UKRAINIAN WIND POWER SECTOR 2023

MARKET OVERVIEW

15 YEARS 2008-2024

UWEA UKRAINIAN WIND ENERGY ASSOCIATION

FRIENDLY The industrial park
WIND TECHNOLOGY

LLC «FRIENDLY WIND TECHNOLOGY»

our energy independence in action

PRODUCTION AND INSTALLATION OF WIND TURBINES

www.friendlytechnology.com.ua

UKRAINIAN WIND POWER SECTOR 2023

MARKET OVERVIEW

Ukrainian Wind Power Sector Market Overview 2023 has been developed by **Public Union Ukrainian Wind Energy Association** in collaboration with **INTEGRITES.**

AUTHORS:
Andriy Konechenkov, Chairman of the UWEA Board, Director at the Ukrainian Wind Energy Agency-K LLC
Galyna Shmidt, Member of the UWEA Board, International Director at the Ukrainian Wind Energy Agency-K LLC
Kateryna Knysh, Head of Analytics at the Ukrainian Wind Energy Agency-K LLC
Oleksandr Podprugin, Deputy Chairman of the UWEA Board, Country Manager Ukraine at Notus Energy
Ivan Bondarchuk, LL.M, Member of the UWEA Board, Counsel and Head of Energy at LCF Law Group
Natalia Hutarevych, Member of the UWEA Legal Committee, Senior Associate at Sayenko Kharenko
Maria Kostytska, Partner and Head of Arbitration at the Paris Office, Winston & Strawn LLP

THE AUTHORS BEHIND THE SECTION "THE REGULATORY FRAMEWORK FOR WIND POWER IN UKRAINE":
Dr. **Oleksiy Feliv,** LL.M., Managing Partner, INTEGRITES
Serhii Datsiv, Senior Associate, INTEGRITES
Kateryna Liaskovets, Paralegal, INTEGRITES

The authors of the Overview particularly wish to express their gratitude to the Ministry of Energy of Ukraine, the State Agency on Energy Efficiency and Energy Saving of Ukraine, the National Commission for State Regulation of Energy and Utilities, the SE Guaranteed Buyer, members of the UWEA Legal Committee and Ukrainian Wind Energy Agency-K LLC for sharing their expert views on the current status, challenges and prospects for wind power in Ukraine.

The photos used in the Overview have been kindly provided by Wind Parks of Ukraine LLC, Elementum Energy LLC, DTEK Renewables, Eco-Optima LLC, Ukrainian Wind Energy Agency-K LLC.

© **Published:** February 2024

Tel. +380 (50) 223 29 96
Email: *info@uwea.com.ua*
www.uwea.com.ua

Public Union Ukrainian Wind Energy Association *(UWEA)* is the largest renewable energy industry association in Ukraine. It's a non-profit organization that serves as the principal communication and cooperation platform for the large-scale adoption of wind technologies in the country and advancing the "green" transformation of the Ukrainian energy system and its post-war recovery based on renewable energy and sustainable development.

The UWEA was founded in 2008 to protect the interests and support the activities of both the national and international stakeholders of the Ukrainian wind energy market. As of the end of 2023, the UWEA unites 82 companies from 14 countries, including 100% of wind electricity producers, investors and wind farm developers, equipment manufacturers, construction, consulting and logistic companies, lawyers, and environmentalists.

The UWEA has been closely cooperating with various national, regional, and local authorities, and international institutions and organizations including the International Energy Agency, International Renewable Energy Agency, BloombergNEF, Wood Mackenzie, and REN21. The UWEA is a member of the World Wind Energy Association and WindEurope.

Since 2020, the UWEA has been promoting offshore wind in the Black Sea. UWEA has become a co-founder of the Black Sea Offshore Wind Energy Federation *(BASOFWED)*. Numerous awards recognise the high-level professionalism of the association's experts. In 2017 the UWEA was awarded the Honorary award "Choice of Ukraine 2017" and in 2019 – the Honorary award "Choice of the Country 2019". In 2023, it received the "Green Heart" award within Ukraine's Ecotransformation project.

Since the beginning of the war unleashed by the russian federation against Ukraine, the UWEA has also been involved in volunteer activities, in particular through a specially created online platform #Renewables4Ukraine.

INTEGRITES is a full-service law firm with offices in Ukraine and Kazakhstan, contact offices in Germany and the UK. The firm is highly recommended for its cross-border work – investment deals, sophisticated transactions, complex dispute resolution, and for projects which require in-depth industry expertise.

Our **Climate Change Task Force** within the firm provides clients with comprehensive advice on projects targeted at the sustainable development of their business and the country in the context of energy transition and green technologies. In 2021, INTEGRITES was shortlisted for Financial Times Innovative Lawyers Awards Europe in the category Sustainability & ESG – "Leadership for Climate Change Task Force".

Key figures about the firm:
- 3+ GW of wind and solar power projects with € 3 bln investment involved
- 19 years on the market
- 1600+ clients around the globe, including Fortune 500 companies & IFIs
- Recognized in Tier 1, The Legal 500

Our expertise in renewables:
- Greenfield development projects for wind, solar, biomass and biogas
- Land issues
- Grid connection, including negotiations of agreements with grid operators
- Obtaining construction permits, environmental assessment, other approvals
- Project financing, including syndicated loans, green bonds, structured equity
- Construction agreements, including EPC under FIDIC standards
- Commissioning of completed generation plants and high voltage parts
- Generation license and award of Feed-In Tariff
- Corporate PPAs and electricity trading *(day-ahead market, spot market, balancing and auxiliary services market)*
- Tax and customs structuring, use of incentive schemes
- Investment protection structuring, including risks associated with Feed-In Tariff
- Investment arbitration in renewables disputes

Contacts:
1 Dobrovolchykh Batalioniv St.,
Kyiv, 01015
+380 44 391 38 53
info@integrites.com
www.integrites.com
https://www.linkedin.com/company/integrites1
https://www.facebook.com/Integrites

CONTENTS

FOREWORD

Ukraine's wind power market has not only been functioning for two years of war, but it is also trying to expand in the face of a full-scale invasion of russia and continuous drone and missile attacks. Shortly before the Overview's release date, another wind turbine was hit by a russian drone. As of January 2024, russia has already damaged or destroyed 11 Ukrainian WTGs, while 71% of wind generation still remains in temporarily occupied territories and does not supply "green" electricity to the Ukrainian power system. However, Ukraine's wind power market is not stagnating.

Wind industry companies continue to implement their wind projects. In 2023, 146.3 MW of new wind power capacities was added to the integrated power system of Ukraine, including the first phase of the Tyligulska wind farm by DTEK Renewables. Once completed, the 500 MW Tyligulska WPP will be one of the largest onshore wind farms in Eastern Europe. So, my congratulations to DTEK Renewables! I also want to pay tribute to Elementum Energy LLC for having commissioned the second phase of the Dnistrovska WPP as well as to Eco-Optima LLC for their Skolivska wind farm!

Ukrainian companies' perseverance and courage helped bring the total installed wind power capacity in Ukraine to 1,900.8 MW at the end of 2023, which accounts for 27.1% of the total RES installed capacity. The past year was also marked by the launch of the Friendly Windtechnology Industrial Park which is included in the project portfolio of the MC "Wind Parks of Ukraine". The industrial park will create new jobs and become the center of national engineering. The project also provides for manufacturing the first in Ukraine's wind power industry blades branded "Made in Ukraine".

It is also worth noting that 2023 will go down in the history of national wind power, as the year when subcontractors from Ukraine, local engineers and technicians successfully installed WTGs under the remote supervision of the manufacturers, since the key foreign contractors evacuated from the sites around a week before the full-scale invasion of Ukraine.

I could proudly say that Ukraine's wind power market has set an example for the global wind community on how wind energy can operate even amid the full-scale war, and how much even a small capacity of wind power can benefit the entire power system and replace damaged fossil fuel generation in certain regions.

Although the RES regulatory framework is not yet perfect in Ukraine, and debts to RES electricity producers have not yet been fully paid off, some positive legislative initiatives aimed at accelerating RES deployment were introduced in Ukraine, namely:

- the Law of Ukraine № 3220-IX "On Amendments to Certain Laws of Ukraine on Recovery and "Green" Transformation of the Power System of Ukraine", which stimulated wind electricity producers to enter the merchant power market and provided for such new RES support tools as a market premium and CfD.
- Ukraine's Energy Strategy until 2050, which provides for bringing the national wind power capacity to 10 GW by 2032.

In 2023, the Ministry of Energy of Ukraine and the NPC Ukrenergo actively worked on integrating the

Ukrainian energy sector with the European one. At the end of 2023, the synchronization with ENTSO-E was completed. In addition, Ukraine increased its electricity import capacity almost threefold to 1.7 GW which is critical to ensure a stable energy supply during the war.

Launching the State Fund for Decarbonisation and Energy Efficiency Transformation by the SAEE became also one of the key steps towards building a sustainable European-style power system in our country.

To sum up, our country has enough potential to carry out even the most ambitious wind projects either offshore and onshore as well as implementing hydrogen projects. I'd like to note that Ukraine's accession to the EU will make it easier for such projects to be implemented, while the Ukrainian RES market will be even more accessible.

Moreover, to deliver on the goals set by the Energy Strategy of Ukraine until 2050, the UWEA developed a Concept of the main reforms that need to take place in the market by 2030 in order to boost wind deployment in Ukraine.

The Ukrainian wind energy community is willing to strengthen its wind power sector and fully support the implementation of the actions set out in the EU Wind Power Package. Therefore, the UWEA and a number of its member companies have also signed the European Wind Charter, promoted by WindEurope.

I want to express my gratitude to all of you for your cooperation, both companies that have been with the UWEA for 15 years already and those who joined our "wind power family" only in 2023.

I thank each of our regular partners and welcome new ones, namely German leading RES associations *(BEE, BWE, BSW and FvB),* COWI, RenewableUK, and ReBuild Ukraine Powered by Energy project.

I also want to express my gratitude to the World Wind Energy Association, Global 100% RE and the Finnish organization EKOenergy ecolabel for their humanitarian assistance to Ukraine in such a challenging time for my country.

Ukraine stands because you stand for Ukraine!

Glory to Ukraine!
Glory to Ukrainian Heroes!

Andriy Konechenkov
Chairman of the Board
UWEA

THE WAR AGAINST UKRAINE IS PUSHING FORWARD THE GLOBAL CLEAN ENERGY TRANSITION

Even with the ongoing large-scale war against Ukraine, which has caused supply chain disruptions and an increase in energy prices, interest rates, and mineral prices, it has become crucial in 2023 to address global energy security and reduce import dependency in the traditional energy sector.

According to BP Plc's *(formerly British petroleum)* Energy Outlook 2023 edition,[1] although the war against Ukraine has led to a slowdown in global economic activity by about 2.7% by 2025 and 3% by 2035, the future of global energy will be defined by four trends: a declining role for hydrocarbons, rapid growth of renewables, an increase in electrification and usage of low-carbon hydrogen. The share of fossil fuels in the global energy mix will prominently decline by 2050 as per each of the three scenarios of potential power development from BP Plc: from the current 80% to 55% in the New Momentum or business as usual scenario; from the current 80% to 28% in the Accelerated scenario; and from the current 80% to 19% in the Net-Zero scenario. At the same time, the share of renewables, such as wind and solar, will increase from the current 12% to 35% under the New Momentum scenario, or to about 60% under the other two scenarios above. According to the company, fossil fuel use will peak in 2030, while CO_2 emissions have already peaked in 2020 and will be 30% lower by 2050 than in 2019.

Following BP Plc's forecast, an international certification and classification organization DNV is convinced that it will take 27 years for the world to move from today's global energy mix, which is based on 80% fossil fuels and 20% renewables, to a ratio of 48% : 52%, respectively. According to DNV experts, wind and solar power will grow 10 and 17 times, respectively, between 2022 and 2050.

In light of recent statements and commitments made worldwide, it is reasonable to view BP Plc's forecast as justified. Thus, Ajay Banga questioned immediately the enormous funds spent by governments on fossil fuel subsidies upon taking office as President of the World Bank Group in 2023.[2] In a statement made at the Group's annual meeting in Morocco, Mr. Banga asserted that the USD 1.25 trillion spent per year on fossil fuel and agricultural development is excessive, and the bank will push governments to prioritize climate change measures.

After that, at the annual meeting of the G7 Energy, Environment and Climate Ministers, an agreement was reached to accelerate the elimination of fossil fuels and establish a carbon-neutral national energy portfolio by 2035, with zero greenhouse gas emissions by 2050 at the latest.[3] Although the Ministers did not set a common clear schedule for the decommissioning of existing coal-fired power plants, each country will continue to follow its national plans on this issue.

The fundamental pledges to move away from fossil fuels and develop RES were laid down at last year's UN Climate Change Conference – COP28. A key achievement of 2023 was the conclusion of an agreement to assess the progress made by UN member states in implementing the Paris Agreement called the Global Stock Take. The primary driver of temperature rise, namely fossil fuels, was addressed in this agreement, making it the first climate agreement in history. Despite the opposition from oil-producing countries, the nations' agreement can be viewed as a triumph for global climate diplomacy. By signing this agreement, nearly 200 countries have agreed to take the following measures:

- to eliminate fossil fuel usage in the energy sector in a fair, orderly, and inclusive way to achieve zero emissions by 2050;
- to triple the world's renewable energy potential and to double the annual rate of energy efficiency improvements by 2030. Led by the EU, 118 countries have agreed to triple global renewable energy capacity by 2030 *(to more than 11,000 GW)* and double the annual rate of energy efficiency improvements during this decade.
- to achieve zero global methane emissions by 2030, which are 80 times more harmful than carbon dioxide;
- to terminate ineffective fossil fuel subsidies.

[1] https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2023.pdf

[2] https://www.worldbank.org/en/news/speech/2023/10/13/remarks-by-world-bank-group-president-ajay-banga-at-the-2023-annual-meetings-plenary

[3] https://www.weforum.org/agenda/2023/04/energy-crisis-accelerates-renewable-energy-investment-what-you-need-to-know-about-the-global-energy-transition-this-week/

IEA: *Five years ago, there were USD 2 trillion in global energy investments, with USD 1 trillion in clean energy (which has increased by 40% since 2020), and USD 1 trillion in fossil fuels. The contrast between investments in these sectors with a preference for clean sources is striking today.*

Also, during the last year's COP28:

- nine new countries joined the Powering Past Coal Alliance;
- a number of countries have joined a commitment to divest from all fuels called the Beyond Oil & Gas Alliance;
- the Coal Transition Accelerator initiative was launched, in particular with the participation of the EC;
- Colombia becomes the first major oil exporter to sign a fossil fuel non-proliferation treaty;
- 50 fossil fuel companies sign the Charter for the Decarbonisation of the Oil and Gas Sectors;
- several countries joined the Global Alliance for Offshore Wind Energy;
- Ukraine, together with 22 countries, including the United States, France, the United Arab Emirates, and the United Kingdom, adopted a declaration on tripling the share of nuclear energy and joined the newly created Climate Club with 36 countries.

COP28 delegates paid special attention to Ukraine's "green" post-war recovery as well.

According to many global experts and specialized international organizations, the rejection of fossil fuels, even though there is evidence of rising global temperatures and the need to reduce greenhouse gas emissions, is still a geopolitical issue that needs to be resolved in order to ensure energy security in the world. The IEA, like BP Plc, is convinced that russia's full-scale invasion of Ukraine has contributed to a boom in clean energy investments that should eventually far exceed the cost of fossil fuels. In its World Energy Investment 2023 report,[4] the IEA predicts that the clean energy sector is expected to receive USD 1.7 trillion in investments by 2023[5] largely driven by solar energy,

while investments in coal, gas and oil are expected to grow to about USD 1 trillion. According to the IEA, global demand for coal has already peaked in 2022 *(while the oil and gas sectors expect their peak in 2030),* while global CO_2 emissions will still reach their maximum in 2025, which differs from BP Plc's abovementioned statement.

As of January 2024, the final investment figures for the global clean energy sector for the entire 2023 have not yet been released, but according to BloombergNEF, new investment in the global renewables sector alone soared to USD 358 bln in the first six months of 2023.[6] This has already become a record figure compared to the six-month period of any previous year *(for example, this figure is 22% higher than in 2022).* Out of the USD 358 bln allocation, USD 335 bln was for solar, and USD 94 bln – for wind.

Redirecting or "greening" investments, as well as reducing the share of fossil energy sources in the global energy mix, accelerates the transition to clean energy. According to WEF's Insight Report "Fostering Effective Energy Transition 2023 Edition",[7] the majority of countries worldwide demonstrated significant progress towards the energy transition in 2023, especially developing countries. The global average Energy Transition Index score has increased

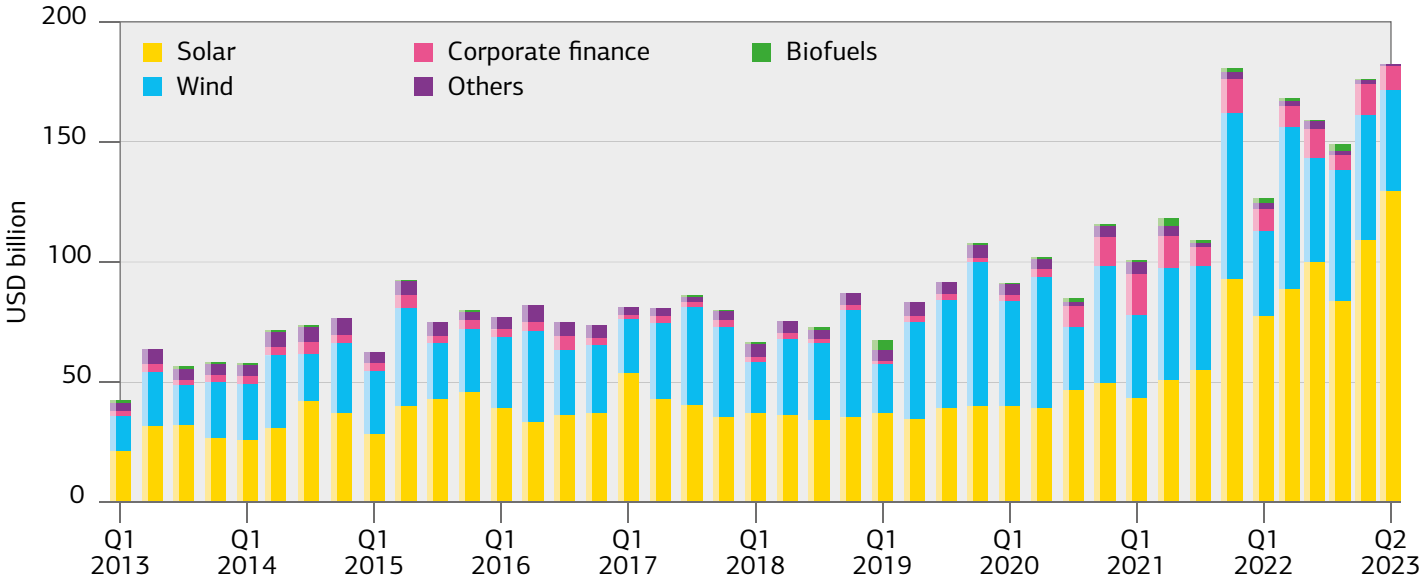
[4] https://iea.blob.core.windows.net/assets/8834d3af-af60-4df0-9643-72e2684f7221/WorldEnergyInvestment2023.pdf

[5] According to the IEA Report, this indicator covers the following sectors: RES and all related green technologies *(energy storage systems, hydrogen, carbon capture and storage technologies, etc.),* e-vehicles, etc.

[6] https://about.bnef.com/blog/renewable-energy-investment-hits-record-breaking-358-billion-in-1h-2023/

[7] https://www3.weforum.org/docs/WEF_Fostering_Effective_Energy_Transition_2023.pdf

Figure 1.1. Global quarterly investment in renewable energy, 2013-2023



Source: *BloombergNEF*

by 10% since 2014. The top 10 countries leading the energy transition *(Sweden, Denmark, Norway, Finland, Switzerland, Iceland, France, Austria, the Netherlands, and Estonia)* account for only 2% of global CO_2 emissions from fuel combustion and 4% of total energy supply.

Ukraine ranks 64th out of 120 countries in terms of energy transition and, according to WEF, is 41.5% ready for transition as of 2023. Among the 5 key progress indicators *(energy intensity, CO_2 emissions intensity, CO_2 emissions per capita, electrification, and total RES capacity),* Ukraine shows the best progress in increasing RES capacity and the worst progress in electrification. Ukrainian performance in all other indicators is below average.

1.1. ANNUAL GROWTH OF NEW RES CAPACITIES IS BEING LED BY SOLAR AND WIND

According to the IEA's Report "Renewables 2023. Analysis and forecast by 2028",[8] the amount of renewable energy capacities added to energy systems around the world grew by 50% in 2023, reaching almost 510 GW, with solar PV accounting for three-quarters of global additions. This growth is primarily due to China's policy, which last year commissioned as many solar PV panels as the entire world in 2022, while its wind power capacity increased by 66% year-on-year. The increases in RES in Europe, the United States and Brazil also hit all-time highs.

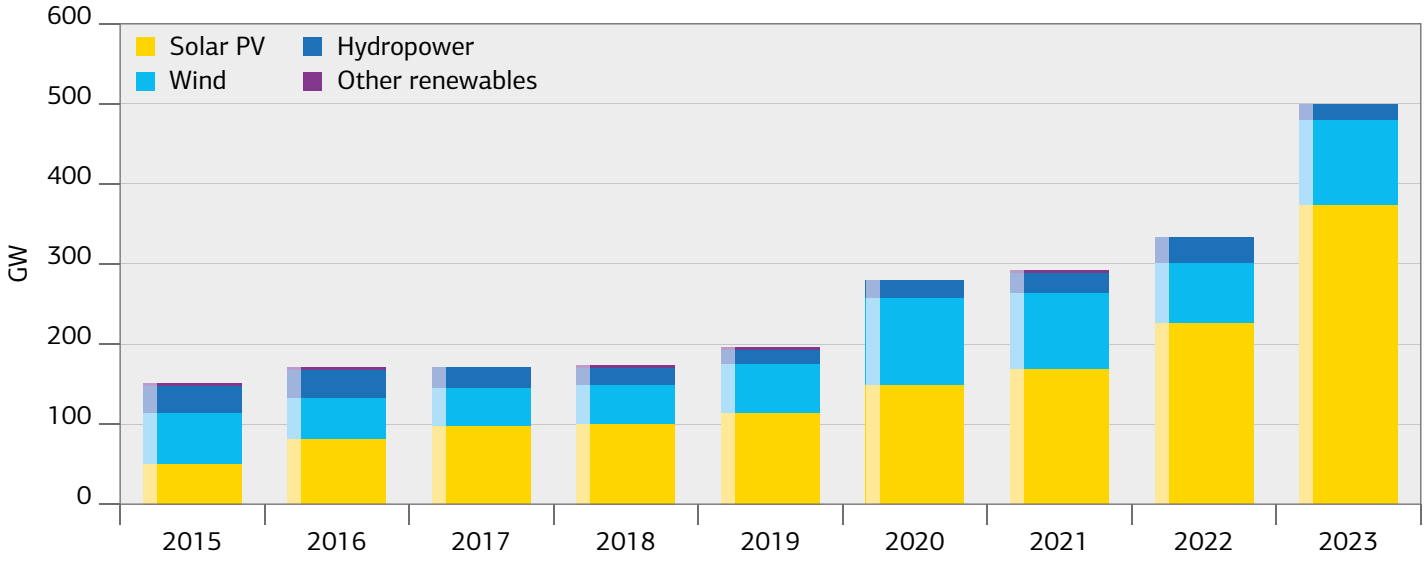
Wind power development will remain closely linked to demand in the medium term. Manufacturing capacity for the main wind turbine components *(nacelles, blades and towers)* remained mostly unchanged in 2023, at about 110-125 GW per year.

