctions, and corporate PPAs.

European Commissioner for Energy, Miguel Arias Cañete stressed that the energy transition needs to go beyond the power sector into heating, cooling and transport.

Speaking at the opening of the Global Wind Energy Summit, Fatih Birol, Executive Director of the IEA, said: “When we talk about system integration, the magic word is “flexibility” in our systems to address the challenge which is coming from solar and wind integration”.

For the third consecutive year the Ukrainian manufacturer of wind turbines, Fuhrlaender Windtechnology LLC exhibited a full range of their products and services at the WindEnergy Hamburg’s Global On & Offshore Expo. A delegation from Ukraine consisting of more than 50 persons representing various Ukrainian and international companies actively involved in the wind power sector in Ukraine, including developers, equipment manufacturers, lawyers, came to Hamburg to visit and participate in the wind fair.

Svitlana Teush, Counsel and Head of the Renewable Energy, Construction and Real Estate practices of Redcliffe Partners, Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA and Galyna Shmidt, UWEA Board Member, presented a poster report “Financing Wind



Power Projects In Ukraine: Unveiling Opportunities and Challenges” at the WindEurope’s Global On & Offshore Conference. Within the framework of the Global Wind Summit 2018, People’s Artist of Ukraine, Ruslana was officially awarded with the honorary title “Ambassador for Global 100% Renewable Energy Platform” for her active role in promoting renewable energy worldwide.

“The natural gas conflict – fossil fuels conflict between Russia and Ukraine is one of the main drivers for unleashing the on-going hybrid war in Ukraine. Renewable energy and wind power in particular, means not only usage of local infrastructure, investment in the regions and job creation, it also sets the world on the path to peace and security, stressed Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA.



LVIV REGION – HUB OF OPPORTUNITIES

On November 1-2, 2018, the XVIII International Economic Forum “Lviv Region – Hub of Opportunities” organized by the Lviv State Regional Administration was successfully held in Lviv. For 18 consecutive years, the International Economic Forum brought together state and regional representatives, investors, business leaders, diplomats, bankers and representatives from international institutions and associations to discuss and resolve important issues of economic development, state formation, as well as networking and experience exchange.

During the plenary session “Power of the Wind – Driving Force of the Energy Independence”, moderated by Andriy Konechenkov, the UWEA Chairman of the Board, Vice President of WWEA, Maxim Kozytsky, Director of the company Eco-Optima, Enis Fakioglu, co-founder of Atlas Global Energy BV, Enisolar and Atlas Global Energy LLC and Olena Koltyk, Development Director of the Ukrainian Association for Renewable Energy shared their thoughts on the development of wind energy technologies both in Lviv region and generally in the country.

Within the framework of the International Economic Forum, the official opening of the largest solar power plant in the Western Ukraine – Yavoriv-1

with a total capacity of 36 MW was held. The project is implemented in Yavoriv district of Lviv region by EnergoPark Yavoriv 2 LLC (*EKO-Optima group of companies*). The total capacity of the SPP will be 72 MW and the second stage of which will be built in 2019.

7TH WIND POWER CONGRESS OF TURKEY

On November 5-6, 2018, the 7th Turkish Wind Energy Congress TWEC 2018 organized by the Turkish Wind Energy Association TUREB was held in Ankara. About 2,000 delegates representing relevant ministries of the Republic of Turkey, state and international institutions, wind turbine producers and wind energy companies participated in discussions, exchange of knowledge and debates aimed at furthering the success of Turkey’s wind energy industry.

The agenda of the two-day congress included a wide range of topical issues and challenges faced by the sector: from plans for development for the next 5-10 years, further support of the national wind energy industry to auctions and financing.

The interest of the Turkish wind energy market players to the wind energy sector of Ukraine still remains high. For the third consecutive year,





the UWEA Chairman of the Board, Vice President of WWEA, Andriy Konechenkov participated in the Wind Energy Congress of Turkey. He devoted his presentation at TWEC 2018 to the investment attractiveness of the Ukrainian wind energy market, presenting the potential of the domestic wind energy sector for Turkish investors.

11TH INTERNATIONAL ENERGY CONGRESS AND EXHIBITION IN ANKARA

On 8-9 November 2018, the Ukrainian delegation consisting of representatives of UWEA member companies took part in the 11th International Energy Congress and exhibition in Ankara, which was organized with participation of the Ministry of Energy and Natural Resources of Turkey in Ankara. The following UWEA members participated in this event: Eco-Optima LLC, UGT Consulting LLC, Crane Ukraine LLC, GT LLC, law firms Redcliffe Partners, Sayenko Kharenko and others.