Announced expansion projects indicate that by 2025 it will increase to about 120-140 GW. In 2023, the role of biofuels came to the fore. Emerging economies, led by Brazil and India, are expected to drive 70% of global demand over the next five years as biofuels start to show their true potential in hard-to-abate sectors such as air travel and as a replacement for highly polluting fuels like diesel.

In general, it is projected that under current policy and market conditions, global renewable energy capacity will reach 7,300 GW by 2028, with solar and wind power accounting for 95% of the growth. Electricity production from renewables should reach 14,400 TWh by the same year. In other words, the IEA expects global renewable energy capacity to increase by at most 2.5 times from the current level by 2030.

[8] https://iea.blob.core.windows.net/assets/3f7f2c25-5b6f-4f3c-a1c0-71085bac5383/Renewables_2023.pdf

Figure 1.2. Global renewable capacity additions, 2015-2023



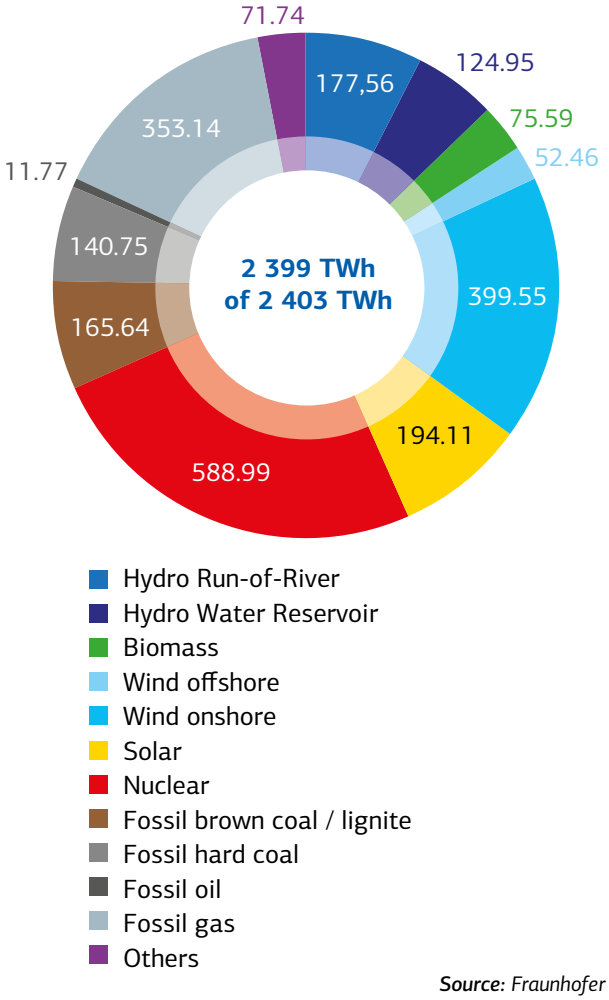
Source: IEA

As for the EU, according to the German Institute Fraunhofer ISE, in 2023, out of a total of 2,403 TWh, RES provided 43.6% or 1,044.87 TWh of electricity, of which 16.7% or 399.55 TWh were generated by onshore WPPs, 2.2% or 52.46 TWh by offshore WPPs, 8.1% or 194.11 TWh by SPPs, 3.2% or 75.59 TWh by BioPPs, and 12.6% or 302.51 TWh by HPPs and PSHs.

The institute's data is confirmed by WindEurope, which claims that the share of wind energy in the current EU electricity balance has reached 19%.[10] The EU built 17 GW of new wind farms in 2023: 14 GW onshore and 3 GW offshore. However, unlike the IEA, WindEurope is convinced that in order to achieve the EU's wind energy targets by 2030, it should build 30 GW of new wind capacity every year.

In general, the growth of wind and solar power has saved the EU EUR 12 bln in avoided gas costs since russia invaded Ukraine, according to a new analysis from energy think tank Ember.[11] In that rough period, the EU's wind and solar grew by 50 TWh *(+10%)* since the start of the war, generating 23% of the EU's electricity in that period *(546 TWh)*. The annual increase in wind and solar alone reduced the amount of gas required for electricity generation by 90 TWh *(9 bln m³)* and avoided gas costs of EUR 12 bln *(USD 12.78 bln)*.

Figure 1.3. EU Electricity mix, 2023[9]



***Source:** Fraunhofer ISE*

[9] https://www.energy-charts.info/charts/energy_pie/chart.htm?l=en&c=EU&interval=year&year=2023

[9] https://windeurope.org/newsroom/press-releases/the-eu-built-a-record-17-gw-of-new-wind-energy-in-2023-wind-now-19-percent-of-electricity-production/

[11] https://ember-climate.org/insights/research/european-electricity-review-2023/

1.1.1. THE EU WIND POWER SECTOR RETURNS TO PROFIT

According to WindEurope, of which the UWEA is a member, the EU wind energy sector gradually overcomes the crisis caused by the full-scale war against Ukraine, inflation, supply chain disruption, imperfect auction procedures, slow permitting and generation restrictions and returns to profit line. The adoption of the European Wind Energy Action Plan *(Package)* in October 2023, which includes 15 immediate measures to improve the competitiveness of the European wind energy value chain, is cited as the main reason for this. The package focuses on auctions, attracting investment in new wind power equipment and infrastructure, and optimizing the permitting process.

As a follow-up to this action plan, in December 2023, 26 EU Energy Ministers and more than 300 wind energy companies endorsed the European Wind Charter,[12] which commits EU national governments to strengthening Europe's wind energy sector and implementing the measures set out in the Package. The document also proposes to double the amount of funds allocated for the development of environmentally friendly technologies from the EU Innovation Fund to EUR 1.4 bln.[13]

Giles Dickson
WindEurope CEO

The year 2024 will continue to present challenges. However, it is positive that governments have recognized the strategic importance of the European wind energy sector and will take steps to actively support it.

The UWEA and a number of its member companies have also signed the European Wind Charter.

[12] EU Governments commit to take urgent actions outlined in the Wind Power Package | WindEurope

[13] https://balkangreenenergynews.com/wind-turbine-manufacturers-in-eu-are-beginning-to-return-to-profit/

DTEK Renewables is a driver of green generation in Ukraine

1.2. FURTHER SHIFT TOWARDS CLEAN ENERGY IN THE EU AND WORLDWIDE

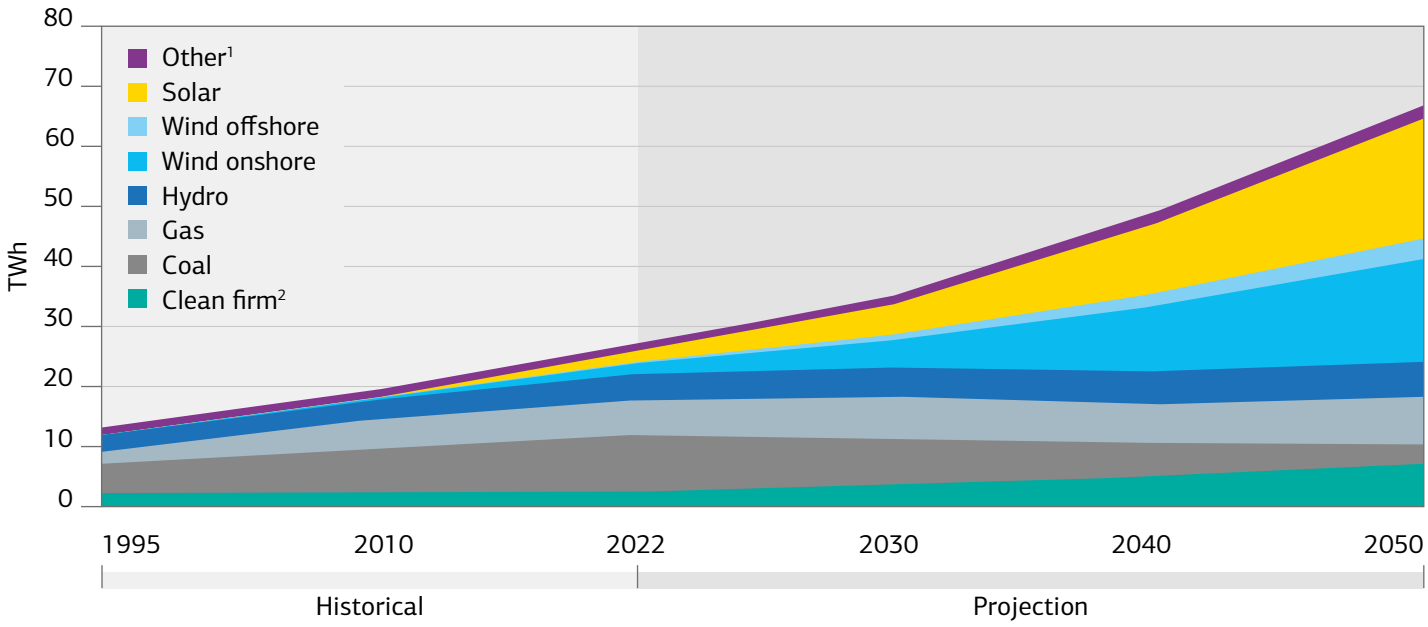
As aforementioned, the large-scale war against Ukraine has become the final hurdle in the world's transition away from fossil fuels, and the need for global energy security has only furthered this development. Thus, the IEA is convinced that, depending on how cold the winters are, in 2024, electricity production from renewables may permanently exceed coal generation. It is expected that this year, 33% of the world's electricity will be generated by renewable energy facilities, and coal production will fall to zero by 2050. The agency also predicts that RES have every chance of accounting for 50% of the global energy mix by 2030.

The McKinsey & Company experts have predicted the same outcome in their report called "Global Energy Perspective 2023"[14] and noted that by 2030, renewables will account for 45% to 50% of global electricity production, and by 2050 – 65% to 85%, respectively, which will help reduce emissions from electricity production by 17-71% by 2050.

To achieve the Paris Agreement goal, IRENA recommends that the world commission an average of 1,000 GW of renewable energy capacity annually by 2030, up from 300 GW in 2022.

The DNV experts also have their own beliefs about the quantity of renewable energy capacity required to prevent global warming from exceeding 1.5°C. Thus, to achieve climate neutrality in 2050, solar power capacity should be increased eightfold to 9,100 GW by 2033; wind power capacity should be increased fivefold to 4,900 GW; and hydrogen production should be increased threefold to 320 tonnes per year.

Figure 1.4. *Electricity generation in 2022 and projection up to 2050*



[1] excludes generation from storage *(pumped hydro, batteries, LDES)*

[2] includes gas and coal plants with CCUS, nuclear, and hydrogen carbon dioxide *(CO_2)* storage

Source: *McKinsey & Company*

[14] https://www.mckinsey.com/industries/oil-and-gas/our-insights/global-energy-perspective-2023#/

As for wind energy, GWEC predicts that from 2023 to 2027, 680 GW of new wind power capacity will be added worldwide, which means 136 GW of new capacity per year. A positive projection was also given for 2030, with the expectation of an additional 143 GW of new wind power capacity being added globally by the end of the decade, which is 13% higher than previous forecasts. Previously, GWEC stated that 1,078 GW of wind power capacities would be added to the global energy mix from 2022 to 2030, while now it is projected to be 1,221 GW during 2023-2030.

The EU continues to increase its ambitions for the deployment of clean energy as well. While EC's President Ursula von der Leyen acknowledged significant progress in the implementation of the European Green Deal during one of her speeches to the European Parliament, the EU aims to further enhance its energy measures. Thus, the EC adopted a new Directive in 2023 to develop RES, and this will lead to a rise in their share in the EU's energy consumption from 32% to 42.5-45% by 2030. Also, it was determined that innovative technologies must make up at least 5% of the RE capacities that are newly installed.

The EU's goal for wind energy is still the same: to have 420 GW of wind power by 2030, which is an increase from today's 230 GW. To deliver on this goal, WindEurope estimates that the industry will have to install almost twice as many wind turbines annually as they are currently installing, and an additional 200,000 employees will also be needed.

The Net Zero Industry Act *(hereinafter referred to as "the Act")*, introduced by the EC in March 2023, is intended to promote and accelerate the achievement of the above-mentioned goals, and it is expected to strengthen Europe's manufacturing capacity. The Act is a component of the European Green Deal and is aimed at building an affordable, reliable, sustainable, and clean energy system while also reducing the risk of replacing Europe's former dependence on russian fossil fuels with a new strategic import dependence. The Act provides for measures aimed at ensuring that by 2030 the EU can cover at least 40% of its own needs in "green" technologies through its own manufacture. The technologies covered by the Act include solar photovoltaic panels and solar thermal systems; onshore and offshore wind farms; batteries/ energy storage systems, hydrogen, etc. The European Parliament approved the Law in November 2023.

In addition, the EU Council also adopted the RefuelEU initiative last year in order to decarbonize the aviation sector. This initiative implies that the EU now has legally binding climate targets covering all key sectors of the European economy.

To promote the development of RES, meet targets, and accelerate the energy transition, investments are necessary. For example, the EU Action Plan for Electricity Grids adopted in November 2023 states that at least EUR 584 bln of new investments are needed to achieve the EU's energy and climate goals by 2030.

To meet the scenario of keeping global warming below 1.5°C, the total annual amount should exceed USD 5 trillion, as last year's global investments in "green" technologies reached USD 1.3 trillion. Thus, according to IRENA, for a complete energy transition, the world needs to invest USD 35 trillion in "green" technologies by 2030.

According to experts from Wood Mackenzie, countries need to invest at least USD 2.7 trillion each year to achieve zero emissions by 2050. BloombergNEF experts, in turn, believe that achieving climate neutrality by 2050 requires a total of USD 8.3 trillion to develop RES between 2023 and 2030.

II

POWER SECTOR OF UKRAINE: THE SECOND YEAR OF RUSSIA'S FULL-SCALE INVASION

2.1. UKRAINE'S POWER SECTOR DURING THE WAR AND THE PROSPECTS FOR ITS "GREEN" TRANSFORMATION

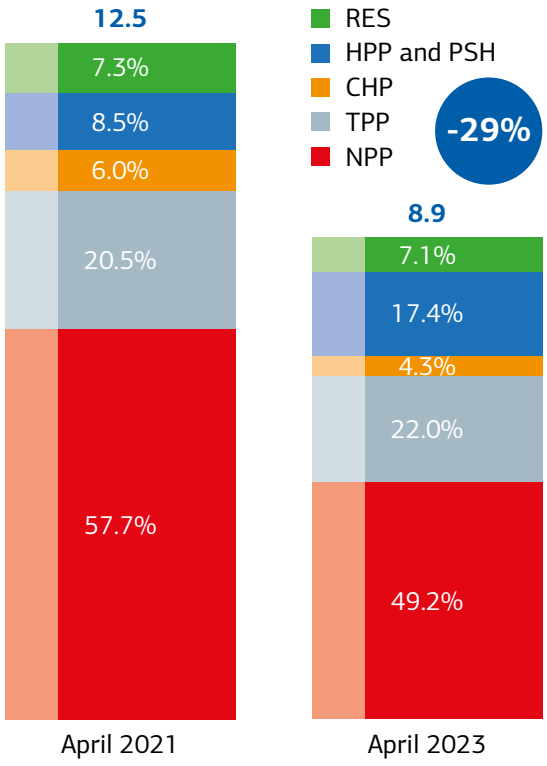
It's been almost two years since russia started its full-scale invasion of Ukraine. Since the earliest days of the invasion, the country's power system has been a particularly important target for enemy missile and drone attacks. Thus, in 2023, the invader continued conducting massive attacks on critical energy infrastructure, as their damage and destruction had the greatest impact on the lives and access to basic social services of the civilian population, especially during the heating season. According to the Ministry of Energy of Ukraine, over two years of the war, russians have damaged or occupied about 50% of the national IPS. In June 2023, russians committed the biggest crime of ecocide on Ukrainian land – they blew up the previously mined 329 MW Kakhovka HPP. Destruction of the Kakhovka Dam also posed a threat to the temporarily occupied Zaporizhzhya NPP that experienced eight blackouts last year. According to the national TSO NPC Ukrenergo, about 10 GW of installed power capacities remain in the temporarily occupied territories.[15]

According to UNDP[16], as of April 2023, the total capacity of the national IPS has decreased from 37.6 GW to 18.3 GW. Manoeuvring capacities have suffered the most and decreased by 68%. In the transmission network, 42 out of 94 crucial high-voltage transformers have been damaged or destroyed as well.

In general, as of 01 September 2023, the total amount of direct, documented damage to the energy infrastructure of Ukraine caused by russia's full-scale invasion, according to the Kyiv School of Economics, increased to USD 8.8 bln *(at replacement cost)*.[17] The World Bank estimates that the damage to the electricity, gas, heat, and coal mining infrastructure exceeds USD 10 bln and will continue to grow.[18]

The structure of electricity production in 2023 did not change significantly. As in previous years, nuclear power provided the lion's share of Ukraine's total electricity production. According to the press service of JSC "NNEGC "Energoatom", in 2023 Ukrainian NPPs generated 52,409 bln kWh of electricity.[19] This is almost 50% of the overall electricity supply of Ukraine. Given that the Ministry of Energy of Ukraine continues to rely on this type of generation *(i.e. in 2023, Ukraine joined the IAEA Board of Governors, and a new type of nuclear fuel for VVER-440 reactors model, created by Westinghouse and NNEGC "Energoatom", has been introduced worldwide)*, we can assume an increase in total nuclear power capacity in the medium term.

Figure 2.1. *Dynamics and structure of generation in April 2023, TWh*



Source: UNDP

[15] https://m.facebook.com/photo/?fbid=563430265825803&set=a.290403429795156

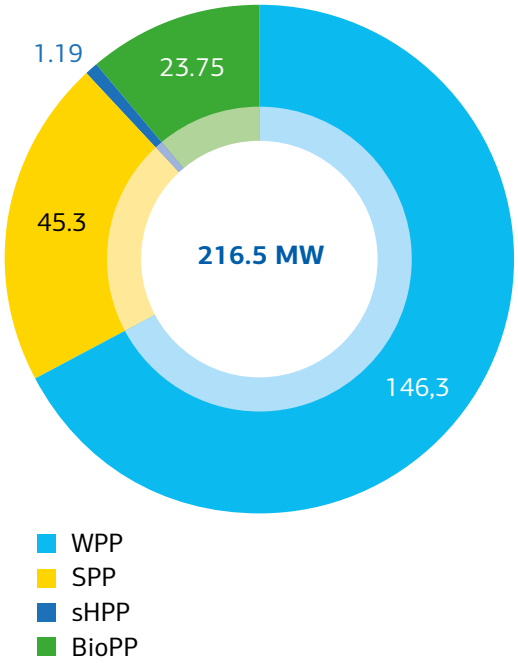
[16] https://www.undp.org/ukraine/publications/towards-green-transition-energy-sector-ukraine

[17] https://kse.ua/ua/about-the-school/news/zagalna-suma-pryamih-zbitkiv-zavdana-infrastrukturi-ukrayini-cherez-viynu-syagaye-151-2-mlrd-otsinka-stanom-na-1-veresnya-2023-roku/

[18] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099184503212328877/p1801740d1177f03c0ab180057556615497, at 82

[19] https://news.finance.ua/ua/enerhoatom-perevykonav-plan-vyrobnyctva-elektroenerhii-na-2023-rik

Figure 2.2. New RES additions, 2023



***Source:** PU UWEA*

Thermal generation remains the second largest source of electricity in Ukraine in terms of installed capacity and production volumes. Meanwhile, it experienced a significant shift from coal to natural gas and fuel oil last year, which is linked to the difficulties of coal production and import. According to the state company Centerenergo[20], which owns 7,600 MW of thermal generation, in 2023 the volume of thermal generation doubled and reached the level of 2014. Meanwhile, TPPs of private company DTEK Energy, according to its press service, generated 15 bln kWh of electricity over the past year.

Despite the destruction of Kakhovka HPP by russia federation, the hydropower sector ended 2023 with 1,181 mln kWh of electricity generated.[21]

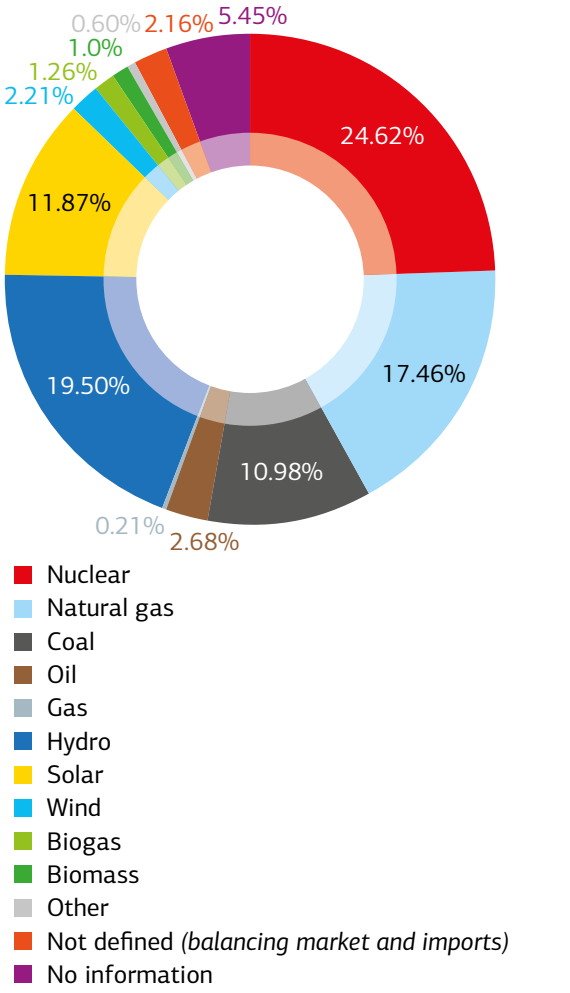
Just like before the war, approximately 20.3% of all electricity was supplied by RES *(SPP, WPP, biomass and biogas)*, with wind share accounting for 1.4%. In addition, the total installed capacity of renewables at the end of 2023 reached 8,762.40 MW *(excluding private household SPPs)*. In the national RES balance, wind with its 1,900.8 MW remains the second largest energy source, after solar with its 6,425.5 MW of industrial SPP.

The total installed capacity of the national RE sector increased during 2023 by 216.5 MW, of which 146.3 MW accounted for WPPs, 45.3 MW – for SPPs, 1.19 MW – for small HPPs and 23.75 MW – for BioPPs.

According to the SE Market Operator, the share of RES in electricity sold on the DAM and IDM increased by 3% to 16.3% in 2023, overtaking coal, which halved from 21.48% in 2022 to 10.98% in 2023. Solar generation remains the leader among renewables, accounting for 72.6%.

However, despite some positive developments, total electricity generation in 2023 decreased by almost 7% compared to the previous year.

Figure 2.3. Structure of electricity sold on DAM and IDM in 2023



***Source:** PU UWEA*

[20] https://www.youtube.com/watch?v=WKl-pYjb78I

[21] https://uhe.gov.ua/media_tsentr/novyny/enerhetychnyy-vymir-kanivska-hes-na-porozi-2024-roku

eco OPTIMA

green energy for life

GREEN ENERGY

RENEWABLE ENERGY SOURCES

Meanwhile, the largest repair campaign in the energy sector launched by Ukraine last year set another precedent for the international community. According to the Ministry of Energy of Ukraine, in less than a year, about 16 GW of power capacities was prepared for the heating season, including the restored and commissioned of 2.2 GW of new thermal and hydropower facilities.[22]

Restoring Ukraine's energy system will be critical to arranging the country's economic recovery. Ensuring energy security and independence with RES at their core is the key guiding principle for this. The development of these homegrown and local-based resources will contribute to domestic electricity production and, therefore, strengthen the energy security and independence of Ukraine. Thus, according to the modelling of the NPC Ukrenergo[23], further development of the national IPS requires 1.3 to 1.5 GW of thermal capacities powered by biofuel, another 1.3 to 1.5 GW of gas-peaking hydrogen-compatible capacities, 3 GW of solar and another 5 GW of wind generation. It will also need around 1 GW of energy storage. In general, the NPC Ukrenergo estimates the demand of IPS of Ukraine for new generating capacity for the next 10 years at the level of 10 GW.

The second important focus in the restoration of the energy system of Ukraine should be the decentralization of power generation. In particular, the national TSO is convinced that Ukraine should prioritize the construction of hundreds of small power plants of 10 MW each, rather than several large ones with a capacity of 1,000 MW.

Last but not least, Ukraine should focus on expanding its own export capacity, since it possesses significant potential to become one of the largest exporters of electricity to the EU after the war, which will contribute to the development of the national economy.

2.1.1. SYNCHRONIZATION WITH THE ENTSO-E: CROSS-BORDER ELECTRICITY TRADE IN 2023

Alongside compensation for lost generation, infrastructure protection, and the establishment of the state energy holding JSC Ukrainian Distribution Networks, the Ministry of Energy of Ukraine highlights the completion of the synchronization of the Ukrainian IPS and the European ENTSO-E as a separate 2023 achievement.

The NPC Ukrenergo signed an agreement with electricity transmission system operators of Continental Europe on the conditions for future interconnection of Ukraine's IPS with its power system back in 2017, while the process of synchronization had to be started in 2023. However, immediately after the start of russia's full-scale invasion of Ukraine, the system operators of Continental Europe received an urgent request from the NPC Ukrenergo for emergency synchronization. The EU Energy Ministers and the TSOs of Continental Europe agreed to start the fast-track synchronization of the Continental European power system with the power system of Ukraine in March 2022. At the end of June 2022, Ukraine started commercial electricity exports to neighbouring EU countries, including Poland, Slovakia, and Romania. In total, net electricity exports from Ukraine to the EU amounted to 4 TWh in 2022, and in just over three months, Ukraine became the third largest non-EU power exporter to the EU after Norway and the United Kingdom.

On 14 December 2023, the positive decision on the NPC Ukrenergo's full membership in the European Network of Transmission System Operators was made by the General Assembly of the ENTSO-E, while the Ukrainian IPS switched from emergency to constant operation within the ENTSO-E. Thus, over the last year, the import capacity of Ukraine's IPS has more than tripled – from 500 MW in January 2023 to 1.7 GW in January 2024, while its export capacity, as of the beginning of 2023, was limited to 400 MW. Meanwhile, the national TSO expects an increase in export capacity to 500 MW in the first months of 2024.

This increase in import capacity is justified, as in 2023, because of damage to power-generating facilities by massive missile and drone attacks, Ukraine imported more electricity than exported. In total, for the entire 2023, the volume of electricity imports amounted to 806.4 thousand MWh, and exports – 366 thousand MWh. Electricity imports peaked in December 2023, namely on 26 December, when imports exceeded 19 thousand MWh of electricity. For the whole of 2023, the largest volume of electricity imports came from Slovakia – 69%.

Electricity exports peaked in September 2023, when 111.1 thousand MWh were delivered to the EU countries. It is worth noting that this month round-the-clock supply of power to the EU was ensured by nuclear and RES generation. In total, last year,

[22] https://www.kmu.gov.ua/news/2023-i-rik-enerhetychnykh-vyklykiv-ta-peremoh-pidsumky-roku-vid-minenerho

[23] https://www.icis.com/explore/resources/news/2024/01/09/10960181/market-conditions-not-war-to-dictate-success-of-ukraine-eu-integration-and-investments-ukrenergo-ceo/

Volodymyr Kudrytskyi
Chairman of the
Management Board
of the Transmission System
Operator NPC Ukrenergo

The interconnection of Ukraine's IPS with the Continental Europe power system, and now the granting of a full membership status in the ENTSO-E to the NPC Ukrenergo marks another important milestone for Ukraine on its way to European integration. This is an important historical step that will significantly contribute to improving energy security, resilience of our power system, and stability of power supply.

Moldova and Slovakia imported the most Ukrainian electricity, namely 40%.

The NPC Ukrenergo became the 40th member of the ENTSO-E, while Ukraine joined "the energy Eurozone". Full membership allows the Ukrainian TSO to vote during the meetings of the ENTSO-E General Assembly, where key issues *(i.e. the development of trans-European energy infrastructure, the 10-year European Network Development Plan, energy risk management, etc.)* are considered; to participate in the preparation of proposals for the ENTSO-E annual work program, as well as in the development of proposals and recommendations for the Assembly on strategic priorities for cooperation between operators, and key decisions, and to work in ENTSO-E Committees and Working Groups, in particular regarding the development of Network Codes.

Though the initial progress is encouraging, there is still much work to be done, including the development of a common energy security system, the build-up of cross-border capacities, and the creation of a single power market with Europe. Regarding the latter, for instance, clear long-term plans for the volume of Ukrainian power exports to the EU remain unclear. The EU-Ukraine Roadmap attached to the Memorandum of Accession signed in mid-June 2023 explicitly mentions the future increase in power exports from Ukraine to the EU. The potential increase in export capacity is also outlined in the UN Development Program report, according to which the Government plans to achieve at least 9 TWh of net exports and produce 176 TWh of electricity per year, without specifying when these goals will be achieved.[24]

Besides strengthening ties with the energy markets of Central European countries, the synchronization has also increased the importance of power trade for bilateral Polish-Ukrainian relations. In June 2022, the Energy Ministers of both countries signed a Memorandum on Strengthening Energy Cooperation in Central and Eastern Europe. It included the reconstruction of an old transnational power line between the Khmelnytsky NPP and the Polish city of Rzeszów, which had not been used since 1992. The line was put into operation at the end of April 2023 with an authorized capacity of 200 MW from Ukraine to Poland and 350 MW in the opposite direction. As Poland is still heavily dependent on its outdated coal-fired power plants, it may find in Ukraine a long-awaited additional source of cheap and often decarbonized power.

Already on 16 January 2024, the first joint auctions were held for the allocation of cross-border capacity for Ukrainian interconnections with Poland. The auctions were simultaneously held by the NPC Ukrenergo and the Polish grid operator PSE for Polish and Ukrainian market participants. The maximum import capacity offered on the Joint Allocation Office auction platform was 425 MW. The electricity supply took place on 18 January 2024.

[24] https://www.reuters.com/business/energy/ukraine-resumes-electricity-exports-europe-minister-2023-04-11/

Ministry of Energy of Ukraine

THE STATUS OF RENEWABLES IN UKRAINE AND PLANS FOR THEIR FURTHER DEVELOPMENT

During the 2022-2023 autumn-winter period, the energy sector became the primary target of the aggressor due to its strategic importance for the country's economy and the livelihood of its population. Targeted missile strikes and kamikaze drone attacks on critical energy infrastructure facilities led to the emergence of balance and network constraints. As a result, the electricity supply to a significant number of consumers was forcibly restricted. During the period from November 2022 to February 2023, the electricity supply was on average restricted for 3.8 million subscribers, with the maximum number of consumers affected by shelling during a systemic accident in the power system of Ukraine exceeding 14 million.

In these conditions, renewable energy, particularly wind energy, played a crucial role in enhancing the resilience of the energy system and ensuring electricity supply to consumers. After massive shelling and the associated systemic accident at several substations of the transmission system, approximately 550 thousand consumers in the city of Odesa and the Odesa region were left without power supply. Before the restoration of the operability of autotransformers at the relevant substations by the NPC Ukrenergo, part of the consumers *(critical infrastructure)* was restored through distribution networks. Additionally, the distribution networks facilitated the transmission of electricity from two WPPs in Odesa region, allowing for the additional restoration of power to around 100 thousand consumers.

Thus, for Ukraine, the question of revising the existing approach to the development of the energy system, particularly in terms of enhancing its resilience, flexibility, and decentralization, has become acute. This includes the development of a distributed network of power plants, especially those using RES, which should utilize the branched network of the distribution system in combination with smart technologies, energy storage systems, demand response measures, etc.

As a result of the full-scale military aggression against Ukraine launched by russia in February 2022, approximately 25% of the installed capacity of renewable energy facilities remains occupied as of the date of releasing this Overview. The situation is particularly challenging for wind energy facilities, with 71% or about 1.3 GW of them located in the occupied territories of Kherson, Zaporizhzhia, Donetsk, and Luhansk regions, as well as in the Autonomous Republic of Crimea.

Despite this, the total installed capacity of renewables reached more than 10.8 GW in 2023, of which wind power accounted for 2 GW *(taking into account all occupied territories, including the annexed Autonomous Republic of Crimea)*. Thus, during 2023, at least 360 MW of installed capacity of renewable energy facilities were commissioned, including 146.3 MW of WPPs *(excluding the generation segment installed by consumers outside the FiT for compensating self-consumption or enhancing power supply reliability)*.

This growth in renewable energy capacity has helped attract investments in the Ukrainian economy totalling more than EUR 12 bln.

Concerning the electricity balance, it is worth mentioning that by the end of 2023, the share of generated "green" electricity, including large HPPs, amounted to 20.3%, with wind accounting for 1.4%.

By 2030, Ukraine aims to achieve a 27% share of RES in gross final energy consumption, as specified in Annex 1 of Directive *(EU)* 2018/2001, in accordance with the decision of the Council of Ministers of the Energy Community No. 2022/02/MC-EnC.

The Ministry of Energy developed the Energy Strategy of Ukraine for the period until 2050 *(hereinafter referred to as "the ESU")*, which was approved by the Cabinet of Ministers of Ukraine in April 2023 and, among other things, defines indicators for the future development of renewables in Ukraine. Thus, the ESU envisages an increase in the share of RES to 50% until 2050 in electricity mix, which, accordingly, requires large-scale implementation of RES projects, primarily wind ones. By 2032, in particular, it is planned to increase the total installed wind power capacity to 10 GW.

Considering the adoption of the ESU, the Ministry of Energy is working on updating and finalizing the draft of the National Renewable Energy Action Plan for the period up to 2030 and the plan for its implementation.

At the same time, the Ministry of Energy has finalized the draft Hydrogen Strategy of Ukraine for the period up to 2050 and the operational plan for its implementation, taking into account the provisions of the ESU. This strategy aims to define the strategic directions and goals for the development of hydrogen energy in Ukraine, with a focus on using wind energy for its production.

Moreover, the Ministry of Economy, with the participation of the Ministry of Energy, is working on the preparation of the National Energy and Climate Plan, in accordance with the requirements of Regulation *(EU)* 2018/1999. This plan will include the main goals and policies of the ESU and will be a component of the Ukraine Facility instrument.

Besides working on general indicators and the direction of the sector's development, the Ministry of Energy is also actively involved in the development and implementation of clear mechanisms to stimulate the deployment and operation of RES in the electricity market on a competitive and market basis.

Thus, on 30 June 2023, the Verkhovna Rada of Ukraine adopted the Law of Ukraine No.3220-IX "On Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine", which came into force on 27 July 2023. Law No.3220-IX was developed based on the revision of several government draft laws, initiated by the Ministry of Energy, such as No.8191, No.9011, No.9012, and the draft Law "On Amendments to Certain Laws of Ukraine to Stimulate the Production of Electricity from Alternative Energy Sources on Market Conditions" which was submitted for the Cabinet of Ministers of Ukraine.

The Law No.3220-IX introduces several provisions, including:

- introduction of Guarantees of Origin for electricity generated by RES;
- implementation of a self-generation mechanism (*Net billing model)* to stimulate the development of small-scale RES generation by consumers;
- definition of new market participants such as "active customer", "aggregator" and activities related to "aggregation";
- extension until the end of 2023 of the deadline for commissioning RES facilities that have entered into PPA's under the FiT before 31 December 2019;
- promotion of the development of the direct power purchase agreements *(Corporate PPA's)* segment for RES electricity;
- giving the opportunity for RES producers with established FiT to leave the Balancing Group of the SE Guaranteed Buyer, independently sell electricity on the electricity market, and receive a market premium *(FiP);*
- improvement of the auction model, including the introduction of CfD instead of a fixed tariff, simplification of requirements for auction participants, the possibility of conducting auctions for the construction of RES facilities together with energy storage installations, and more.

To implement the provisions of the Law No.3220-IX, the Ministry of Energy has developed several regulatory acts and submitted them to the Cabinet of Ministers of Ukraine:

- Draft resolution of the Cabinet of Ministers of Ukraine "On Amendments to the Some Resolutions of the Cabinet of Ministers of Ukraine Namely No.420 dated 23 May 2018, and No. 1175 from 27 December 2019" regarding improving the conditions for holding auctions for the distribution of support quotas. The possibility of holding the first auctions in 2024 is being considered with a focus on stimulating the development of wind energy;
- Draft order of the Cabinet of Ministers of Ukraine "On Approval of the Concept of the State Target Economic Program to Stimulate the Development of Distributed Generation of Electricity from Renewable Sources for the Period Up to 2030" which envisages stimulating the installation of generating capacities from RES together with energy storage systems at critical infrastructure facilities and private households.

Together with the NEURC, a draft resolution of the Cabinet of Ministers of Ukraine "On the Introduction of Guarantees of Origin for Electricity Generated from Renewable Sources" has been developed. It includes the procedure for issuing, circulating, and cancelling Guarantees of Origin, as well as the method for determining the environmental value of electricity from RES. The launch of Guarantees of Origin registry is expected within six months from the date of the mentioned draft resolution's adoption. Guarantees of Origin registry for electricity is planned to be integrated into the regional registry of the Energy Community, and Ukraine is set to acquire full membership in the Association of Issuing Bodies *(AIB).*

Simultaneously, the issue of recognizing Ukrainian Guarantees of Origin in the EU is being elaborated.

The Ministry of Energy is also actively working on the integration of the Ukrainian energy sector with the European one, which remains one of Ukraine's top priorities for 2024. In the latest enlargement package, the European Commission assessed Ukraine's overall progress in the energy sector as having a good level of readiness *(Ukraine received 4 out of 5 possible points).*

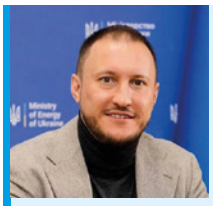
At the end of 2023, the synchronization of Ukraine's energy system with the ENTSO-E was completed. The next step involves adopting the regulatory framework for the integration of the electricity market in accordance with the so-called Electricity Integration Package, which includes, among others, EU Regulations 2019/941, 2019/942, 2019/943, EU Directive 2019/944, EU Commission Regulations 2017/2196, 2017/1485, 2017/2195, 2016/1719, 2015/1222.

The Ministry of Energy, in accordance with the action plan for fulfilling obligations under the Energy Community Treaty, has prepared proposals for amending certain Laws of Ukraine to implement EU Regulation 2019/941 and EU Directive 2019/944.

In December 2023, the NEURC presented a draft Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding the Transposition of Acts of the Energy Community" foreseeing amendments to Ukraine's Laws for the implementation of the Electricity Integration Package. The draft Law is currently being revised in collaboration with the Ministry of Energy.

An important task for 2024 is the implementation of the provisions of EU Directive 2018/2001 to stimulate the use of RES. The Ministry of Energy has initiated the development of a draft law of Ukraine to implement the provisions of this Directive in full, including considering its updates according to EU Directive 2023/2413 dated 18 October 2023 *(RED III)*. Additionally, the implementation of provisions from Commission Delegated Regulations *(EU)* related to the mentioned directive is planned, including 2021/2003, 2022/342, 2019/807, 2022/759, 2023/1184, and 2023/1185.

Furthermore, the Ministry of Energy plans to prepare legislative amendments to regulate the legal, economic, and organizational principles for the development of offshore wind energy in Ukraine.



Yaroslav Demchenkov
Deputy Minister of Energy
of Ukraine

Utilizing our wind energy potential will mean a huge energy breakthrough that can make post-war Ukraine a European leader in sustainable energy and one of the main continental suppliers of clean electricity, as our country combines extraordinary natural conditions with proactive business that creates new wind generation capacity even during the war.

100+

OVER A HUNDRED
QUALIFIED LAWYERS

900+

MERGERS IN
LAST DECADE

$80
BILLION

INVESTED IN TO UKRAINE
WITH OUR ASSISTANCE

№1

RECOGNISED AS №1 FOR 100+
TIMES IN KEY PRACTICES

2.1.2. LAW OF UKRAINE No 3220-IX ON RESTORATION AND "GREEN" TRANSFORMATION OF THE ENERGY SYSTEM OF UKRAINE

Author: *Natalia Hutarevych, Senior Associate at Sayenko Kharenko, member of the UWEA's Legal Committee*

The purpose of the Law of Ukraine No. 3220-IX "On Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine" of 30 June 2023 *(hereinafter referred to as "the Law No. 3220-IX")* is fully reflected in its title. It contains an extensive list of amendments aimed at transforming existing regulatory and support mechanisms in the electricity market or introducing new ones.

While the Law No. 3220-IX empowers electricity consumers to increase their activity in the electricity market, the "green" transformation is achievable only with the active participation of major market players. Below, we explore the tools offered by the Law No. 3220-IX, as well as the status of their implementation six months after their adoption.

Market premium mechanism

A new incentive tool is introduced in the electricity market – the market premium mechanism. This tool will apply to winners of auctions for the allocation of support quota mandatorily *(instead of purchasing the entire volume of electricity produced by RES facility at the auction price).* In contrast, RES producers under the FiT support scheme may use this mechanism voluntarily in case of exit from the Balancing Group of the SE Guaranteed Buyer termination/suspension of electricity sale at the FiT, and entering into a service agreement under the market premium mechanism.

The market premium mechanism provides for the market sale of electricity for all RES producers. According to this scheme, the SE Guaranteed Buyer should pay the producer the difference between FiT/auction price and estimated market price, which depends on prices for base load electricity in the DAM and under bilateral agreements concluded at electronic auctions. Such payment is made if the FiT/auction price exceeds the estimated market price.

It should be emphasised that the market premium mechanism has different conditions for the auction and the FiT system if the estimated market price exceeds the FiT/auction price. In such a case, the winner of the auction will have to pay the SE Guaranteed Buyer the cost of services under the market premium mechanism for electricity generated by the relevant electricity facility, which is under support, in other words, to return the excess profit if producer earned/should have earned in the market more than the auction price. Producers that have changed their support scheme from FiT to a market premium mechanism are not subject to a similar obligation.

Provisions of the Law No. 3220-IX on the market premium mechanism came into force on 26 January 2024. The NEURC has recently adopted decisions necessary for the implementation of the market premium mechanism, in particular, the procedure for determining the cost of services under the market premium mechanism, the template agreement for the provision of services to support electricity generation from alternative sources under the market premium mechanism *(Resolution No. 178 dated 24 January 2024).*

Guarantees of Origin for RES electricity

Although the mechanism of Guarantees of Origin is not new to Ukrainian legislation, its practical implementation is yet to be realized. The amendments to Guarantees of Origin introduced by the Law No. 3220-IX are fundamental, therefore, they can be considered as introducing a new support instrument.

According to the Law No. 3220-IX, the NEURC is authorised to issue Guarantees of Origin free of charge in an electronic register in compliance with the Procedure for Issue, Circulation, and Cancellation of Guarantees of Origin *(hereinafter referred to as "the Procedure"),* which is to be approved by the Government. In November 2023, the Ministry of Energy of Ukraine published the draft Procedure for comments and suggestions, so we expect its approval soon *(at the time of writing this Overview, the Procedure has not yet been adopted).*

The Guarantee of Origin could be used:

- to disclose information to electricity consumers on energy sources in the total energy mix of electricity suppliers;
- to confirm that electricity generated by RES installation of consumer/active consumer and consumed by consumer/active consumer is generated from RES and that goods/works/services of such consumer/active consumer are produced/performed/provided in whole or in part using electricity produced from RES;
- to confirm that electricity generated by RES installation of consumer/active consumer and consumed for its own needs is generated from RES.

Figure 2.4. *The key provisions of Law 3220-IX on Guarantees of Origin*

CHARACTERISTICS OF GUARANTEES OF ORIGIN *(GOs)*	• it is an attribute of electricity generated from RES; • it is issued for 1 MWh of electricity supplied to the grid/generated and used for self-consumption; • the issue of more than one GO for the same electricity unit is forbidden;
CIRCULATION OF GOs	• GOs are generated in the register automatically based on commercial metering data entered by the commercial metering administrator (Ukrenergo); • GOs could be circulated separately from the volumes of relevant electricity, on a market basis, at free prices, except for GOs in respect of electricity sold to the Guaranteed Buyer at a FiT/in respect of which services under the market premium mechanism is provided *(the Guaranteed Buyer receives ownership of these GOs simultaneously with purchase and sale of electricity/services, and they are not separately paid for);* • GOs are traded on the Market Operator's platform or at electronic auctions on other trading platforms; • the circulation period – is 12 months from the date of electricity generation; the cancellation period – is 18 months from the date of electricity generation. Upon termination of this period, GO automatically expires;

Source: *Sayenko Kharenko*

The NEURC will verify the accuracy of the data provided to the register of Guarantees of Origin. If verification reveals electricity production from non-renewable sources, registration of the relevant generating facility/installation for obtaining Guarantees of Origin is cancelled for six/twelve/thirty-six months, depending on the established volume of electricity produced from non-renewable sources.

To implement the mechanism of Guarantees of Origin, on 27 December 2023, the NEURC approved the Procedure for Establishing and Maintaining Register of Electricity Generating Facilities and Electricity Generating Installations of Consumers *(including Active Consumers)* Using Alternative Energy Sources for Electricity Generation *(Resolution No. 2624)* and the Procedure for Disclosure of Information to Electricity Consumers on Energy Sources in the Total Energy Mix of Electricity Purchased by Electricity Supplier and/or Produced at Its Own Generating Facilities *(Resolution No. 2626).*

After approval of the Procedure by the Government, the NEURC shall ensure the operation of the Register of Guarantees of Origin within six months. There are two alternative solutions: to develop Ukrainian Register of Guarantees of Origin independently or to use the software of a foreign developer of such a Register *(e.g., software developer Grexel),* which may simplify interaction with foreign registers but may also raise issues of compliance with Ukrainian legislation governing public registers.

The Law No.3220-IX sets a requirement to integrate Ukraine's Register of Guarantees of Origin with the relevant registers of the Energy Community, the EU and the OECD countries, as well as to facilitate Ukraine's full membership in the Association of Issuing Bodies *(the AIB)*. This will create a technical opportunity for the mutual recognition of Ukrainian and foreign Guarantees of Origin, subject to the establishment of international agreements.

The Law No. 3220-IX also amends the **FiT support scheme.** Although the **auction scheme** *(for the allocation of support quota)* has not yet been launched in Ukraine, lawmakers continue to improve it.