III LEGAL ENERGY FORUM

The participants of the III Legal Energy Forum, which took place on 14 November 2018 in Kyiv, shared their vision of the current problems and future of the Ukrainian energy sector. This year's event conducted by the "Yuridychna Praktika" (Legal Practice) for the third consecutive year was supported by the Ukrainian National Bar Association and informationally supported by the UWEA. Law firm Asters traditionally became a general partner of the forum. The third session of the III Legal Energy Forum was devoted to the actual issues and legal aspects of renewable energy.

DEVELOPMENT OF SMALL AND MEDIUM GENERATION – THE WAY TO THE FUTURE CLUSTER ENERGY

On November 21-23, 2018, the III International Forum Innovation Market took place. The three-day program of conference events was devoted to the issues related to the development of innovation and





investment activities in education, science, energy, environment, financial and banking sectors.

Mykola Savchuk, member of the UWEA Board, Head of Small and Medium Wind Generation department, General Director of GRESA-GROUP participated in the discussion “Development of Small and Medium Generation – the Way to the Future Cluster Energy” conducted on November 21, 2018, within the framework of the International Forum of Innovation Market. In his speech, Mr. Savchuk presented the possibilities of using small and medium wind generators in Ukraine as well as the advantages of wind-solar combined power systems for households.

Within the framework of the plenary session, Andriy Konechenkov, Chairman of the Ukrainian Wind Energy Association and Vice-President of the World Wind Energy Association, reported on the status of wind power in Ukraine, achievements and peculiarities of the development of wind energy in the world and Ukraine.

In 2018, the UWEA members took part in more than 50 different professional conferences and events in most regions of Ukraine, including public hearings devoted to wind energy projects, meetings of the Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety of Ukraine, etc.

7TH CONFERENCE SYSTEMS OF GUARANTEED ELECTRICITY SUPPLY AND AUTOMATION 2018

On 22 November 2018, at the Chamber of Commerce and Industry of Ukraine, in Kyiv, the seventh professional electro technical conference “Systems of Guaranteed Electricity Supply and Automation 2018” organized by the journal “Networks & Business” was held.

IN 2018, THE UWEA MEMBERS TOOK PART IN MORE THAN 50 DIFFERENT PROFESSIONAL CONFERENCES AND EVENTS IN MOST REGIONS OF UKRAINE, INCLUDING PUBLIC HEARINGS DEVOTED TO WIND ENERGY PROJECTS, MEETINGS OF THE COMMITTEE ON FUEL AND ENERGY COMPLEX, NUCLEAR POLICY AND NUCLEAR SAFETY OF UKRAINE, ETC.

3.5. AWARDS AND HONORS



THE FIRST ECO-OSKARS IN UKRAINE

Business forum “ECOTransformation of Ukraine. Stakeholders of Green change – 2018”, which took place on 17 December 2018 in Kyiv, gathered the ECO leaders, famous industry experts and executives of leading enterprises. The forum participants presented their main achievements in the field of ecology, renewable energy and energy saving, the best implemented environmental solutions.

The forum opened with the ECO-Oscar award ceremony during which diplomas Green Change Stakeholder and Ecotransformation-2018 statuettes (*ECO-Oscars*) were awarded to 50 Green Change Stakeholders for a significant contribution to the green transformation of the state.

Receiving the award, Andriy Konechenkov, UWEA Chairman of the Board, WWEA Vice President, thanked all stakeholders of the Ukrainian wind energy market for their joint work in promoting “clean”, wind energy to achieve energy independence and sustainable development of the country: “It is renewable energy which today drives out fossil fuel from energy production, creates environmentally friendly environment for the development of society and improves the living standard on our planet. I am very grateful to the organizers of this event for the excellent idea of drawing public attention to green changes”.

“VIVAT, UKRAINE!” ROLE OF PERSONALITY IN UKRAINE’S INTEGRATION INTO EUROPE

On June 15, 2018, a presentation of the book “VIVAT, Ukraine!” which contains articles about the country’s iconic personalities in a wide variety of industries was held at the Ukrainian National News Agency Ukrinform. Andriy Konechenkov, UWEA Chairman of the Board, Vice President of WWEA, became a member of the All-Ukrainian Program “The Golden Fund of the Nation. VIVAT, Ukraine!”

Ukrainian Confederation of Journalists launched the book “VIVAT, Ukraine!” on the occasion of the 10th anniversary of the All-Ukrainian Program “The Golden Fund of the Nation”.

In his address to the audience Andriy Konechenkov thanked the project’s organizers for a high appraisal of his activity in the field of renewable energy. It was symbolic that this event took place just on the Global Wind Day.



3.6. GROWING PARTNERSHIP

In 2017, the PU “UWEA” actively cooperated with state institutions and national and foreign professional associations. A number of memorandums on cooperation were signed to expand partnership aimed at developing a sustainable power sector of Ukrainian economy.