The Law No. 3220-IX also introduces **other amendments to the electricity market**, which relate to:

- **electricity transmission tariff** – when setting the tariff, real receipt of budget support should be taken into account, and not only the possibility of such receipt declared in legislation;
- establishment of **a new type of activity in the market** – aggregation, which is an association of facilities for generation *(with capacity up to 20 MW)*, consumption and storage of electricity with the purpose of purchase and sale of electricity, provision of ancillary and balancing services;
- **distribution of electricity by small distribution systems** is classified as a licensed activity;
- **exemptions from direct line regulation,** which do not require the Regulator's approval for construction and operation, for RES generation and cogeneration plants;
- **cancellation of the obligation for RES producers to sell electricity under bilateral agreements at electronic auctions;**
- **cancellation of the NEURC's right to set the maximum term of bilateral agreements** concluded by RES producers;
- **expanding the list of counterparties to RES projects** under a service agreement to ensure the price stability for electricity generated from alternative energy sources *(Corporate PPAs):* it can be concluded with a consumer, electricity supplier, or trader. The parties determine the terms of this agreement.

Therefore, the Law No. 3220-IX improves existing regulatory and support schemes by incorporating market features, and it also introduces new tools in the Ukrainian market that provide its participants with a wider list of opportunities and bring them closer to the EU markets. Extensive work on the development and approval of bylaws demonstrates a willingness to

Figure 2.5. Amendments to the FiT support scheme

CONSTRUCTION COMPLETION	Construction completion of RES facilities under FiT *(except for solar generation)* was granted until 31 December 2023 provided that *(i)* pre-PPA with the Guaranteed Buyer had been concluded before 31 December 2019, *(ii)* as of 24 February 2022, technical conditions for grid connection were in force, and connection agreement was valid with no outstanding obligations of the customer
NEW TYPE OF AGREEMENT	The Law No. 3220-IX introduced an agreement on participation in the SE Guaranteed Buyer's balancing group, the template of which is approved by the NEURC
IMBALANCE	Calculation of imbalance for the Guaranteed Buyer's balancing group, calculation and reimbursement of RES producers' share of the cost of imbalance settlement shall be set out in agreement on participation in the Guaranteed Buyer's balancing group. New rules will apply to imbalances starting from 8 September 2022
PRINCIPLES OF TRADE	Government approves principles of trade policy for the SE Guaranteed Buyer, which should increase its profitability and payments under FiT
VOLUME OF PURCHASE	The maximum volume of electricity that the SE Guaranteed Buyer can purchase at FiT is calculated according to the installed capacity of generating equipment set in the licence

Source: *Sayenko Kharenko*

Figure 2.6. Amendments to the scheme of auction for allocation of support quota

CHANG OF GUARANTEES	Instead of guarantees for the purchase of the entire volume of electricity generated by the RES facility at an auction price, the Law No. 3220-IX guarantees the purchase of service through a market premium mechanism
GOVERNMENT REQUIREMENTS	Government may determine technical parameters of storage installation at the facility under support; daily hourly intervals when support may be provided; load profiles of the facility under support; maximum price offer of the auction participant *(within limits established by law)*; share of auction price fixed for the winner in euros *(not less than 50% of the auction price)*
CONSTRUCTION DEADLINES	For solar generation, the period for construction and commissioning of a power generation facility has been reduced from two years to 18 months from the date of conclusion of a service agreement based on the market premium mechanism following the results of the auction
SUPPORT PERIOD	Is reduced from 20 to 12 years
PROVISION OF DOCUMENTS	*(i)* documents on ownership/use of land plot/building for the location of generation facility and *(ii)* agreement on connection of electricity facility to the grid are not required for participation in the auction but must be submitted no later than six months from the date of sign of agreement concluded under auction results

Source: *Sayenko Kharenko*

implement provisions of the Law No. 3220-IX promptly and, hopefully, consider proposals and interests of market participants.

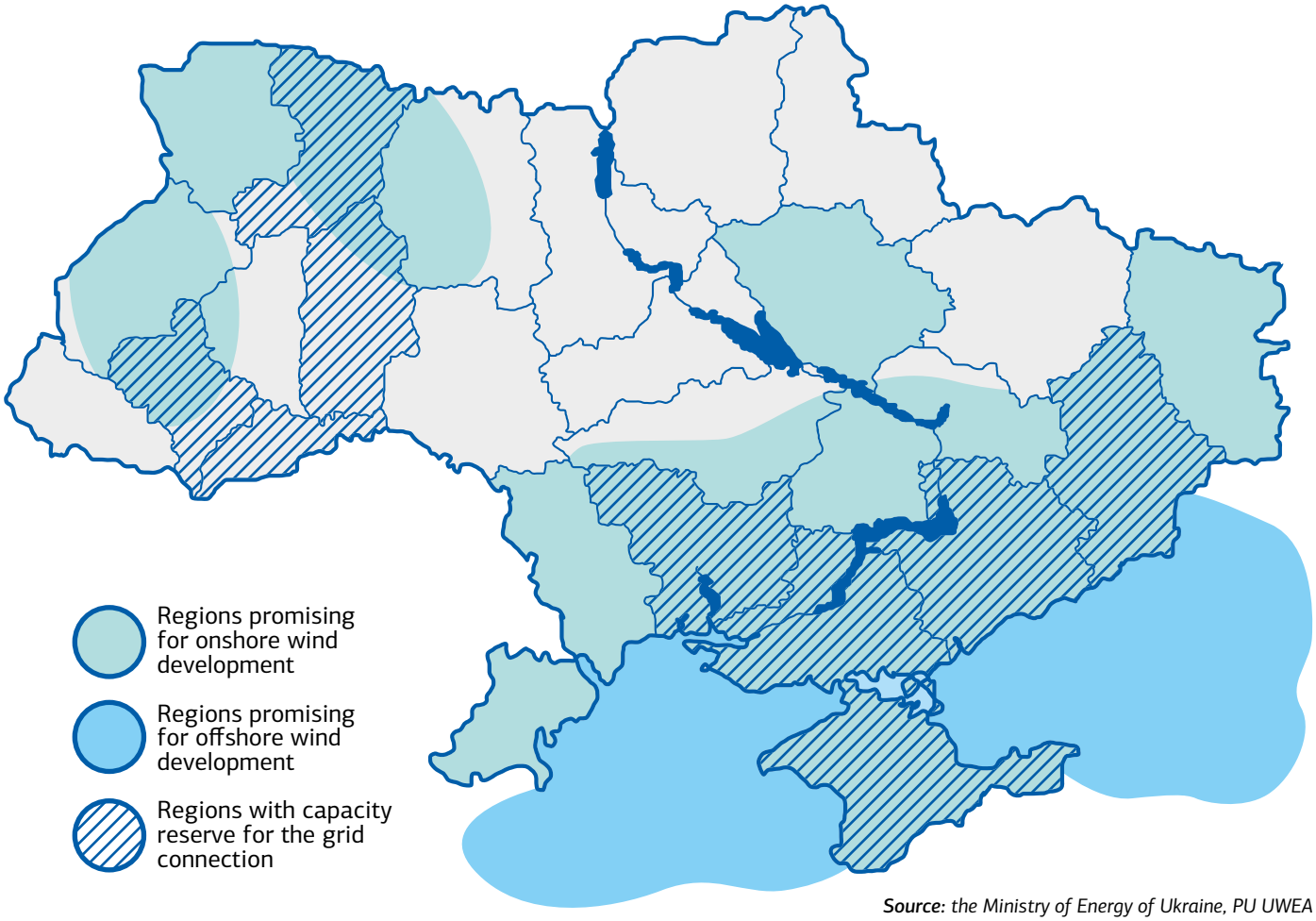
Given the importance of the Law No. 3220-IX for the current and further deployment of RES in Ukraine, the UWEA Secretariat prepared and published a separate detailed analysis of its provisions in September 2023.

2.1.3. THE ENERGY STRATEGY OF UKRAINE UNTIL 2050

In April 2023, Ukraine's Government endorsed the Energy Strategy of Ukraine until 2050[25], which was presented on 21-22 June 2023 at Ukraine's Recovery Conference in London. Though martial law restricts public access to the document, official statements by the Ministry of Energy make it clear that the Energy Strategy reflects the objectives of the European Green Deal, the National Economic Strategy until 2030 and international commitments undertaken by Ukraine, primarily under the EU-Ukraine Association Agreement and the Paris Agreement.

[25] https://zakon.rada.gov.ua/laws/show/373-2023-%D1%80#Text

Figure 2.7. Regions promising for onshore and offshore wind development



***Source**: the Ministry of Energy of Ukraine, PU UWEA*

The primary goal of the Energy Strategy of Ukraine is **to achieve a climate neutrality of the power sector by 2050** through:

- reduction of coal consumption;
- modernization and renewal of energy infrastructure;
- diversification of energy supply;
- boosting the efficiency of resource usage;
- comprehensive integration with European markets and efficient functioning of domestic markets;
- provision of energy resources for the power sector based on economic feasibility;
- development of renewables, new products and innovative solutions, in particular, the production of "green" steel, renewable hydrogen, etc.

The Energy Strategy of Ukraine sees a rise in electricity demand from 109 TWh in 2022 to 700 TWh in 2050. This will lead to an increase in export potential not only in terms of cross-border electricity trade but also in the supply of "green" steel and renewable hydrogen/ammonia to the EU.

WHERE ENVIRONMENTALISTS & WIND DEVELOPERS UNITE

MCL GROUP – a professional team with over 12 years of experience in the renewable energy market of Ukraine. The initial objective of the company was to help clients fulfill their nature-positive goals and to offer them professional environmental guidance and assistance. However, later our focus has been expanded to designing and developing renewable energy projects. Currently, the company owns a large portfolio of co-developed green generation (more than 500 MW) and develops its own wind projects from scratch.

OUR SERVICES FOCUS ON:

- EIA procedure
- Ecological surveys, incl. ornithology in line with international practices
- ESG consulting
- Development of autonomous wind energy projects
- Design & engineering
- Preparation of environmental & technical documentation at all design stages

WE ARE COMPANY THAT CARES! Our activity based on modern international practices and standards. Due to the availability of our own specialized equipment, we are able to most effectively conduct both field environmental studies and wind measurements.




COMPREHENSIVE APPROACH AND CLOSED CYCLE: FROM IDEA TO PROFIT!

CHARTING GREEN HORIZONS!
CONTACT US TODAY!

https://mcl.kiev.ua/ info@mcl.kiev.ua +38 (067) 329 85 29

LAUNCH OF THE STATE FUND FOR DECARBONISATION

As the country's chief energy manager, the SAEE directs its efforts to deliver the goals of reducing energy consumption and decarbonisation in our country, set in the National Energy Efficiency Action Plan until 2030.

On 11 April 2023, the Verkhovna Rada of Ukraine amended the Budget Code of Ukraine and included the issue of carbon tax funds accumulation as a separate line in the State Budget that complies with the European "polluter pays" principle. For this, the State Fund for Decarbonisation and Energy Efficiency Transformation *(hereinafter referred to as "the Decarbonisation Fund")* was launched. According to the EU Energy and Climate Action Management Regulation, the Decarbonisation Fund provides for the targeted allocation of environmental taxes for energy efficiency and decarbonisation and is applied in 21 EU countries.

The Decarbonisation Fund is expected to be used for the following purposes:

- financial assistance for initiatives and state-specific programs that focus on energy efficiency, RES, and alternative fuels, as well as carbon emissions reduction;
- financial security for compensation, reimbursement, and reduction of liabilities of individuals and legal entities under loan and leasing agreements concluded for the implementation of the above-mentioned projects;
- repayment of funds borrowed by the state for the implementation of the above-mentioned investment projects.

Today's focus is on directing the money of the Decarbonisation Fund towards as many energy-efficient projects as possible and also implementing decarbonisation projects. Also, it is extremely important to increase and diversify the number of financial tools to encourage the widest possible range of end users to implement energy efficiency measures. This relates to households, municipalities, and businesses.

Anna Zamazeeva
Head of State Agency on Energy Efficiency and Energy Saving of Ukraine

I express my sincere gratitude to those who supported our idea of creating a fund. Finally, Ukraine will have a constant source of funds to finance all measures that will allow the population, businesses, and local authorities to implement energy-efficient measures and move towards energy independence. Our country will direct the saved money to its reconstruction, development, and improvement of social welfare (pensions, social payments, etc.), while companies – increase their competitiveness.

The set goals can be achieved, in particular, by creating the state revolving financial instrument that will direct funds specifically toward the implementation of energy-efficient projects during the reconstruction and renovation of obsolete generating facilities or the construction of new ones.

This state financial instrument will ensure energy efficiency policy including selecting projects, providing them with affordable investments and financing, permanent monitoring of the use of directed funds, as well as these projects' outcomes and their impact on national energy efficiency indicators.

The functioning of the Decarbonisation Fund is one of the key steps towards building a sustainable European-style power system, according to the principle of "energy efficiency first."

2.2. WIND POWER SECTOR: CURRENT STATUS AND DEVELOPMENT PROSPECTS

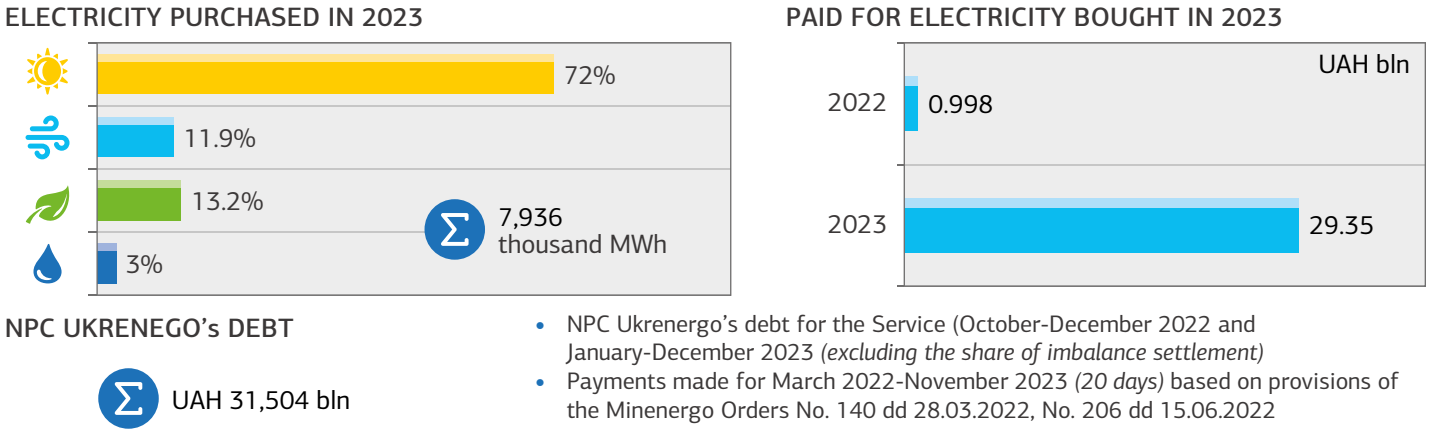
2.2.1. LAST YEAR's MAIN MARKET TRENDS AND IMPLEMENTED PROJECTS

Targeted missile and drone attacks on Ukrainian energy infrastructure have proven the need to use wind energy technologies on a larger scale than it was planned before the full-scale invasion of russia. Military actions and the occupation of a significant part of the southern territories of Ukraine with high wind areas, negatively affected the national wind power sector. At the time of releasing this Overview, 71% or 1,317 GW of wind power capacities remain temporarily occupied, and 11 wind turbines are known to be damaged or destroyed. At the same time, the wind farm is unique because even if one WTG is destroyed, all others can still continue operating, which is not the case for large fossil fuel facilities. All Ukrainian WPPs that have been affected in some way by the war are proof of this thesis on a daily basis.

However, 2023 will remain in the history of the national wind power industry as the year when local subcontractors, engineers, and technicians successfully installed WTGs under the remote supervision of the manufacturers, since the key foreign contractors evacuated from the sites around a week before the full-scale invasion of Ukraine.

*for national security reasons, the authors avoid naming settlements or specific geographic coordinates of the wind energy facilities mentioned in this section

Figure 2.8. Level of settlements with RES electricity producers at FiT, 2021-2023



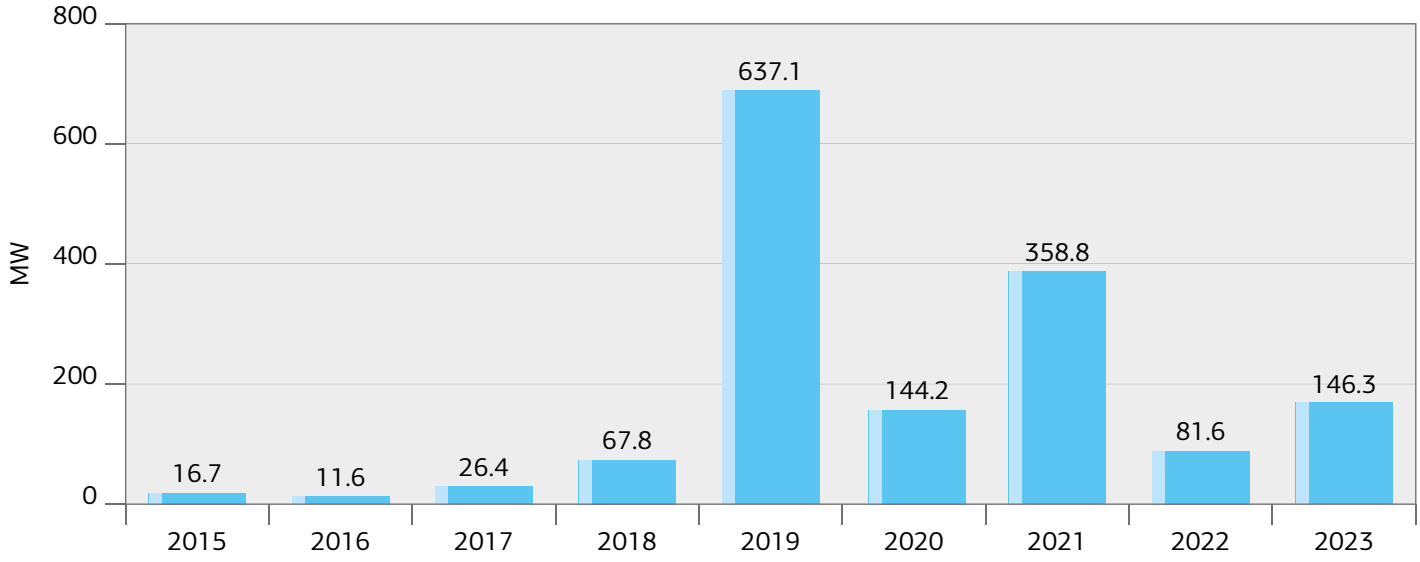
Source: *SE Guaranteed Buyer*

While describing the key 2023 trends in the wind energy sector, it is impossible not to mention the financial situation in the market. The financial crisis in the country's electricity market in 2021-2022, stemming from debts being accumulated since 2020, only deepened last year and became perhaps, the main reason for holding back the development of new projects. Under the conditions of debts of "all to all", wind and solar electricity producers actually received payment for the supplied power from the residual funds. This led to the fact that as of 31 December 2023, the debt of the SE Guaranteed Buyer to RES producers reached UAH 36.6 bln, while the debt of the NPC Ukrenergo to the SE Guaranteed Buyer crossed the threshold of UAH 32.6 bln. This rising debt tendency has a critical impact on the RES sector, resulting in paying off only about 50% of the payments.

While in January 2023, the SE Guaranteed Buyer ensured a 91% FiT payment rate, between February and October 2023, it declined and ranged between 58% in February and 53.5% in October, reaching its lowest points in June *(45.1%)* and in September 2023 *(46.5%)*. In November, the situation improved slightly, and the SE Guaranteed Buyer reported paying 98.7% of the debt for November and 98.6% of the debt for December 2023 respectfully. Payments made by the SE Guaranteed Buyer in the last days of December 2023, improved the overall payment rate for 2023 reaching 60.05%, slightly higher than in 2022 at 56%.

In its resolution dated 12 December 2023, the NEURC mandated the SE Guaranteed Buyer to settle all payments with RES electricity producers under FiT by 01 July 2024 *(originally, the settlement deadline was 31 December 2023)*.

Figure 2.9. Annual wind additions, mainland, 2015-2023



Source: *NEURC, PU UWEA*

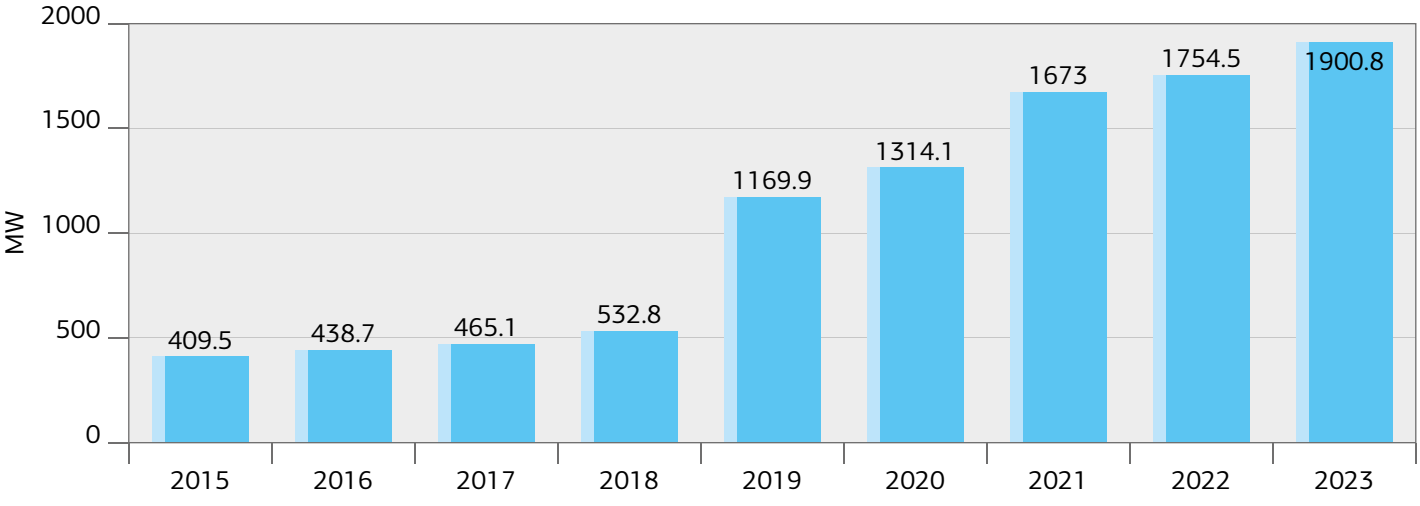
Difficulty in attracting bank financing for the construction of wind power plants because of military risks was another great challenge faced by the wind energy market last year. Finding a solution for the problem at the state level is also progressing very slowly.

Meanwhile, the adoption of the Law of Ukraine No. 3141-IX "On Amendments to Some Laws of Ukraine Regarding the Prevention of Abuse in the Wholesale Energy Markets" dated 10 June 2023 *(hereinafter referred to as "the REMIT Law")* and the aforementioned Law No. 3220-IX, had a positive effect on the market: the exit of RES electricity producers from the Balancing Group has been finally regulated.

It is worth noting that amid the war and the above-mentioned challenges, the wind power sector in Ukraine keeps growing. 146.3 MW of new wind power capacities was added to the grid in 2023. It represents the annual increase in wind capacity at 57% of 2022 or at 41% of the installed capacity in 2021.

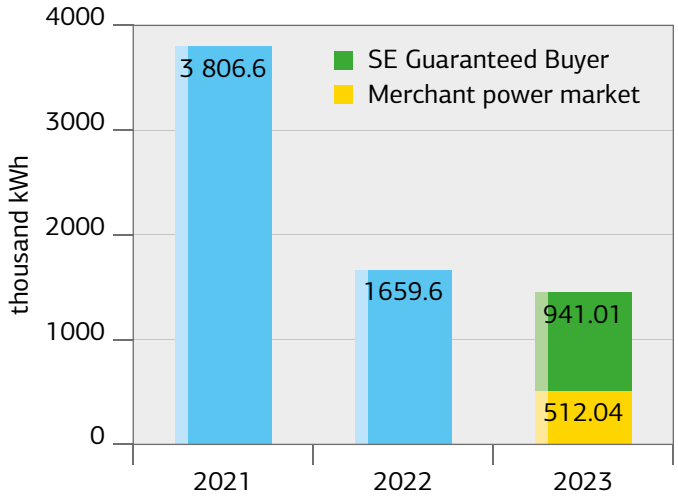
In total, during the first two years of the full-scale war, 228 MW of new wind power capacities were added to the grid, including the first phase of Tyligulska WPP of DTEK Renewables, the second phase of Dnistrovska WPP of Elementum Energy, 54.6 MW Skolivska WPP of the Eco-Optima, and several wind turbines of MC "Wind Parks of Ukraine". Thus, by the end of 2023, the total installed capacity of the national

Figure 2.10. Installed wind capacity, mainland, 2015-2023



Source: *NEURC, PU UWEA*

Figure 2.11. Dynamics of wind-generated electricity purchased by the SE Guaranteed Buyer



Source: *SE Guaranteed Buyer, PU UWEA*

wind energy sector reached 1,900.8 MW *(including wind power plants in the temporarily occupied territories without the Autonomous Republic of Crimea),* equivalent to 21.7% of the total RES electricity capacity in Ukraine *(excluding private household SPPs).* Overall, 703 wind turbines *(excluding 11 damaged ones)* with an average unit capacity of 3.7 MW have already been installed in the country.

However, as of 31 December 2023, only 583.8 MW of wind capacities out of 1.9 GW continued to generate and deliver "green" electricity to the grid. According to the SE Guaranteed Buyer, last year the national off-taker purchased 941,014.77 thousand kWh of electricity generated from wind. It's worth noting that since October 2023, most wind electricity producers have been selling electricity on the merchant power market. Combining the electricity volumes sold by them on DAM and IDM, this indicator will come to 1,453,060.8 thousand kWh.

The last two years have shown the world how wind energy operates in times of war and how it can benefit the system, even having a small total capacity. Wind energy, as a type of distributed generation, can strengthen the country's energy security and resilience to energy terror, and replace both outdated and damaged power facilities by russia.

The viability of the wind power market over the last two years of the war, along with Ukrainian business and power engineers' invincibility, as well as the ability to construct new wind power facilities despite ongoing air attacks, are once again evidenced by the newly commissioned WPPs.

114 MW Tyligulska WPP

Despite russia's ongoing full-scale war against Ukraine, the DTEK Renewables completed the construction of the first phase of the Tyligulska wind power plant, with a capacity of 114 MW out of the total declared 500 MW. The first phase, consisting of 19 EnVentus Vestas 6.0 MW turbines, will annually generate up to 390 mln kWh of "green" electricity which is enough to power around 200,000 households and to save approximately 400,000 tonnes of CO_2 annually.

Pre-construction works started two years before the full-scale war against Ukraine, so the WTGs installation was planned for standard, non-wartime conditions. However, 13 wind turbines were installed in 2022, i.e. during the first blackout in the history of the independent Ukraine. Air raid alarms took about 20% of the construction team's working time, with the total work stoppage due to air raids reaching almost 300 hours.

Obviously, during the construction of the first phase of Tyligulska WPP, DTEK Renewables provided its workers with protective equipment, installed mobile shelters, and developed evacuation plans, which were compulsorily followed during military threats.

Logistics was another challenge. For the first phase of Tyligulska WPP and all previous company's wind energy projects, the equipment was delivered by sea to ports, and then transported to the construction site by special trucks. However, the limited operation of ports because of constant shelling and other military risks has significantly worsened the conditions and increased the cost of delivering such complex cargo. Therefore, the company will develop alternative routes and logistics for the second phase of Tyligulska WPP.

Overall, the commissioning of the first phase brought the company even closer to reaching its individual 2 GW goal of new renewable energy capacities by 2030. When completed, 500 MW Tyligulska WPP will become one of the largest onshore wind plants not only in Ukraine but also in Eastern Europe.

In early September 2023, Tyligulska WPP has been recognized by the American magazine POWER and received the Renewable Top Plant Awards in the renewable energy category[26]. The award was given for the courage and resilience of the DTEK Renewables team that built the first phase of its Tyligulska WPP just 100 kilometres from the front line.

Skolivska WPP

Orivska WPP LLC, a part of Eco-Optima group of companies, successfully completed the construction of 54.6 MW Skolivska wind farm in western Ukraine. The unique feature of Skolivska WPP is its positioning within a mountainous region, located at an elevation exceeding 700 m above sea level. The project was implemented with the support of JSC Ukreximbank and MND Group and attracted investments totalling UAH 2.1 bln to the Ukrainian economy.

Skolivska WPP includes 10 WTGs Delta 4000 N 149/5x with a hub height of 104.7 m and blades' lengths of 72.4 m, of which 6 wind turbines have a unit capacity of 5.5 MW and 4 wind turbines of – 5.4 MW.

Construction of the wind farm started in 2021 and continued during the full-scale invasion of the russian aggressor. Although the war affected the delivery time of the main equipment, eight wind turbines had been already commissioned by the end of 2023. The commissioning of another two wind turbines is expected in Q1 of 2024. Within the project, the company additionally built a 110/35 kV substation and installed 16 km of underground cables, along with 6 km of 35 kV overhead electricity lines.

When fully commissioned, Skolivska wind farm is expected to generate 150 bln kWh of "green" electricity. Taking into account the constant shelling of the energy infrastructure by russian federation, the production of electricity by Skolivska wind farm greatly contributes to the reliability and independence of Ukraine's IPS.

II phase of Dnistrovska wind farm

Elementum Energy's Dnistrovska wind farm was constructed in two consecutive phases. The first phase of 40 MW came into commercial operation in May 2021. Construction of the second phase, consisting of 11 GE 5.3 and 5.5 MW turbines on Cypress platform was launched in June 2021 and by February 2022 all components have been delivered to the construction site in Odesa region and partly installed.

A week or so before the full-scale invasion of russian federation of Ukraine, the key contractors evacuated from the site, and until October 2022 all installation works were put on hold. After months of intensive negotiations, a new installation model allowed the resumption of the construction, with major roles assigned to the subcontractors, local engineers, and technicians.

Thanks to the outstanding performance of FairWind on site and remote supervision of GE as well as the unparalleled dedication of Elementum Energy team and all related stakeholders, the wind park reached mechanical completion in April 2023 despite the extreme challenges of wartime, hundreds

[26] https://dtek.com/media-center/news/american-power-magazine-honors-dtek-tyligulska-wind-power-plant-construction-with-an-award/

of hours of air raid sirens and intense winter winds. The second phase of the Dnistrovska wind farm was commissioned in June 2023.

Upon entering into all mandatory electricity market agreements, starting from the last days of June 2023, Dnistrovska wind farm phase II was operating on the free market, and increasing electricity sales as the wind turbines passed the routine manufacturer`s tests. In September 2023, the first phase of the wind farm also started market sales by putting on hold sales under the FiT.

Friendly Windtechnology Industrial Park

2023 was a challenging year for Friendly Windtechnology LLC, a member of the MC "Wind Parks of Ukraine" group, primarily due to the relocation of the only multi-megawatt wind turbine production facility in Ukraine from Kramatorsk to Zakarpattia region.

This complex process required significant efforts and financial outlay from the team. At the new location, the company had to start from scratch, including the construction of new production facilities to manufacture components for wind turbines.

Yuliya Svyrydenko
First Deputy Prime Minister of Ukraine – Minister of Economy of Ukraine

Creation of new industrial parks is aimed at developing the processing industry, supporting Ukrainian exports, creating new jobs, and filling local budgets.

However, on 01 August 2023, the company's Friendly Windtechnology Industrial Park was included in the Register of Ukraine's Industrial Parks. In addition, at the end of 2023, the company began construction of its first wind farm in Zakarpattia region, with a total capacity of about 80 MW.

One of the industrial park's production facilities will start operating in 2024 to manufacture wind components and turbines of 4.8 MW – 5.5 MW unit capacity. The company also has ambitious plans to launch the production of its first blades under the brand "Made in Ukraine".

Vladyslav Yeremenko
General Director
Friendly Windtechnology LLC

We believe that wind power is one of the most efficient and environmentally friendly ways to generate electricity that can ensure the energy security and independence of our country. The Energy Strategy's objectives indicate that new generating capacities, especially wind farms, will be necessary in the coming years. Therefore, we consider the activities of the Wind Parks of Ukraine group of companies and our industrial park "Friendly Windtechnology" to be an essential component of implementing this strategy.

UWEA and its member companies are willing actively contribute to the recovery, decarbonisation and development of the national power system even during the war. Wind projects implemented in 2022-2023 is a good example of it.

All other enterprises in the industrial park will be involved in mechanical engineering and metalworking. Thus, the operation of the industrial park will create new jobs, develop the local economy and contribute to the country's energy independence. According to the concept of the new industrial park, 745 of new jobs are to be created in the processing industry, professional, scientific and technical activities.

As of the date of the present Overview release, the Friendly Windtechnology Industrial Park was one of the few actually operating in Ukraine.

Despite the shortage of qualified workers at the new location because of the ongoing war, the Friendly Windtechnology team remains confident in the further wind deployment in Ukraine. At the same time, the company also hopes that the government will enhance its support for the national wind energy sector by creating a stable and transparent regulatory environment, which is a crucial factor in delivering on the goals outlined in the National Energy Strategy until 2050.

ГАРАНТОВАНИЙ ПОКУПЕЦЬ
державне підприємство

DEBTS TO RES ELECTRICITY PRODUCERS AND FUTURE DEVELOPMENT PLANS

2023, the second year of russia's full-scale war against Ukraine, was a very difficult year for Ukraine's energy sector and for the RES sector in particular. Attacks on energy infrastructure continued, including solar power plants and wind farms, while Zaporizhzhya NPP is still under occupation *(as of January 2024).*

However, significant progress in improving the legislative framework to accelerate RES deployment in Ukraine was made last year. Thus, the Energy Strategy of Ukraine until 2050 was approved, full synchronization of Ukraine's and European energy systems was completed, the Parliament passed long-awaited Law of Ukraine No. 3141-IX "On Amendments to Certain Laws of Ukraine on Prevention of Abuse in Wholesale Energy Markets" and Law of Ukraine No. 3220-IX "On Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine" while the national regulator increased electricity price caps on the DAM and IDM, etc.

Nevertheless, the problem of the accumulation of debts to RES electricity producers remains relevant. It should be noted that payments by the NPC Ukrenergo for the service to ensure an increase in the share of electricity produced from alternative energy sources *(hereinafter referred to as "the Service")* directly affect the level of settlements.

As of mid-January 2024, the total debt of the NPC Ukrenergo to the SE Guaranteed Buyer for this service amounted to UAH 31.504 bln or USD 833.6 mln. Thus, while in 2022, the NPC Ukrenergo's debt reached UAH 8.671 bln or USD 229.4 mln *(out of UAH 11.649 bln or USD 308.2 mln accrued),* in 2023, the national TSO's debt more than doubled to UAH 19.864 bln or USD 525.6 mln *(out of UAH 25.192 bln or USD 666.6 mln accrued)* to the SE Guaranteed Buyer.

Nevertheless, 2023 was quite an intense year for the SE Guaranteed Buyer. The company actively auctioned off electricity generated from RES, increasing sales volume to 7,936,286 thousand kWh.

The future also looks promising for the enterprise. Legislative changes adopted in 2023 allowed the SE Guaranteed Buyer to export electricity and become a player in the market for Guarantees of Origin. Revenues from electricity exports and activities in trading Guarantees of Origin will allow the SE Guaranteed Buyer to improve settlements with RES electricity producers under FiT and reduce the burden on the NPC Ukrenergo's electricity transmission tariff. In 2024, the enterprise expects the adoption of bylaws necessary for the practical implementation of these legislative initiatives, in particular, the Procedure for the SE Guaranteed Buyer export activity, as well as the NEURC's amendments to the license conditions of the SE Guaranteed Buyer.

The SE Guaranteed Buyer will also continue its work on corporatizing the company and transforming the state-owned enterprise into a joint-stock company with an understandable legal form of organization for Western partners *(i.e. 100% state share, supervisory board, and independent members).*

Editor: on 2 February 2024 the Cabinet of Ministers made a decision on transforming the state-owned enterprise Guaranteed Buyer into a joint-stock company, with 100% shares in its authorized capital owned by the state and not subject to privatization.

ERU
ENERGY RESOURCES OF UKRAINE

ERU – is a group of companies with foreign investments specializing in the supply of electricity, gas and in the implementation of projects in the energy industry of Ukraine since 2014, in particular Hungary, Austria, Bulgaria, Romania, Slovakia. Since 2017, ERU holds a 20-year political risk insurance (PRI) contract, increased in 2020 to $100mm, with the U.S. International Development Finance Corporation (DFC) for its gas trading, storage and other activities with state entities in Ukraine. The company combines management experience, deep understanding of the local market and expertise formed over more than 35 years of successful activity in the energy sector of many countries around the world.

IN THE AREA OF ELECTRICITY OUR MAIN ACTIVITIES ARE:

External operations
import and export operations, Market Access

Balance group
imbalance optimization within balance group

Trader
electricity trading under bilateral contracts

Electricity supplier
electricity supply to the end-consumers

COOPERATION WITH "GREEN" ENERGY PRODUCERS:

We offer a comprehensive service of electricity purchase and participation in the balancing group. By cooperating with us, you get:

- **Minimization of losses from imbalances through active balancing.**

The number of members of our balancing group is 66, among them are suppliers, traders, producers: SPPs, WPPs and others.

- **Guaranteed timely payments for produced electricity**

(status of settlements with SE "Guaranteed Buyer": 2022 – 55,3%, 2023– 60,05%) on 18.01.24.

- **Competitive prices for the purchase of produced electricity, a wide list of options and opportunities.**

HOW TO START COOPERATION WITH US:

1. Send your Company's name and ID (EDRPOU) to the e-mail address **bg@eru.com.ua.**
2. In response to your letter, you will receive a questionnaire and a request for the necessary information.
3. Subsequently, you will receive a calculation for your company as a participant of BG, a contract and a commercial offer.

In case of any questions, please contact us:

+380 93 96 92 486 Vasyl Gulevich
+380 97 43 21 617 Victoria Yevgrafova

2.2.2. WIND ELECTRICITY PRODUCERS ENTERING THE MERCHANT POWER MARKET

The new model of the electricity market, aimed at introducing competitive mechanisms for the functioning of the electricity market, was launched on 01 July 2019. In the years that followed, efforts were made to enhance and align its operation with the rules of the EU market. Because of the successful completion of the synchronization of the Ukrainian and European energy systems, as well as future Ukraine's accession to the EU, the further development of the RE electricity sector in a market-based and market-responsive way remains the priority for Ukraine, which also determines the direction of the post-war restoration of the national power system.

One of the main achievements on this path is the recent amendment of the Law of Ukraine "On the Electricity Market" which allows for the inclusion/exclusion of certain RES generation facilities that sell electricity at a FiT or auction price from the Balancing Group of the Guaranteed Buyer.

Discussions about enabling RES producers to leave the Balancing Group of the Guaranteed Buyer and sell electricity on market terms in different segments of the wholesale electricity market started back in 2022. Amendments to Article 71 of the Law of Ukraine "On the Electricity Market" introduced by the REMIT Law provide for an opportunity for *"business entities that generate electricity from alternative energy sources at electricity facilities or their construction phases (launch complex) and sell electricity at the FiT, or business entities that have acquired the right to support based on the results of the auction, to exclude their electricity facilities or construction stages (launch complex) from the Balancing Group of the SE Guaranteed Buyer* ***by suspending the power purchase agreement*** *at the FiT or the power purchase agreement concluded between the SE Guaranteed Buyer and the business entity that has acquired the right for support for such a facility based on the results of the auction."*

The subsequently adopted Law of Ukraine No. 3220-IX not only solidified the ability of RES electricity producers to temporarily exit the Balancing Group of the Guaranteed Buyer while retaining their rights under the FiT, but also allowed them to switch from FiT to a new support mechanism in the form of a market premium and CfD. The above-mentioned legislative initiatives, especially the introduction of provisions on temporary exit the Balancing Group of the Guaranteed Buyer with the possibility to return to it and sell electricity to the SE Guaranteed Buyer at the same FiT rate as it was before the leaving of the Balancing Group of the Guaranteed Buyer, became one of the main reasons for wind electricity producers to enter the free market.

ECU
ЕНЕРГЕТИЧНА КОМПАНІЯ УКРАЇНИ

The Energy Company of Ukraine (ECU): *collaboration with professional energy traders within PPAs enhances the benefits for RES producers that have entered the free energy market.*

As of January 2024, about 78% of wind generation in the territory controlled by Ukraine had left the Balancing Group. Having spoken to some WPP operators and electricity traders, the UWEA found out **what prompted wind energy companies to enter the merchant power market** and **what problems market players faced in 2023.** The interviewers also shared their views on **further development of the wind sector in Ukraine.**

The Ukrainian electricity traders interviewed by the UWEA include the Energy Company of Ukraine JSC, ERU Trading LLC, and KENK LLC, while a list of wind electricity producers includes DTEK Renewables, Wind Parks of Ukraine, Guris, and Elementum Energy.

According to all interviewers, another key driver for wind electricity producers to leave the Balancing Group of the Guaranteed Buyer was said to be receiving fair payment for the electricity on time and in full. Having considered the huge debts accumulated in the market over the last three years, such an approach is quite reasonable and justified. Other important factors highlighted by the companies include changes in the market, certain market predictability, and the ability to cover operational and financial costs, as well as continuing operations during wartime.

DTEK

The first phase of the Tyligulska WPP with a capacity of 114 MW has been operating on a fully market-based basis since September 2023. The liberalization of the electricity market last year made it possible for wind energy projects to operate on market conditions, i.e. without incentive mechanisms, and to receive funds for the generated electricity on time and in full. The second phase of the same wind farm will operate on market conditions and without such incentive mechanisms as the FiT from the first days of its commissioning.

WIND PARKS OF UKRAINE

Our company considered entering the free market for several reasons:

- *low level of settlements of the SE Guaranteed Buyer with RES electricity producers and violation of the mechanism for selling electricity at the FiT set out by the Law, which led to significant financial losses for our companies;*
- *changes in the market and increasing electricity price caps by the Regulator;*
- *the ability to receive a fair price for generated electricity and cover their operating and financial costs during the war.*

Key challenges faced by wind electricity producers and traders during 2023 could be divided into: technical *(the variability of wind generation);* regulatory *(imperfect secondary legislation);* and war-related, which are especially relevant for plants located in an active combat zone.

KENK
КРИВОРІЗЬКА ЕНЕРГЕТИЧНА КОМПАНІЯ

Among the problems that are worthy of attention, we can note the imperfect secondary legislation regarding the suspension of the contract with the SE Guaranteed Buyer, namely the possibility of object-by-object output of generation from the Balancing Group of the SE Guaranteed Buyer. In other words, if there are two different generation facilities on one legal entity (for example, SPP and WPP), then it is quite difficult to bring only one of such facilities to the free market, provided that the contract is suspended.

ERU
ENERGY RESOURCES OF UKRAINE

Despite all the advantages of the free market, the most tangible problem is the difficulty in predicting wind power generation due to instability, unregulated wind flow and its dependence on weather conditions, which requires involvement of various tools for balancing our "portfolio".

GÜRİŞ

The main reason for us to enter the free market was definitely the opportunity to receive payment for the produced "green" electricity on time. This decision was made much easier when relevant Law also granted us the right to temporarily suspend the agreement with the SE Guaranteed Buyer and renew it after a certain period of time.
Thus, our company has a fairly clear idea of what to expect in the market over the next 3 years. For an international investor, such market predictability is very important and valuable in terms of doing business in Ukraine.

ECU
ЕНЕРГЕТИЧНА КОМПАНІЯ УКРАЇНИ

The key challenges for renewable energy companies in Ukraine, apart from the war, are payments for produced energy and a shortage of balancing capacities. Additionally, the diminishing opportunity to apply the FiT to new RES projects makes forecasting cash flows for upcoming ventures increasingly difficult. This situation not only hampers financing for construction works, which typically constitutes over 70% of total budgets, but also complicates the operational activities of RES producers.

GÜRİŞ

Among 2023 issues relevant to our market were:

- *The inability to repay our loan obligations with international banks, which forced the parent company to intervene and, accordingly, has left a negative impact on future investment decisions;*
- *Insufficient development and poor regulation of the IDM, especially its balancing part.*

WIND PARKS OF UKRAINE

The war impacted our business since our operating wind farms are located in the active hostilities zone, for which they are constantly subject to shelling and damage. This leads to losses, supply disruptions, and risks to the life and safety of our staff. A separate 2023 challenge was the time-consuming work we did with banks for loan restructuring.

Speaking about further wind development in Ukraine, all market participants interviewed expressed their confidence in the prospects of wind energy for the national economy, in particular for its post-war recovery and noted Ukraine's favorable geographical location and rather high wind potential. Both traders and wind energy companies recognised granting wind power producers the right to operate independently on the merchant power market as a significant achievement of the past year, which would help regulate the financial situation on the market, ensure market predictability and facilitate investment in new wind energy projects.

ECU
ЕНЕРГЕТИЧНА КОМПАНІЯ УКРАЇНИ

New market opportunities are driving the development of RES in Ukraine, especially wind energy. In 2023, an alternative to the FiT was introduced in Ukraine's market. Exiting the SE Guaranteed Buyer's Balancing Group and embracing the free market has partially addressed the challenges faced by RES producers. Further growth in renewable energy in Ukraine requires additional incentives, such as the FiP system and Guarantees of Origin. The Energy Company of Ukraine, ranked as the TOP-2 "green" energy trader in the country, is leading the introduction of pre-PPAs for upcoming wind and solar power plants. This strategic move is expected to lay the foundation for new renewable projects, with a minimum capacity of 100 MW expected to commence in the first half of 2024.

DTEK

If successful electricity market reforms continue, in particular for its further liberalisation and benefit of the reforms already implemented, investors' interest in wind power deployment will only grow.
This will increase the construction of such projects and strengthen the energy security of both Ukraine and the EU, which can import Ukrainian «green» electricity.
Our company has quite clear plans for the future. Our key goal is to build 2 GW of new renewable energy capacity in Ukraine by 2030, and we have been already actively working on delivering it. Besides completing Tyligulska WPP, the company plans to build a 650 MW Poltava WPP, which will improve the energy supply to the energy deficit Poltava and neighboring regions.

KENK
КРИВОРІЗЬКА ЕНЕРГЕТИЧНА КОМПАНІЯ

The construction and launch of new wind farms is a crucial step towards ensuring the sustainability of the power system and increasing the share of renewables.
At the same time, in our opinion, to further develop the wind energy market under martial law, two main conditions are required:

- *transparent conditions for investors are now on the part of "green" traders, not the SE Guaranteed Buyer;*
- *state guarantees against military risks.*

Summing up, we can say that development is not only possible but extremely necessary when these two key conditions are met.

ERU
ENERGY RESOURCES OF UKRAINE

Thanks to the entry into the free market, wind energy companies will be able to eliminate the main problem – receiving funds from the sale of electricity produced at the wind power plants in a timely manner, so the wind market development looks quite promising, especially with constant innovation, increased efficiency and energy independence.