MEMORANDUM ON COOPERATION BETWEEN THE ASSOCIATION OF SYSTEM SUPPORT FOR UKRAINIAN REFORMS AND TECHNOLOGIES OF LOW-CARBON ECONOMY AND THE UWEA

On April 10, 2018, Vasyl Gureyev, President of the Public Union Association of System Support for Ukrainian Reforms and Technologies of Low-Carbon Economy, and Andriy Konechenkov, Chairman of the Board of the Public Union Ukrainian Wind Energy Association, signed a Memorandum on Partnership and Cooperation between the two Unions.

The Memorandum defines actions aimed at developing a sustainable power sector in Ukraine. The parties will promote dissemination of practice and experience of using low-carbon technologies in the power industry, in particular, wind, solar and hydrogen technologies.

MEMORANDUM ON PARTNERSHIP AND COOPERATION WITH THE ALL-UKRAINIAN ENERGY ASSEMBLY

The Memorandum on Partnership and Cooperation between PU UWEA and the PU All-Ukrainian Energy Assembly, signed on April 13, 2018, aims at effective cooperation between the two public unions on the development of a balanced power sector in Ukraine and, in particular, promoting the dissemination of practices and experience of using renewable energy in the power sector and development of national production of the appropriate equipment. Within the framework of cooperation between the UWEA and the All-Ukrainian Energy Assembly, the book “Renewable Energy. Wind Power Plants. Guidelines for the Development and Operation of Wind Power Projects. (SOU VEA.600.1.1./01:2017 Renewable energy)” was published in early 2018.

MEMORANDUM ON PARTNERSHIP AND COOPERATION WITH THE OFFICE OF THE RENEWABLE ENERGY AMBASSADOR RUSLANA LYZHCHKO

Memorandum of Partnership and Cooperation between the PU Ukrainian Wind Energy Association and Office of the Renewable Energy Ambassador, Ruslana Lyzhychko was signed on 13 September 2018.



Addressing the UWEA members present at the official signing ceremony, People’s Artist of Ukraine, Ruslana Lyzhychko, underlined: “Modern wars are wars for energy resources and their locations; and war in Donbass is not an exception. You don’t need to fight for the Sun and Wind, there are no borders for them. A new RE-based energy system should be created. By signing this Memorandum, I want to assist in building another power system”.

“I highly appreciate contribution by Ruslana, RE 100% Ambassador, in promoting and supporting carbon-free development both in Ukraine and worldwide. Ruslana brings new, special style of music – Renewable-style music, solar and wind-style music”, commented Andriy Konechenkov, Chairman of the Board of the Ukrainian Wind Energy Association, WWEA Vice President.

MEMORANDUM ON PARTNERSHIP AND COOPERATION WITH THE ENERGY ASSOCIATION UKRAINIAN HYDROGEN COUNCIL

The combination of powerful wind power and unlimited potential of hydrogen energy for ensuring a balanced development of Ukrainian power complex to allow a transition to a modern, carbon-free economy is the goal of the Memorandum of Partnership and Cooperation signed on May 11, 2018 in Kyiv between the PU UWEA and the Energy Association Ukrainian Hydrogen Council. Successful New Energy International Form “Wind and Hydrogen” held in May is a vivid example of effective cooperation between two associations.

MEMORANDUM WITH OFFICE OF THE NATIONAL INVESTMENT COUNCIL OF UKRAINE

On September 18, 2018, the Ukrainian Wind Energy Association signed with the Office of the National Investment Council of Ukraine a Memorandum on Partnership and Cooperation to consolidate efforts on cooperation in reforming the legislation regulating the green energy sector, exchange of information and experience, establishing partnerships with representatives of RES sector in other countries, promotion of information assistance to investors for implementation of renewable energy projects in Ukraine.

“The investors’ interest is explained, first of all, by attractive Ukrainian legislation, high green tariffs and sufficient potential of renewable energy sources for the development of large-scale solar and wind projects”, noted Andriy Konechenkov, UWEA Chairman of the Board, WWEA Vice President.



MEMORANDUM ON PARTNERSHIP AND COOPERATION WITH THE INTERNATIONAL UNION OF BUSINESSMEN OF UKRAINE AND TURKEY

On November 15, 2018, a Memorandum on Partnership and Cooperation between the IPO International Union of Businessmen of Ukraine and Turkey and the PU Ukrainian Wind Energy Association was signed in the office of the International Union of Businessmen of Ukraine and Turkey in Kyiv. Parties identified the following areas of mutual cooperation:

- Exchange of information, experience and materials on attractiing investments, creation of favorable investment climate.
- Identification of topical problems, barriers to implementation of wind energy technologies in Ukraine, wind power generation and potential solutions.
- Facilitating activities of Turkish and Ukrainian companies interested in implementing joint projects in Ukraine.
- Development of effective partnership in the field of wind energy between representatives of the electricity sectors of Ukraine and Turkey.





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