Kyiv, Stepan
Rudnitsky street, 2b
info@kenk.com.ua
kenk.com.ua
044 344 69 79
050 011 63 29

100% of Dnistrovska WPP operates on the free market by putting the sales under the FiT on hold. Electricity is sold under bilateral contracts with traders, as well as on the DAM and IDM segments.
The company positively assesses this experience and will consider the market sales model as one of the priorities for its future projects. Going forward, the company plans to work on efficiency, forecasting quality, and increasing its market sales expertise.

Ukraine has enormous wind energy potential and can truly become a European hub for the production of "green" electricity and hydrogen. At the same time, not only the big declarations by the government in terms of the development of "green" energy, including "green" hydrogen and e-fuels, but even those much more modest of many predictions will hit the wall of present interconnection procedures if not being changed. For example, norms like "the N-1 rule" leads to underutilization of the existing grid. Grid reliability and security should be better addressed by automatic emergency curtailment than by grid underutilization. Moreover, limiting the new generation capacities due to obligatory grid underutilization means impeding the construction of excess generation needed to cover with "green" energy the less sunny or windy hours.

2.2.3. PROSPECTS FOR FURTHER WIND POWER EXPANSION IN UKRAINE

No matter how long the full-scale war lasts, the top priorities for the medium- and long-term expansion of the national wind power sector will be as follows:

- accelerating wind deployment and implementation of planned projects by 2030, based on the market conditions; and
- increasing total installed wind capacity to the level required for safe, reliable and efficient operation of Ukraine's IPS;
- reparation/compensation for damages caused to wind power facilities by russia.

We are fully confident in the further wind deployment in Ukraine. We believe that wind power is one of the most efficient and environmentally friendly ways to generate electricity that could ensure our country's energy security and independence. We expect that in a free market environment, wind energy will gain more opportunities for investment, modernization, diversification, and integration with European partners. Increasing electricity exports to the EU will also benefit wind energy companies by increasing sales volumes, expanding sales markets, and strengthening the competitiveness of the Ukrainian economy.

RECOVERY OF DAMAGES & LOSSES FROM RUSSIA: THE RELEVANT CLAIMS' FEATURES

Damages information provided by:
Maria Kostytska, Partner and Head of Arbitration at the Paris Office, Winston & Strawn LLP

Ukraine's energy infrastructure remains the main military target for russia. During two years of full-scale war, the electricity sector suffered the most, losing almost USD 6.5 bln, of which about USD 3.9 bln was due to the loss of generation alone[27]. In general, by June 2023, RES producers suffered losses at around USD 220 mln,[28] while the wind power sector alone – over EUR 50 mln.[29]

While some Ukrainian state-owned energy companies have already expressed their intention to file claims against russia for compensation of war damages, no publicly known investor-state proceedings have been initiated in the energy sector in two years of full-scale war. In contrast, some privately owned energy companies have opted to pursue their claims in Ukrainian courts.

Investors who have made investments in facilities located in the geographical areas that are under occupation since both 2014 and 2022 have the possibility to bring investment arbitration claims against the russian federation based on the **1998 BIT between russia and Ukraine** *(hereinafter referred to as "the Ukraine-russia BIT").*

Prospective claimants can rely on the favorable precedents set by earlier investment arbitration

27 https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099184503212328877/p1801740d1177f03c0ab180057556615497, at 82.

28 https://kse.ua/wp-content/uploads/2023/09/June_Damages_ENG_-Report.pdf, at 29.

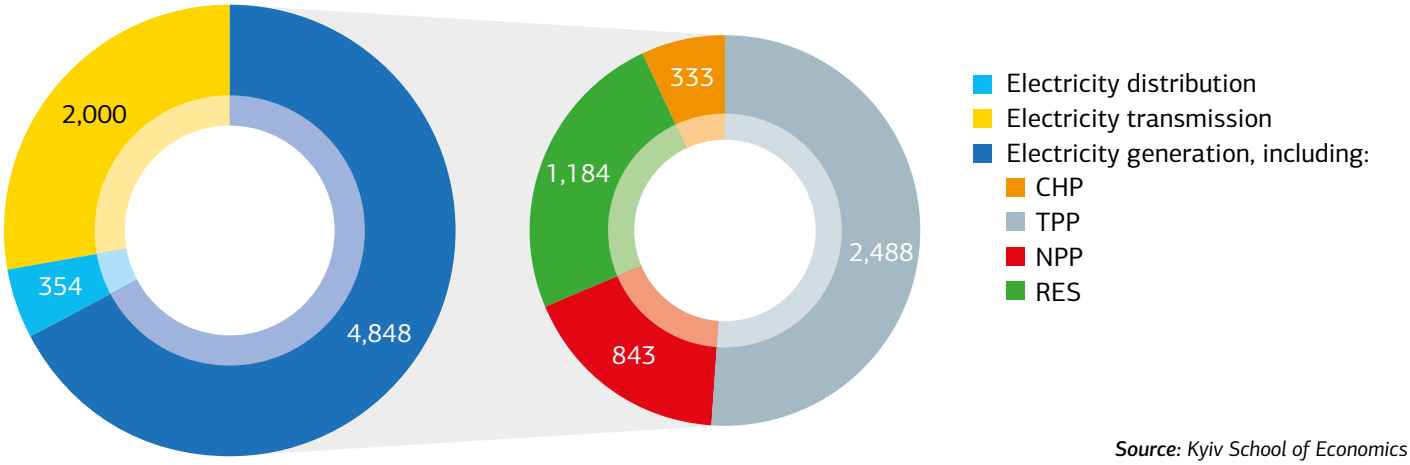
29 https://www.energycharter.org/fileadmin/DocumentsMedia/Occasional/2023_05_24_UA_sectoral_evaluation_and_damage_assessment_Version_X_final.pdf, at 11.

Dnistrovska wind park

ELEMENTUM ENERGY

Powering a better future

Figure 2.12. Direct infrastructure damage to electricity facilities over two years of war, USD mln



Source: *Kyiv School of Economics*

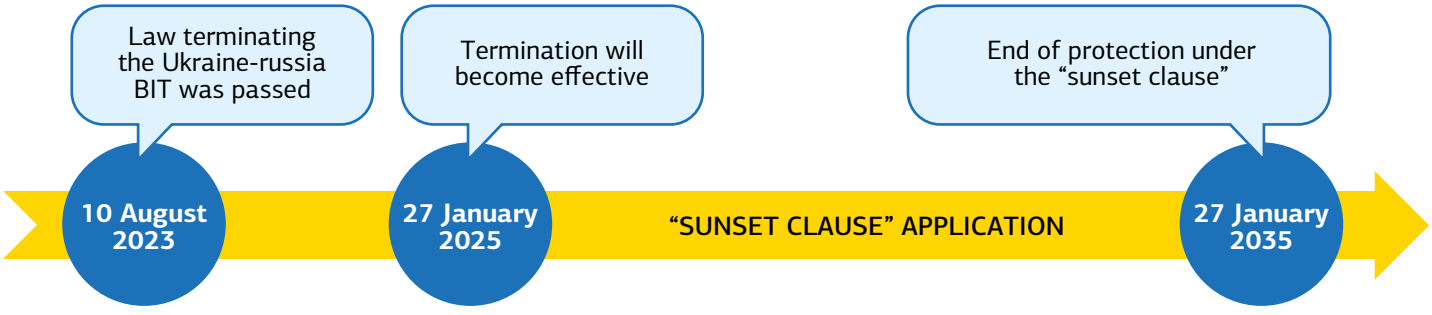
cases arising from the occupation of the Crimea, the so-called "Crimean cases" and the ECHR's decision in Ukraine and the Netherlands v. russia on 25 January 2023.[30] In the Crimean cases, the arbitral tribunals invariably upheld jurisdiction under the Ukraine-russia BIT based on russia's effective control over Crimea since its annexation in 2014, held russia liable for breaches of the Ukraine-russia BIT and awarded damages to Ukrainian claimants. The ECHR's decision of 25 January 2023, in Ukraine and the Netherlands v. russia, too, upheld jurisdiction based on russia's exercised effective control over the temporarily occupied territories of the Donetsk and Luhansk regions from 11 May 2014.[31]

Prospective claimants should also bear in mind that on 10 August 2023, the Verkhovna Rada of Ukraine adopted the Law of Ukraine No. 3329-IX on termination of the Ukraine-russia BIT[32], which provides that the termination of the BIT will normally take effect on 27 January 2025, at the end of the current validity period, on the condition of proper notification of the russian federation of such termination. However, the "sunset clause" in Article 14*(3)* of the Ukraine-russia BIT enables investors to file claims relating to investments made before that date for 10 more years, i.e., until 27 January 2035.[33]

Electricity producers with similar claims – type of industry, geographical location, factual background, applicable treaty, relief sought, etc. – may consider the possibility of filing **"mass claims"** to jointly seek compensation for war damages and thus reduce the costs of arbitration and legal representation. Favourable precedents exist for the filing of this type of claim by Ukrainian claimants.

For prospective and further investment in the Ukrainian energy sector, **securing comprehensive war risk insurance** is crucial for the enduring

Figure 2.13. Validity period of "sunset clause" after termination of the BIT



Source: *Winston & Strawn LLP*

[30] https://hudoc.echr.coe.int/eng?i=001-222889

[31] https://hudoc.echr.coe.int/eng?i=001-222889, § 695.

[32] https://zakon.rada.gov.ua/laws/show/3329-20#Text

[33] https://zakon.rada.gov.ua/laws/show/643_101#Text, art. 14.

WINSTON & STRAWN LLP

Winston & Strawn is a premier international law firm founded in 1853 with over 900 lawyers in 16 offices in Europe, Asia, North America and Latin America. Winston's full-service energy practice, comprised of specialized lawyers with a deep familiarity and keen sense of the energy market, provides services to a wide range of participants of the energy sector. Winston has extensive experience advising and representing clients in energy disputes (oil & gas, renewable energy) before international arbitral tribunals and national courts of various jurisdictions. Partner Maria Kostytska in the Paris office leads the dispute prevention and resolution practice with a focus on Ukraine, and more broadly Eastern and Western Europe, the Baltics, Central Asia and Latin America.

recovery and development of renewable energy, including wind projects:

- The Multilateral Investment Guarantee Agency *(hereinafter referred to as "MIGA")*, a member of the World Bank Group, has already been instrumental in providing political risk insurance *(hereinafter referred to as "PRI")* with guarantees surpassing USD 185 mln. During the war and post-war recovery phases, MIGA supports the private sector with trade finance guarantees and PRI assistance to international banks, and post-stabilization, it plans to expand its offerings, including PRI guarantees for the real sector.[34]
- The U.S. International Development Finance Corporation *(DFC)* also plays a vital role in this matter, having supported projects worth USD 400 mln.[35]
- French and German counterparts, Bpifrance Assurance Export[36] and the German investment guarantee scheme,[37] provide insurance protection for companies investing in Ukraine.
- The EBRD, in collaboration with the United Kingdom, is leading a pilot project for war risk insurance, underscoring a collective commitment to the resilience and growth of projects in post-conflict scenarios.[38]

Compensation for damages to renewable energy facilities caused by russia is one of the conditions for ensuring the further rollout of renewable energy in Ukraine, as it allows companies in the "green" energy sector to restore their assets and ensure effective ownership of their property.

Regardless of when the war against Ukraine ends, the process of filing the relevant claims can be started now to ensure effective post-war recovery of the sector, as well as its further large-scale development both by 2030 and by 2050.

TOWARDS A WIND FUTURE. CONCEPT OF WIND ENERGY DEVELOPMENT UNTIL 2030

According to the Ukrainian Government's strategy, wind energy should become one of the key elements of the post-war recovery of the Ukrainian economy. Achievement of the declared ambitious goals of building dozens of gigawatts of new capacity will require attracting dozens of billions of euros in investments from international and Ukrainian financial institutions, engaging new development teams, and providing international stakeholders with experience in large-scale project implementation.

At the same time, most of the wind projects currently being developed in Ukraine face a lack of financing for reasons that require prompt resolution, namely a non-transparent and overregulated market, resulting in accumulated debts; inefficient and unpredictable regulation, leading to an increase in

[34] https://www.miga.org/migas-ukraine-response

[35] https://www.dfc.gov/media/press-releases/joint-statement-establishment-dfc-miga-consultative-group-political-risk

[36] https://www.kmu.gov.ua/news/yuliia-svyrydenko-frantsiia-strakhuvatyme-vid-voiennykh-ryzykiv-svoi-kompanii-iaki-zatsikavleni-u-vidbudovi-ukrainy

[37] https://www.investitionsgarantien.de/

[38] https://www.kmu.gov.ua/news/velykobrytaniia-pratsiuvatyme-razom-z-iebrr-nad-proektom-strakhuvannia-voiennykh-ryzykiv-v-ukraini.

disputes between market players; the absence of "green" auctions, through which private companies could provide financial institutions with guarantees of a minimum offtake of generated electricity; and an impaired grid connection procedure, according to which the existing term of technical conditions for connection is insufficient for the development of new projects.

In view of these challenges, the UWEA has developed a concept of the main reforms that need to take place in the market to enable further development of the wind energy industry in Ukraine:

- **Ensure transparency, competition and financial stability in the electricity market.** This means abandoning the mechanisms of "manual" regulation, as well as economically unjustified electricity tariffs for households, which should be replaced by targeted subsidies to certain categories of vulnerable consumers.
- **Refusal to provide non-transparent stimulation and support exclusively to state-owned nuclear and large hydropower generating companies.** Any stimulation should be provided on a competitive basis, in compliance with the standards of eligibility of state aid provided for by the legislation of Ukraine and the EU regulations.
- **Enhance the institutional capacity of the NEURC and the Antimonopoly Committee of Ukraine to ensure quality regulation, supervision and investigation of abuses in the electricity market.** Any practices of state authorities that conflict with the current legislation or are determined by the courts to be unlawful should be immediately stopped, the consequences should be eliminated, and the damage caused to businesses should be compensated.
- **Providing support mechanisms for wind energy projects** at a level no less effective than in the EU. We are talking about auctions for the right to conclude CfDs with the FiP mechanism that guarantees the purchase of electricity by new projects for a period of at least 15 years.
- **Introduce a system of guarantees against political risks.** This includes establishing in legislation stable regulatory and fiscal conditions for wind energy projects, as well as refraining from retroactive changes to existing projects.
- **Ensure the simplest and most transparent mechanisms for project development** in accordance with the "overriding public interest" regime. It should be recognized at the state level that wind energy development is a priority public interest, and therefore, permitting procedures for land allocation, EIA, development and approval of urban planning documentation, and grid connection should be simplified to the highest possible extent.
- **Ensuring the stability of technical solutions for grid connection,** which is an important factor for the transparency of capital expenditures *(CAPEX)* of wind energy projects. Guarantees of grid connection and their consistency from the beginning of development to operation help ensure investment stability and openness to potential investors. Therefore, the UWEA considers it appropriate to consider tools to extend the validity of technical conditions for grid connection for a period sufficient for the full development and construction of wind farms. At the same time, it is necessary to ensure that there are appropriate barriers to the existence of "paper" projects that block the available capacity for bona fide investors.

Analysing the public statements of the authorities on the plans for the work and development of the energy sector for 2024, it becomes clear that the reform of the renewable energy market shall continue. This is the right strategy, as with the uncertain duration of martial law in Ukraine, postponing these reforms until the post-war period will make the Ukrainian market less competitive, as the markets of neighbouring countries, with which Ukraine is already competing for funding and projects, will gain momentum during this time.

Although it is still difficult to make clear forecasts for further development of Ukraine's wind power sector even for the next few years, as UWEA did before the full-scale invasion, however, the further deployment of wind energy technologies in the country can no longer be stopped. It encourages wind companies to continue to develop and construct new projects.

In particular, over the next few years, construction of several wind farms is expected including, for example, such projects as the II phase of Tyligulska wind farm, new Poltava WPP, and several projects in Odesa and Zakarpattia regions.

CONTINUED CONSTRUCTION OF 500 MW TYLIGULSKA WPP

The good news of the past year was the signing of a Memorandum of Understanding on the completion of the Tyligulska WPP in Ukraine between DTEK Group and Danish wind turbine manufacturer Vestas in the presence of Kadri Simson, European Commissioner for Energy, and Herman Halushchenko, Minister of Energy of Ukraine. According to the Memorandum, Vestas is ready to supply wind turbines to Ukraine for the final project implementation.

The second phase of the Tyligulska wind farm will consist of 64 wind turbines with a unit capacity of 6 MW each. Thus, its total capacity will amount to 384 MW. The construction of the wind farm is

scheduled for 2024-2025. The installed wind turbines are expected to be gradually connected to the grid since the end of 2024.

Investments in the second phase of Tyligulska WPP will amount to EUR 450 mln, which will be provided from the company's own funds and loan financing from leading Western European banks under state guarantees.

After the commissioning of the second phase, the 500 MW Tyligulska WPP will produce about 1.7 TWh of electricity annually, which is enough to power about 900,000 households. The project is expected to reduce CO_2 emissions by 1.7 mln tonnes annually.

The future 500 MW Tyligulska WPP, supported by the European Commission and the Ukrainian government, is set to become one of the largest in Eastern Europe with a total investment of over EUR 650 mln.

FUTURE WIND FARM IN POLTAVA REGION

In 2023, another wind power project by DTEK Renewables was announced, namely 650 MW Poltava WPP, with pre-design work already underway and expected to last until May 2024. The type and unit capacity of WTGs will be announced by the company based on the results of the preliminary design. However, it is already known that DTEK plans to use wind turbines with a unit capacity of 6 MW for this plant.

On 26 October 2023, a trilateral agreement was signed with the executive committee of the relevant city council and a specialized certified organization to carry out a set of spatial planning works. Construction of the plant is expected to begin in 2025.

Andriy Konechenkov
Chairman of the Board
UWEA

The signing of the Memorandum on the completion of the Tyligulska wind farm at the UN Climate Conference COP28 demonstrates the pivotal role of wind energy in mitigating climate change. The Tyligulska wind farm will not only provide the population of Ukraine with clean electricity, but also strengthen the resilience of our power system, and thus, the country's energy security and energy independence. The UWEA is proud of its member companies' achievements.
We greatly appreciate DTEK Renewables and Vestas significant contribution to the transformation of Ukraine into a "green" energy hub.

FURTHER BUSINESS DEVELOPMENT PLANS BY ELEMENTUM ENERGY

As of the beginning of 2024, the company has more than 200 MW of new wind projects at the active development stage. In a short-term perspective Elementum Energy plans to bring such projects to the RtB stage and implement them in the medium-term perspective.

Also, starting from 2024, Elementum Energy's team focuses on exploring opportunities for war risk insurance by international insurance agencies and works towards potential securing financing for new projects.

III

THE REGULATORY FRAMEWORK FOR WIND POWER IN UKRAINE

3.1. MAJOR LEGISLATIVE CHANGES IN 2023

One of the most pressing issues in RE sector in 2023 was the regulatory approval of the extension of both technical conditions for the connection of generating facilities and contracts with the SE Guaranteed Buyer for the sale of electricity at FiT for generation facilities which construction was interrupted by the full-scale russian invasion of Ukraine. In addition, at the end of 2022, the RES market expected that in 2023 the problem of debts to RES producers would be resolved, a mechanism of Guarantees of Origin would be introduced, the long-awaited REMIT Law would be adopted, further market liberalization *(removal of price caps)* would be implemented, market mechanisms for stimulating wind energy would be introduced and/or improved, etc. However, only a part of the legislative initiatives related to the above-mentioned issues has been implemented in practice. Some issues still remain unsolved, and some are still under active consideration.

EXTENSION OF CONDITIONS FOR WPPs CONNECTION

Due to the full-scale russian invasion of Ukraine, significant amounts of wind projects under construction were suspended – some of them founded themselves on the occupied territory, and some faced hardships caused by the invasion. Under the legislation effective as of 24 February 2022, to retain the technical grid connection scheme, wind power projects had to be commissioned before 31 December 2022. Hence the projects, suspended due to the invasion, were facing the risk of losing the grid connection scheme and especially the cost part of it.

To eliminate this risk, **the Law of Ukraine No. 3141-IX "On Amendments to Certain Laws of Ukraine on Prevention of Abuse in Wholesale Energy Markets"**[39] dated 10 June 2023 *(the above-mentioned REMIT Law)* was supplemented with the provision extending the tenure of the WPPs grid connection until 31 December 2024.

The REMIT Law adopted on 10 June 2023, entered into force on 2 July 2023. This secured the previously agreed grid connection schemes of the pending projects. Described provisions have a retrospective effect and apply starting from 1 November 2022.

Following this, on 30 June 2023, **the Law of Ukraine No. 3220-IX "On Amendments to Certain Laws of Ukraine on Restoration and Green Transformation of the Energy System of Ukraine"**[40] *(the above-mentioned Law No. 3220-IX)* was adopted, which entered into force on 27 July 2023, and detailed the mechanism for extending the terms of the connection conditions. Developers were granted with the opportunity to obtain the extension of the technical conditions under the condition that the grid connection agreement was effective as of 24 February 2022, and that the developer does not have any unperformed obligations under his agreement that had matured before 24 February 2022. To formalize the extension the developer and the respective grids operator must enter an additional agreement to the grid connection agreement.

The Law No. 3220-IX stipulates that a developer can obtain the extension until 31 December 2024, without changing any terms of the grid connection agreement or until 31 December 2025, under the condition that the grid connection fee is changed under fair terms. In this case, a new grid connection fee should be determined as of the day following the day of the cancellation or expiration of the martial law regime.

Introduced extensions are not available to the developers whose projects are located within the occupied territory at the conclusion of the additional agreement. In practice, such grid connection agreements are regularly extended based on the force majeure provisions.

In addition, Law No. 3220-IX provides for the:

- introduction of electronic tradable Guarantees of Origin;
- reload of the "green" auctions support scheme;
- possibility of switching to a FiP support mechanism for RES producers benefiting from FiT;
- restoration of damaged renewable generation while retaining the FiT;
- limitation of opportunity to retain grid connection terms for wind projects located within the occupied territories.

The provisions of Law No. 3220-IX are analysed in more detail in Section 2.1.2 of this Overview.

[39] https://itd.rada.gov.ua/billInfo/Bills/Card/26136

[40] https://zakon.rada.gov.ua/laws/show/3220-20#Text

EXTENSION OF THE FIT

The REMIT Law extended the FiT for wind power projects. Legislation effective before the enactment of the REMIT Law provided that to be eligible for the FiT, a wind power plant that has secured pre-PPA with the SE Guaranteed Buyer had to be commissioned within three years following the date of such pre-PPA. Such pre-PPAs have been secured in the period between June – December 2019. The REMIT Law extended the FiT eligibility criterion on wind power projects commissioned **for one year** *(depending on the date of the pre-PPA signing).*

In addition, the REMIT Law retained the same level of the FiT rates for wind power projects commissioned before 30 June 2023, while for wind power plants commissioned after 01 July 2023, the FiT was reduced by 17.5% to 7.46 eurocents/kWh. The Law No. 3220-IX, adopted in the summer, clarified the deadline for new wind power plants to qualify for the FiT, stipulating that this option is available until **31 December 2023.**

It is worth noting that the above-mentioned FiT's rate will also apply to a small number of projects commissioned after 31 December 2023, namely projects with an installed capacity of less than or equal to 5 MW, as provided for in the third paragraph of the second part of Article 9-1 and the second paragraph of the second part of Article 9-3 of the Law of Ukraine "On Alternative Energy Sources".

THE RIGHT TO WITHDRAW FROM THE SE GUARANTEES BUYER'S BALANCING GROUP

Back in July 2022, the Law of Ukraine No. 2479-IX "On Peculiarities of Relations on the Natural Gas Market and in the Heat Supply Sphere During Martial Law and Following Renewal of Their Functioning"[41] was adopted, which for the first time granted RES electricity producers under the FiT the right to temporarily leave the Balancing Group. This made it possible for the producers to operate on market conditions, in particular in terms of selling generated electricity in various market segments. Given the dynamics of settlements with producers under the FiT, entering the market de facto enabled RES producers to receive more money for electricity sold and, accordingly, improve their financial position.

However, it became technically possible to enter the free market only on **25 April 2023.** This was due to the NEURC adopting **Resolution No. 758**[42], which amended Resolution No.641 of 26 April 2019. The resolution approved the procedure for entry and exit of business entities, including electricity facilities subject to the FiT, from the Balancing Group. In essence, the Resolution established precise regulations and protocols for documenting the exit or exclusion of generating facilities from the Balancing Group.

ADOPTION OF THE BYLAWS TO IMPLEMENT THE PROVISIONS OF THE REMIT LAW

The REMIT Law also provides for the introduction of obligations for companies organizing trading operations to report suspicious transactions.

Based on this Law, on **26 September 2023,** the NEURC adopted **the Resolution "On the Approval of the Procedure for Investigating Abuse in the Wholesale Energy Markets"**[43] *(hereinafter referred to as "the Market Abuse Investigations Regulation").* According to the Regulation, the NEURC has the authority to initiate investigations based on submissions from applicants or independently, if there are grounds for such investigation, particularly based on the analysis of the participant's market behaviour. The investigation process includes several stages, such as preliminary research, hearings, and reaching a verdict. It's noteworthy that market participants are obligated to actively cooperate with the NEURC during an investigation and provide all necessary information related to the case.

Upon the investigation's completion, the NEURC reaches the verdict regarding the identified violations, the possible application of sanctions, or other measures in accordance with the Law. In cases where violations are not detected or evidence is found insufficient, the investigation may be closed. The NEURC's decision upon the investigation are subject to judicial review.

On 29 September 2023, the NEURC approved the **Procedure** *(methodology)* **for determining the amount of fines imposed by the NEURC**[44] that defines principles, stages and criteria for determining fines for abuses in the wholesale energy market, in particular the nature, duration and seriousness of the infringement, the amount of damage caused and the amount of potential income that could be obtained as a result of the abuse.

On 4 October 2023, the NEURC adopted a **Regulation that establishes the Registration rules for participants in the wholesale energy market**[45]. The Regulation outlines the details of the registration process and requirements for potential participants. The scope of this Regulation encompasses a broad

[41] https://zakon.rada.gov.ua/laws/show/2479-20#Text

[42] https://zakon.rada.gov.ua/rada/show/v0758874-23#n3

[43] https://www.nerc.gov.ua/news/nkrekp-zatverdila-poryadok-rozsliduvannya-zlovzhivan-na-optovomu-energetichnomu-rinku

[44] https://zakon.rada.gov.ua/rada/show/v1800874-23#Text

[45] https://www.nerc.gov.ua/news/nkrekp-zatverdila-poryadok-reyestraciyi-uchasnikiv-optovogo-energetichnogo-rinku

range of wholesale market participants, including electricity producers, gas extraction enterprises, gas storage operators, gas transmission and distribution system operators, market operators, electricity transmission and distribution system operators, LNG storage and facility operators, as well as traders and major consumers of electricity *(which consumes 600 GWh electricity per year and above)* and natural gas. The Regulation provides for the establishment of a public registry of participants, accessible through the NEURC's official website. This ensures the process' transparency and openness.

The Regulation details a registration procedure that requires entities interested in trading wholesale energy products to register as market participants before entering into any agreements. Notably, this registration is a singular requirement, regardless of the scope or type of their market activities. The registration procedure requires the submission of a registration form by an authorized representative. Thereafter, the form is subject to the NEURC's verification for its accuracy, completeness of the information provided, and compliance with the established procedure. Upon successful completion of the process a participant is assigned an ECRB code, and their details are incorporated into the registry.

On **27 December 2023,** the NEURC adopted **Resolution No. 2626,** which approves the **Procedure for disclosure of information to electricity consumers on energy sources in the general structure of the electricity balance purchased by an electricity supplier and/or generated at its own power plants**[46].

The Procedure establishes requirements for the formation of information on the share of each energy source in the electricity purchased by the electricity supplier and/or generated at its own power plants, including Guarantees of Origin of electricity generated from renewable energy sources *(if any),* as well as the frequency and timing of disclosure of such information to consumers.

AMENDMENTS TO THE DISTRIBUTION SYSTEM, THE TRANSMISSION SYSTEM AND THE COMMERCIAL METERING CODES

In order to create technical conditions for the functioning of the electricity generation mechanism by active consumers and the operation of aggregators, as provided for by the Law No. 3220-IX, last year the NEURC made several amendments to the Distribution System Code, the Transmission System Code, and the Commercial Metering Code.

CODE	AMENDMENTS
Distribution Systems Code	**Resolution No. 2274 dated 5 December 2023**[47] **supplemented the Code with provisions, inter alia stipulating that:** **1.** The following installations may be connected to the power grids of the producer of electricity from RES *(SPP, WPP, BioPP and micro-, mini- and small hydroelectric power plants)*: • self-consumption electrical installations not related to electricity generation located on the same land plot or land plots that share common borders with the internal power supply grids. • electrical installations of related entities located on the same land plot or land plots or having common borders with them *(provided that there are no generating units installed at the facilities of such related entities).* **2.** Electricity producers that generate electricity at cogeneration plants with a capacity of up to 20 MW have the right to connect to the power grids of the electricity producer: • electrical installations of its own critical infrastructure facilities via internal power supply grids; • electrical installations of critical infrastructure facilities of other business entities in coordination with municipal authorities *(provided that there are no generating units installed at such critical infrastructure facilities).* **3.** Commercial metering of consumed and generated electricity is organized in accordance with the requirements of the Commercial Metering Code.

[46] https://www.nerc.gov.ua/storage/app/uploads/public/658/c11/dee/658c11deeda8d947414484.pdf

[47] https://zakon.rada.gov.ua/rada/show/v2274874-23#n2

Transmission System Code	**1. The NEURC's Resolution No.68 dated 17 January 2023**[48] supplemented the Code with the following: • at the TSO's request, high-voltage direct current *(HVDC)* systems must be equipped with an independent control module to modulate the output active power of the converter substation depending on the frequency value at all connection points of the HVDC system to maintain a stable frequency of the power system. The principles of operation, parameters and activation criteria for this frequency controller are determined by the TSO at the stage of connection of electrical installations. The issue of the operation of HVDC systems has also been regulated. Connecting customers' electrical installations to the power grids of electricity producers is prohibited unless provided for by the Distribution Systems Code. **2. The NEURC's Resolution No.1763 dated 29 September 2023**[49] approved amendments to the Code, which provide, inter alia for updating the procedures for concluding contracts for the provision of electricity transmission services and contracts for the provision of dispatch *(operational and technological)* management services. **3. The NEURC's Resolution No.2649 dated 29 December 2023**[50] amended the Code, which defines the specifics of connection of the consumer's generating units to the consumer's own power grids and the technical requirements for the operation of a new electricity market participant – an aggregator.
Commercial Metering Code	**The NEURC's Resolution No.2276 dated 5 December 2023**[51] added to the Code: • requirements for the specifics of commercial metering by RES electricity producers *(SPPs, WPPs, bioenergy plants and micro, mini and small hydropower plants)* by creating additional commercial metering stations and combining them into one commercial metering site of group "a"; • requirements on the specifics of organizing commercial metering at cogeneration plants with a capacity of up to 20 MW by creating additional commercial metering stations and combining them into one commercial metering site of group "a".

CREATION OF TECHNICAL CONDITIONS FOR SUSTAINABLE IMPORT AND EXPORT OF ELECTRICITY

On 12 September 2023, the NEURC approved **the rules for the allocation of cross-border capacity for Ukrainian interconnections with Poland, Slovakia, and Hungary at daily auctions** to be held on the Joint Allocation Office *(JAO)*[52] auction platform. This decision has been preceded by an agreement reached by TSOs from Ukraine, Slovakia, Hungary, and Romania to introduce a jointly coordinated cross-border capacity allocation procedure based on the JAO platform in June 2022. Poland has since adhered to this agreement.

On the same day, the NEURC also decided on the allocation of 100% of all available cross-border capacity with Slovakia in daily auctions and instructed the national TSO NPC Ukrenergo, to present operators from Poland, Hungary, and Slovakia with a proposal to agree on the allocation of capacity in monthly and annual auctions. According to earlier reports, Ukraine and Romania agreed that 35% of cross-border capacity could be allocated at annual auctions, 35% at monthly auctions, and 30% at daily auctions.

Daily Allocation Rules for the Poland-Ukraine border came into force on 16 January 2024. The commencement of commercial daily auctions for Ukrainian-Slovak and Ukrainian-Hungary borders was not announced last year.

On 27 October 2023, the Cabinet of Ministers of Ukraine approved Resolution No. 1127[53]. This resolution allows non-domestic consumers to continue working during power outages if their total electricity consumption includes at least 30% purchased imported electricity during May-September and 50% during October-April, in each billing hour.

Additionally, **on 28 November 2023**, the Ministry of Energy of Ukraine announced an increase in the capacity to import electricity from European countries from 1.2 GW to 1.7 GW starting from 01 December 2023.

[48] https://www.nerc.gov.ua/acts/pro-zatverdzhennya-zmin-do-kodeksu-sistemi-peredachi-13

[49] https://zakononline.com.ua/documents/show/522670___760800

[50] https://www.nerc.gov.ua/acts/pro-zatverdzhennya-zmin-do-kodeksu-sistemi-peredachi-16

[51] https://zakon.rada.gov.ua/rada/show/v2276874-23#n2

[52] https://expro.com.ua/novini/regulyator-pogodiv-pravila-rozpodlu-dlya-peretinu-z-slovachchinoyu-polscheyu-ta-ugorschinoyu

[53] https://zakon.rada.gov.ua/laws/show/1127-2023-%D0%BF#Text

REGULATION OF TARIFFS & PRICES IN THE ELECTRICITY MARKET

On 9 December 2023, the NEURC's **Resolution No. 2322**[54] approved the following transmission and despatch tariffs for 2024:

- transmission tariff – UAH 528.57 per MWh (~ EUR 13.31);
- dispatch tariff – UAH 104.57 per MWh *(~ EUR 2.63).*

At the first time the different transmission tariff has been set for the "green" steel industry – electricity consumers that a) produce steel and whose carbon dioxide emissions do not exceed 250 kilograms per 1 tonne of production, and b) produce steel with an electric arc furnace method only *(for these consumers the transmission tariff is UAH 364.7 per MWh (~ EUR 9.18)).* The beneficial tariff rate for "green" steel could be a good stimulus for steel producers to finance the development of wind farms to secure the stable supply of "green" electricity.

PRICE CAPS

Starting from February 2022, the NEURC introduced price caps in the DAM and IDM in response to the unstable situation in the electricity market caused by russian full-scale invasion of Ukraine. As a result, price caps hindered the growth of the electricity market and during 2023 were reconsidered twice. The first revision was made through **Resolution No. 1126**[55] **on 27 June 2023,** which was in effect until the adoption of **Resolution No. 2099**[55] **on 9 November 2023** that is still in force and established the specific price caps shown in the table below.

ELECTRICITY MARKET FUNCTIONING UNDER THE MARTIAL LAW

During 2023, the NEURC's **Resolution No. 332 "On Ensuring Stable Functioning of the Electric Energy Market, Including the Financial Condition of Participants in the Electric Energy Market During the Period of Martial Law in Ukraine" of 25 February 2022**[57] was repeatedly amended.

In particular, based on the recommendations of the Antimonopoly Committee of Ukraine, the Resolution provides for the possibility of securing the financial obligations of market participants under electricity imbalance settlement agreements by providing a cash guarantee in the amount of not less than 50% of the required amount of such participant's financial guarantee for the trading day d, provided that the amount of financial guarantee not covered by the cash guarantee is secured by providing a financial guarantee of a bank.

In addition, during the past year, the following amendments were made to this Resolution:

- the obligation, in particular, for electricity producers operating in the electricity market and ensuring the operational security of the IPS of Ukraine to promptly provide copies of documents, explanations and other information necessary for the NEURC to perform its functions and powers in the form, scope and timeframe specified by the NEURC's requests;
- exclude the provision on the use by the SE Guaranteed Buyer of the forecast volumes of electricity supply and consumption provided by

PRICE CAPS FOR DAM	PRICE CAPS FOR IDM	PRICE CAPS FOR BM
from 00:00 to 07:00 and from 23:00 to 24:00 – UAH 3 000 *(EUR 75.78)*/MWh;	from 00:00 and 07:00 and 23:00 to 24:00 – UAH 3 000 *(EUR 75.78)*/MWh;	**Price cap:** 125% of the DAM price **Minimum floor price:** UAH 0.01 *(EUR 0.00025)*/MWh
from 07:00 to 08:00 and from 11:00 to 17:00 – UAH 5 600 *(EUR 141.45)*/MWh;	from 07:00 to 08:00 and from 11:00 to 17:00 – UAH 5 600 *(EUR 141.45)*/MWh;	
from 08:00 to 11:00 – UAH 6 900 *(EUR 181.86)*/MWh;	from 08:00 to 11:00 – UAH 6 900 *(EUR 181.86)*/MWh;	
from 17:00 to 23:00 – UAH 7 500 *(EUR 189.44)*/MWh	from 17:00 to 23:00 – UAH 7 500 *(EUR 189.44)*/MWh;	
Minimum floor price: UAH 10.00 *(EUR 0.25)*/MWh	Minimum floor price: UAH 10.00 *(EUR 0.25)*/MWh	

[54] https://www.nerc.gov.ua/acts/pro-vstanovlennya-tarifu-na-poslugi-z-peredachi-elektrichnoyi-energiyi-nek-ukrenergo-na-2024-rik#:~:text=Постанова%20від%2009%20грудня%202023%20р.%20№%202322,передачі%20електричної%20енергії%20НЕК%20«УКРЕНЕРГО»%20на%202024%20рік

[55] https://www.nerc.gov.ua/acts/pro-vstanovlennya-granichnih-cin-na-rinku-na-dobu-napered-vnutrishnodobovomu-rinku-ta-balansuyuchomu-rinku

[56] https://zakon.rada.gov.ua/rada/show/v2099874-23#Text

[57] https://zakon.rada.gov.ua/rada/show/v0332874-22#Text

INTEGRITES

18 years
on the market

1600+ clients
around the globe, including Fortune 500 companies & IFIs

INTEGRITES is a full-service law firm with offices in Ukraine and Kazakhstan, contact offices in Germany and the UK.

The firm is highly recommended for its cross-border work – investment deals, sophisticated transactions, complex dispute resolution, and for projects which require in-depth industrial expertise.

Our **Climate Change Task Force** provides clients with comprehensive advice on projects targeted at the sustainable development of their business and the country in the context of energy transition and green technologies.

In 2021, INTEGRITES was shortlisted for Financial Times Innovative Lawyers Awards Europe in the category Sustainability & ESG – "Leadership for Climate Change Task Force".

OUR EXPERTISE IN RENEWABLES

- **Greenfield development** projects for wind, solar, biomass and biogas
- **Land issues**
- **Grid connection,** including negotiations of agreements with grid operators
- **Obtaining construction permits,** environmental assessment, other approvals
- **Project financing,** including syndicated loans, green bonds, structured equity
- **Construction agreements,** including EPC under FIDIC standards
- **Commissioning** of completed generation plants and high voltage parts
- **Generation license** and award of feed-in tariff
- **Corporate PPAs** and electricity trading (day-ahead market, spot market, balancing and auxiliary services market)
- **Tax and customs structuring,** use of incentive schemes
- **Investment protection structuring,** including risks associated with feed-in tariff
- **Investment arbitration** in renewables disputes

3+ GW
of wind and solar power projects

€ 3 bln
investment involved

The Legal 500 EMEA TOP TIER 2023 ENERGY

KEY EXPERTS

Dr. Oleksiy Feliv, LL.M.

Managing Partner

Serhii Datsiv

Senior Associate

+380 44 391 38 53
info@integrites.com

www.integrites.com

1 Dobrovolchykh Batalioniv St., Kyiv, 01015, Ukraine

SUBSCRIBE TO OUR DIGEST

sellers and consumers under the FiT to determine the volume of electricity sales on the DAM;
- defining the procedure for actions of the TSO as the settlement administrator *(SA)* in case of receipt by such TSO as the SA of the information on the seizure of funds held in the bank account of a market participant, in particular, establishing *(1)* the obligation of the TSO as the SA to notify the market participants of the Balancing Group and its party responsible for the balance *(PRB),* which includes such market participant, of the availability of information on the seizure of funds and *(2)* the need to verify the compliance of the TSO's financial guarantee provided by the party responsible for imbalances with the requirements of the Resolution;
- providing TSOs with the possibility not to apply the maximum sales volume limitation based on a reasonable *(according to the Hydrometeorological Centre)* request from an electricity producer using hydro resources during the flood period in case of an increase in the forecasted volume of water inflow by more than 400 м^3/s compared to the volume for d-7;
- failure to take into account the amount of electricity imbalances resulting from an emergency, including those caused by hostilities, when calculating the financial guarantee for electricity producers.

On 7 November 2023, the President of Ukraine put into effect the **NSDC's Decision "On Additional Measures to Strengthen the Resilience of the Energy System and Prepare the National Economy for the Autumn-Winter Period of 2023/24".**[58] The Decision obliges the Cabinet of Ministers of Ukraine, the Ministry of Energy of Ukraine, the Ministry of Communities, Territories and Infrastructure Development of Ukraine, regional administrations and the Kyiv city state administration to take certain measures to strengthen the resilience of the Ukrainian energy system within a specific timeframe.

In particular, the Cabinet of Ministers of Ukraine was instructed to work on the following issues:
- state incentives for the construction of distributed generation facilities in territorial communities based on economically reasonable decisions;
- state support for national enterprises producing energy equipment and machine building in order to provide them with affordable loans for further development, expansion of the range of production and employment;
- expanding state-targeted support for national enterprises producing energy equipment and machinery aimed at import substitution and/or localization of production within Ukraine;
- introduction of mobile generation to increase manoeuvring capacities and cover emergency power supply needs in certain energy hubs and districts; ensuring an increased level of security of electricity supply, including the formation of reserves of mobile *(auto)* transformers, switchgear, energy storage devices *(batteries),* mobile power plants, including combined cycle power plants;
- exemption from import duties and VAT, for the period of martial law and for six months after its termination, of operations on the importation into the customs territory of Ukraine of goods and/or services provided free of charge or with financing by the Ukraine Energy Support Fund as an aid to business entities operating in the electricity market *(generation, transmission, distribution of electricity),* for the purposes of restoration, repair and engineering and technical protection of infrastructure of such enterprises;
- development of the mechanism for the reimbursement of universal service providers in the electricity market for losses from reduced payments by household consumers in the areas where hostilities are *(were)* taking place or temporarily occupied by russia during the period of martial law.

On 22 February 2023, by their **Order No. 57/342,**[59] the Ministry of Energy of Ukraine and the State Property Fund of Ukraine approved the **Methodology for Determining Damage and Losses to Ukraine's Energy Infrastructure Caused by russian Military Aggression** *(hereinafter referred to as "the Methodology").* The Methodology defines the mechanism for assessing damage and losses caused to Ukraine's energy infrastructure facilities as a result of loss, destruction or damage due to russian military aggression. The mechanisms for assessing losses and needs for restoration of lost, destroyed and damaged energy infrastructure facilities were developed on the basis of national and international valuation standards, as well as the World Bank's guidelines for damage assessment and other materials developed by organizations recognised in the international community.

Last year, the legal framework for regulating the operation and protection of critical infrastructure, which also includes energy generating facilities, continued to be developed.

Resolution No. 415 of the Cabinet of Ministers of Ukraine dated 28 April 2023,[60] approved the procedure for maintaining the Register of Critical Infrastructure Facilities. Access to information in the

[58] https://zakon.rada.gov.ua/laws/show/n0041525-23#Text

[59] https://document.vobu.ua/doc/19158

[60] https://www.kmu.gov.ua/npas/pro-zatverdzhennia-poriadku-vedennia-reiestru-obie-a415#:~:text=Кабінет%20Міністрів%20України%20Постанова%20від%2028%20квітня%202023,до%20Реєстру%2C%20доступу%20та%20надання%20інформації%20з%20нього

Register is restricted during martial law and for 12 months after its termination or cancellation.

In addition, **on 4 August 2023,** the Cabinet of Ministers of Ukraine adopted **Resolution No. 818**[61] approving the **Procedure for the Development and Approval of Safety Data Sheets for Critical Infrastructure Facilities.** This document defines the requirements that a critical infrastructure operator must meet when creating a safety data sheet as well as the mechanism for its approval by the relevant authorities in the field of critical infrastructure protection.

On 19 September 2023, the Cabinet of Ministers of Ukraine adopted **the Order No. 825-p**[62] approving the **National Plan for the Protection, Security and Resilience of Critical Infrastructure.** The plan includes a list of measures, deadlines and responsible authorities, as well as strategic goals such as:

- legal regulation of the activities of critical infrastructure protection entities;
- critical infrastructure risk management;
- creation of the coordination system for the national critical infrastructure protection system;
- establishment of international cooperation.

Last year, significant changes were made to the Temporary Procedure for the Connection of Electrical Installations to the Distribution System During the Period of Martial Law in Ukraine *(hereinafter is referred to as "the Temporary Procedure").* The Temporary Procedure was first approved on 26 March 2022. Following multiple updates, the Temporary Procedure restored standard and non-standard connections to the grid from 01 January 2024. On **2 May 2023,** the NEURC, **by its Resolution No. 810**[63], provided that temporary changes in the technical parameters of customers' electrical installations are now carried out by providing temporary connection services and under a temporary connection agreement concluded between the customer of the temporary connection service and the DSO.

In this case, the fee for temporary connection is calculated in accordance with the temporary connection agreement on the basis of the estimate for the construction and installation of the linear part of the connection. If the customer decides to independently construct the linear part of the connection with the selected connection point located on the border of the customer's land plot *(on the territory of this land plot),* as well as if there is no need to build the linear part of the connection, the fee for temporary connection will not be charged.

In addition, the Resolution supplemented the Rules for Bringing Temporarily Connected Electrical Installations for the Period of Martial Law in line with the Requirements of the Distribution Systems Code with the following provisions:

- In case of failure to bring the customer's temporarily connected electrical installations into compliance with the requirements of the Distribution Systems Code due to a temporary change in technical parameters, the DSO shall ensure that the technical parameters of the electrical installations are brought back to their original values. In the case of construction of the linear part of the connection, the DSO shall take technical measures to disconnect the linear part from the power grids without reserving the capacity of such facility;
- If there is a temporary change in technical parameters, the temporarily connected facilities must comply with the Distribution Systems Code as per clauses 8 or 9 of these Rules. This should be done while considering the type of connection and the customer's electrical installation's technical characteristics and/or location as of the date of the agreement conclusion. The following features should also be taken into account:

1. if, as a result of a temporary change in technical parameters, there is no need to build *(reconstruct)* the linear part of the connection, the provisions of clauses 8 or 9 of these Rules regarding the transfer of the linear part of the connection shall not apply;
2. in the event of a temporary change in the technical parameters of the customer's electrical installations due to a change in the voltage level and/or a change in the power supply scheme of the electrical installation *(including from single-phase to three-phase)* without changing the permitted capacity, the fee for providing the customer with the service of bringing the temporarily connected electrical installations in compliance with the requirements of the Distribution Systems Code shall be calculated on the basis of the project and estimate documentation for the construction and installation works of the existing electrical networks of the distribution system operator *(reconstruction, technical re-equipment).*

[61] https://zakon.rada.gov.ua/laws/show/818-2023-%D0%BF#Text

[62] https://zakon.rada.gov.ua/laws/show/825-2023-%D1%80#Tex

[63] https://www.nerc.gov.ua/acts/pro-vnesennya-zmin-do-postanovi-nkrekp-vid-26-bereznya-2022-roku-352-5

AMENDMENTS TO THE ELECTRICITY MARKET RULES

The NEURC's Resolution No.109 dated 17 January 2023[64] approved amendments, which, inter alia, provided for improvements to the provisions on the forms and content of reports of the balancing service provider and the party responsible for the balance, as well as on the calculation of adjustments and billing for electricity imbalances.

The NEURC's Resolution No. 390 dated 28 February 2023[65] approved amendments to the DAM and IDM's Rules, defined the range of circumstances that constitute manipulation of the electricity market, and clarified the following:

- the settlement administrator monitors the electricity market in order to detect manipulation, including analysing the source of electricity origin;
- electricity market participants are prohibited from manipulating the electricity market;
- in case of detection of actions or inaction on the part of a market participant containing signs of manipulation, the settlement administrator shall analyse the data obtained from the observation results and notify the NEURC and the relevant market participant no later than 17:00 of the second business day from the date of detection of signs of manipulation, providing the results of the analysis of the activities of this participant;
- empowering the settlement administrator to monitor and notify the NEURC of the following actions of the market participant: *(1)* a market participant that is a party responsible for the balance, other than producers and the SE Guaranteed Buyer, has a negative imbalance in the amount exceeding 15% of the total volume of purchased and imported electricity by the participants of the Balancing Group for the trading day d, according to the operational data of commercial metering; *(2)* a market participant provides false information to the TSO.

The NEURC's Resolution No. 832[66] dated 2 May 2023 clarified the following provisions related to the Market Rules:

- the gate for registration of electricity volumes under bilateral contracts corresponding to the settlement periods of the trading day on the electronic platform will be closed at 10:00 am one day before the trading day *(d-1);*
- in case of technical necessity or in the presence of circumstances that make it impossible for the TSO to register bilateral contracts, the closing of the gate for registration of electricity volumes under bilateral contracts corresponding to the billing periods of the trading day on the electronic platform may be postponed by the TSO no later than 7:00 pm one day before the trading day *(d-1);*
- in case of postponement of the closing time for registration of electricity volumes under bilateral contracts, the TSO shall publish a relevant notice on its website by 10:00 am;
- in case of an emergency, namely, if the operability of the market operator's software systems is not restored for timely DAM trading, the operator shall decide to: a) postpone the DAM gate closing time to another time, but no later than 9:00 pm of the day preceding the day of delivery, if the systems can be restored by this time; b) cancel DAM trading for the relevant day of delivery, if the systems cannot be restored by 9:00 pm of the day preceding the day of delivery.

The NEURC's Resolution No. 1882 dated 10 October 2023[67] defined the events and circumstances upon which a market participant loses its Defaulted Status and stipulated that the application for accession to the electricity imbalance settlement agreement must also contain information on open escrow accounts, confirmed by a bank certificate on opening such an account.

The NEURC's Resolution No. 2277 dated 5 December 2023[68] stipulates that financial guarantees may be provided, inter alia, by providing a cash guarantee under the imbalance settlement agreement to the financial guarantee escrow account, an escrow account opened by a market participant to provide a financial guarantee under the imbalance settlement agreement.

The NEURC's Resolution No. 1579[69] dated 29 August 2023 provided for the renewal of the Methodology (*Procedure)* for the formation of the fee for connection to the transmission and distribution systems and certain provisions of the Distribution Systems Code. Thus, according to the amendments, the provisions of the Distribution Systems Code were reinstated, which regulate, in particular, the following issues: peculiarities of connection services, which require compliance with TSO's requirements *(based on trilateral agreements);* realization of the customer's right to be the customer for the construction of the linear part of the connection; mechanism of

[64] https://zakon.rada.gov.ua/rada/show/v0109874-23#n6

[65] https://zakon.rada.gov.ua/rada/show/v0390874-23#n47

[66] https://zakon.rada.gov.ua/rada/show/v0832874-23#Text

[67] https://zakononline.com.ua/documents/show/522346___760170

[68] https://zakononline.com.ua/documents/show/523760___762793

[69] https://zakon.rada.gov.ua/rada/show/v1579874-23#n3

ENERGY & NATURAL RESOURCES

LCF

LCF acts as a permanent legal advisor to large energy and extraction companies, as well as international organizations implementing projects in the field of alternative energy, energy markets, hydrocarbons and infrastructure.

Our clients value the ability to solve non-standard legal matters for implementation of complex and high value private equity projects.

Our deep industrial expertise combined with unique successful experience in litigation allows to identify and mitigate regulatory and contractual risks during development of project algorithms, structuring transactions and resolving regulatory and licensing matters.

SERVICES

Legal support for development and implementation of projects in the energy sector

Due Diligence and structuring of transactions in the energy markets

Legal advice and support of regulatory and permitting procedures

Ensuring compliance with antimonopoly and competition legislation in energy markets

GR and representation of interests in rulemaking procedures

Litigation and legal protection and representation in energy markets

CLIENTS

Elementum Energy
UDP Renewables
Capital Energy
SCATEC Solar
United Green
Finance Real
Holleman Ukraine

reimbursement and payment of penalties for violation of the terms of connection services; peculiarities of connection of users' electrical installations to small distribution systems; principles of development of technical specifications; the order of development and approval of the DSO's project and estimate documentation; requirements for construction works and commissioning of electrical installations; connecting the customer's electrical installations to the power grid; specifics of connection of electrical installations located in the security zone of power grids; the procedure of connection of the customer's electrical installations on the territory subject to complex development.

The NEURC's Resolution No. 2232[70] dated 29 November 2023 supplemented the Temporary connection procedure with provisions according to which the connection of customers' energy storage facilities is carried out by the DSO until 01 January 2025, without any payment for capacity connection.

In the case of connection of energy storage facilities, the DSO shall provide the Customer with invoices for connection fees in the following manner:

- an invoice in the amount of 50% of the component of the fee for the creation of power grids of the linear part of the connection *(turnkey);*
- an invoice in the amount of 90% of the cost of the linear part of the connection *(advance payment)* after the customer has agreed with the DSO on the project documentation for the linear part of the connection and received a technical decision on the approval of the project documentation. The payment of 50% of the component fee made by the customer is credited to the amount of the advance payment. If the cost paid by the customer in the amount of 50% is not enough to cover the amount of the advance payment, the DSO shall provide the customer with an additional invoice for the payment of the relevant difference in funds, which must be paid by the customer within 5 business days from the date of its receipt. If the cost paid by the customer exceeds the amount of the advance payment by 50%, the DSO must return the excess funds paid by the customer within 5 business days;
- an invoice in the amount of 10% of the cost of the linear part of the connection to the power grids, as the balance of the connection fee, together with the notification of the provision of the connection service, which is paid by the customer to the current account of the DSO within 5 business days from the day following the day of receipt of the notification of the provision of the connection service.

In order to prevent delays in the provision of connection services, the implementation of construction and installation works for such measures may be started by the DSO before the NEURC approves the investment projects. In this case, the DSO must apply in writing to the NEURC for approval of the relevant technical and economic indicators of the project and estimate documentation, the results of which the NEURC must notify the DSO within 7 working days from the date of receipt of such an application.

The NEURC's Resolution No. 2648 dated 29 December 2023[71] stipulated that starting from 01 January 2024, the DSOs will provide services for standard and non-standard connections to the power grid in accordance with the Distribution Systems Code. The procedure for temporary connection will be applied exclusively to customers who have applied for connection of electrical installations used for temporary accommodation of displaced *(evacuated)* persons and located in the territories where hostilities are possible and in the territories of active hostilities where state electronic information resources are operating.

[70] https://zakon.rada.gov.ua/rada/show/v1579874-23#n3

[71] https://zakon.rada.gov.ua/rada/show/v2243874-23#Text

3.2. EXPECTED CHANGES IN THE REGULATORY AND LEGAL FRAMEWORK IN THE WIND ENERGY SECTOR IN 2024

Last year, several draft RES regulatory acts were published. These acts are expected to be adopted and come into force in 2024 and they will directly impact the functioning and development of the national wind energy sector.

On 27 December 2023, the Draft Law of Ukraine "On Amendments to the Law of Ukraine "On the Electricity Market" on Regulation of Issues Related to Ensuring the Security of Electricity Supply"[72] was published on the website of the Ministry of Energy of Ukraine, which was developed to strengthen the state control over compliance by electricity market participants *(except for consumers who do not belong to a special group of consumers)* with the requirements of regulatory legal acts in the electricity sector, in particular, in terms of ensuring reliable *(continuous)* and safe supply of electricity.

The Draft Law proposes a number of amendments, in particular to the Law of Ukraine "On the Electricity Market" in terms of specifying the powers of state authorities and defining the requirements for ensuring state supervision *(control)* in the electricity sector. It is proposed to introduce the concept of an auxiliary service to ensure guaranteed capacity, which will consist of ensuring the generating capacity of electricity production, which the producer can guarantee to provide upon the relevant operational command of the dispatcher 24 hours a day throughout the year within the limits of the activation time limit.

It is proposed to grant the Ministry of Energy of Ukraine new powers in the following areas:

- implementing of scientific and technical policy, development and approval of procedures, norms and rules in the electricity sector;
- providing conclusions and proposals to the investment programmes of distribution system operators in terms of the main technical areas of distribution system development;
- approving DSOs' development plans for the next five years.

The Draft Law also provides for the expansion of the functions of state energy supervision, in particular by empowering the State Energy Supervision Inspectorate to issue an conclusion to the Ministry of Energy of Ukraine on the priority of technical solutions for the development of distribution systems provided for by projects investment programmes, development plans of distribution system operators and the results of inspections of the reconstruction and modernisation of power plant equipment and monitoring of the safety of the supply of electric energy on behalf of the central executive body, carried out by market participants.

The Draft Law also proposes to allow the NPC Ukrenergo to use revenues from the distribution of cross-border transmission capacity for the construction of new cross-border transmission lines during martial law, except for funds to pay for the costs of financial and economic activities in accordance with the NEURC's decision taken in consultation with the Ministry of Energy of Ukraine. At the same time, priority will be given to the first repayment of TSOs' debts that have been formed in the balancing market.

The Draft Law No. 9138[73] **"On Projects of National Interest in the Energy Sector"**, registered in the Verkhovna Rada of Ukraine on 22 March 2023, provides for:

- definition of the concepts of "the national interest project in the energy sector", "projects of common interest of the Energy Community" and "projects of mutual interest";
- definition of the procedure for selecting the above-mentioned projects and the criteria for their selection;
- determination of the possibility and procedure for cross-border distribution of investment costs for projects of common interest of the Energy Community between countries with the most positive impact from the completion *(implementation)* of such projects;
- stimulation of such projects and the need to develop a manual of procedures for the

[72] https://www.nerc.gov.ua/acts/pro-zatverdzhennya-zmin-do-postanovi-nkrekp-vid-26-bereznya-2022-roku-352-3

[73] https://itd.rada.gov.ua/billInfo/Bills/Card/41623

implementation of such projects in order to increase their attractiveness to investors;
- amendments to legislative acts that will ensure the implementation of projects of national interest in the energy sector in accordance with the procedures set out in the draft act.

To resolve the situation with the SE Guaranteed Buyer's payments for electricity generated by RE generation facilities located in the territories temporarily occupied by russia and not operating synchronously with the IPS of Ukraine, several relevant draft Laws are expected to be considered. In late August and early September 2023, the Verkhovna Rada of Ukraine registered three relevant draft Laws:

1. Draft Law No. 9629[74] "On Peculiarities of Settlements with Producers Under the FiT Whose Generating Facilities are Located in the Temporarily Occupied Territories":
- defines the creation of a register of electric power facilities that carry out the production of electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro-, mini- and small hydroelectric power plants)* located in the territories where are *(were)* engaged in hostilities or temporarily occupied by the russia and do not operate synchronously with the IPS of Ukraine;
- prohibit the SE Guaranteed Buyer from purchasing electricity supplied by electricity facilities during the time such facilities are in the Register;
- tasking the TSO to develop within one month the Procedure for maintaining a register of electricity facilities that produce electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro, mini- and small hydropower plants),* located in the territories where military operations are being *(were)* conducted or temporarily occupied by the russia and do not operate synchronously with the IPS of Ukraine. The Procedure must be agreed upon with the NEURC.

2. Alternative Draft Law No. 9629-1[75] "On Peculiarities of Electricity Generation Activities in the Temporarily Occupied Territories", registered in the Verkhovna Rada of Ukraine on 01 September 2023, provides for:
- creation of a register of electric power facilities that carry out the production of electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro-, mini- and small hydroelectric power plants)* located in the territories where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine;
- prohibition for the SE Guaranteed Buyer from purchasing electricity supplied by electricity generating facilities during the time such facilities are in the Register, as well as from consumers whose electrical installations are located either in the where are *(were)* engaged in hostilities or temporarily occupied russia and do not operate synchronously with the IPS of Ukraine;
- prohibition for universal service providers to purchase and sell electricity generated by entities whose electrical installations are located either in the territories where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine;
- prohibition for the purchase and sale of electricity in all market segments generated by electricity facilities located in the territories where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine;
- determination of conditions for suspending payments on loans issued to producers for the construction of alternative energy facilities located in the temporarily occupied territories and not in synchronous operation with the IPS of Ukraine;
- the necessity for TSO to develop within one month a Procedure for maintaining a register of electricity facilities that produce electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro-, mini- and small hydroelectric power plants)* and located in the territories where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine.

3. Alternative Draft Law No.9629-2[76] "On Peculiarities of Settlements with Producers under the FiT Whose Generating Facilities are Located in the Temporarily Occupied Territories", provides for:
- creation of a register of electric power facilities that carry out the production of electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro-, mini- and small hydroelectric power plants)* located in the territories where are *(were)* engaged in hostilities or temporarily occupied by the russian federation and do not operate synchronously with the IPS of Ukraine;

[74] https://itd.rada.gov.ua/billInfo/Bills/Card/42560

[75] https://itd.rada.gov.ua/billInfo/Bills/Card/42668

[76] https://itd.rada.gov.ua/billInfo/Bills/Card/42720

- prohibition for the SE Guaranteed Buyer to purchase electricity supplied by electricity generating facilities during the time such facilities are in the Register, as well as from consumers whose electrical installations are located either the where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine;
- consideration of the payment already made by the SE Guaranteed Buyer for electricity generated at electricity facilities located in the territories where military operations are *(were)* conducted or temporarily occupied by russia as payment for electricity for the periods for which there is a debt with the earliest date of occurrence;
- the necessity for TSO to develop within two weeks the Register of electricity facilities that produce electricity from alternative energy sources *(except for blast furnace and coke oven gasses, and using hydropower – only micro, mini and small hydroelectric power plants)* located in the territories where are *(were)* engaged in hostilities or temporarily occupied by russia and do not operate synchronously with the IPS of Ukraine; a Register of private households that produce electricity under the FiT and are located in the territories where hostilities are taking place *(or have taken place)* or in the territories temporarily occupied by russia; a register of active consumers located in the territories where hostilities are taking place *(or have taken place)* or in the territories temporarily occupied by russia.

A number of Resolutions are also expected to be adopted in 2024.

The Draft Resolution of the Cabinet of Ministers of Ukraine "On the Introduction of Guarantees of Origin of Electricity Generated from Renewable Energy Sources"[77], which was first published on 8 November 2023, and revised for the second time on 29 November 2023, provides that:

- RES electricity producers who do not benefit from support *(FiT or the right to be supported by auctions support scheme)* and consumers *(including active consumers)* have the right to register themselves in the register of Guarantees of Origin;
- RES electricity producers that benefit from the FiT or auction support scheme and consumers including active consumers that would enter agreements with the SE Guaranteed Buyer or universal services suppliers are obliged to register and keep in the status of a registry user for the duration of the support;
- the registration takes place by means of the creation of an account of the user of the register of Guarantees of Origin; once the registration of the user is completed, the user has the right to register a generating facility in the register of Guarantees of Origin. Only generating facilities located in the domain of Ukraine are registered in the register of Guarantees of Origin;
- the Guarantees of Origin for the specific amount of electricity is generated automatically based on the certified commercial metering data received from the commercial metering administrator and issued for the amount of 1 MWh of electricity;
- the Guarantee of Origin is valid for 12 calendar months from the date of generation of the amount of electricity for which such a guarantee of origin was issued and may be transferred to any other user of the register of Guarantees of Origin. After the expiration of the 12 months period, the guarantee of origin is not subject to further circulation and may be redeemed *(used for the confirmation that goods, works or services were produced/performed/rendered using the renewable energy or that electricity consumed for own needs was produced from renewable sources)* within 6 calendar months. If the Guarantee of Origin of electricity is not redeemed within 18 calendar months from the date of production of the amount of electricity for which such guarantee of origin was issued, such Guarantee of Origin shall be cancelled;
- generating units registered in the register of Guarantees of Origin and aggregated generating units are subject to scheduled or unscheduled inspection to verify the information submitted for the registration.

The NEURC's Draft Resolution "On Amendments to Certain Resolutions of the National Energy and Utilities Regulatory Commission"[78] published on 17 August 2023, which provides for:

- approval of the Model Contract on Participation in the Balancing Group;
- approval of a new version of the Procedure for the Purchase of Electricity from Alternative Energy Sources by the SE Guaranteed Buyer;
- approval of a new version of the Model Contract for the Purchase and Sale of Electricity under the FiT;
- invalidation of the NEURC's Resolution No.2804 of 13 December 2019 "On the Approval of the Procedure for the Sale and Metering of Electricity Generated by Consumers and the Payment Thereof".

[77] https://www.mev.gov.ua/rehulyatornyy-akt/proekt-postanovy-kabinetu-ministriv-ukrayiny-pro-zaprovadzhennya-haranti

[78] https://www.nerc.gov.ua/news/oprilyudnyuyetsya-proyekt-zmin-do-deyakih-postanov-nkrekp-shchodo-normativno-pravovih-aktiv-shcho-regulyuyut-diyalnist-garantovanogo-pokupcya-ta-kupivli-elektrichnoyi-energiyi-za-zelenim

The NEURC's Draft Resolution "On Approval of Amendments to Certain Resolutions of the NEURC"[79] published on 3 November 2023, which provides that:

- producers of electricity from RES with support have the right to transfer financial responsibility for imbalances in all or several generating units that have been set a FiT or have acquired the right to support through an auction to the SE Guaranteed Buyer by including such a producer or several renewable energy supply units with support in the Balancing Group;
- peculiarities of financial liability of producers of electricity from renewable energy sources with support for imbalances of generating units included in the Balancing Group are determined by the agreement on participation in the Balancing Group and the Procedure for the purchase of electricity produced from alternative energy sources;
- inclusion of a generating unit in the Balancing Group means the transfer of financial responsibility of the RES electricity producer with support for imbalances of the supply unit, which is subject to the FiT, to the SE Guaranteed Buyer by concluding a participation agreement in the Balancing Group and a power purchase agreement at the FiT or by concluding an additional agreement to such an agreement;
- the inclusion of RES generating units with support to the Balancing Group is carried out by entering into the FiT electricity purchase and sale agreement for such generation units and a participation agreement in the Balancing Group.

[79] https://www.nerc.gov.ua/news/oprilyudnyuyetsya-proyekt-postanovi-zmini-do-deyakih-postanov-nkrekp-zmini-do-pravil-rinku-i-pravil-rinku-na-dobu-napered-ta-vnutrishnodobovogo-rinku

IV

UWEA ANNUAL ACTIVITIES

4.1. KEY ACHIEVEMENTS

Two years on from russia's invasion of Ukraine, wind energy has proven to be one of the main tools for building energy resilience and independence of our country, as it is harder to destroy or badly damage a wind farm than a large conventional power plant.

Conveying the significance of the wind energy sector for our energy resilience to both the energy community in Ukraine and international partners was a key focus of the association's activities.

In 2023, as well as in 2022, UWEA was actively involved in the legislative process, cooperating with other RES industry associations – EUEA, UARE, and ASEU. Thus, during the year, the UWEA in cooperation with other RES industry associations sent 33 joint letters to various relevant government bodies – the Ministry of Energy, the NEURC, the NPC Ukrenergo, and the SE Guaranteed Buyer providing their comments and proposals on different legislative acts related to the functioning of the RES market in Ukraine. The UWEA also cooperated with the Committee on Energy, Housing and Utilities and the Ministry of Energy of Ukraine, especially during the development of the Law on the "green" transformation of the power system of Ukraine. UWEA's representatives took part in the Committee's meetings, drawing attention to the urgent issues of the renewable energy sector.

Particular attention was paid to the mechanisms of European integration of the Ukrainian energy market, specifically the introduction of European standards for the operation of the wholesale energy market through the REMIT regulation. The UWEA, together with other RES industry associations, actively promoted the accelerated implementation of the REMIT Law.

In 2023, there were changes in the UWEA Board. In March 2023, the UWEA Board welcomed its new members – Ivan Bondarchuk, Counsel, Head of Energy Practice at LCF Law Group; Oleksandr Podprugin, Country Manager Ukraine at Notus Energy, and Olga Rybachuk, Managing Director at Elementum Energy. Oleksandr Podprugin was also elected Deputy Chairman of the UWEA Board.

We express our sincere gratitude to all our members and partners for their active and fruitful work through 2023!

Traditionally, participation in industry-related international and national events became an integral part of the UWEA's activities in 2023. Wind energy and its role for the "green" post-war recovery of Ukraine, "green" energy transition and decentralisation were the focus of last year's events.

On 15 June 2023, 100 women were awarded the Green Heart Leader honorary award at the forum "Women's Leadership for Environmental Protection and Sustainable Development" which was held in Kyiv and Dnipro. Among those awarded were Representatives of Ukraine's wind sector – **Galyna Shmidt,** UWEA Board Member and Vice President of WWEA, and **Natalia Hutarevych,** Senior Associate at Sayenko Kharenko, member of the UWEA Legal Committee. **We are proud of women's leadership in the renewable energy sector of Ukraine!**

2023 also marked the 15th anniversary of the Ukrainian Wind Energy Association. Founded back in 2008, throughout these 15 years, the association has always advocated wind energy deployment in our country, protecting the interests of renewable energy at both national and international levels. Today, the **UWEA unites 82 companies from 14 countries operating** in various segments of the national wind energy market. Just last year 18 new companies joined the association.

The UWEA keeps working for the benefit of Ukraine, in particular, for decarbonising and greening our economy, post-war "green" recovery of the power sector with wind power at the core.

4.2. SETTLEMENTS WITH RES ELECTRICITY PRODUCERS

In 2023, the UWEA prioritised settlements with RES producers: the UWEA representatives have consistently brought up this matter in multiple meetings with the NEURC, the NPC Ukrenergo and the SE Guaranteed Buyer. The UWEA also addressed official letters to the President of Ukraine and the Prime Minister of Ukraine, in which substantiated the need to resolve this issue for further development and investment attractiveness of the industry.

Over the year, the UWEA continued its cooperation with the Energy Community Secretariat to resolve the problem of debt accumulation in the Ukrainian electricity market, and in particular in the renewable energy market.

Following the meeting with the participants of the 2020 mediation in the renewable energy sector of Ukraine held on 16 March 2023 in Kyiv, the Energy Community Secretariat launched a post-mediation process on 27 March 2023 aimed at resolving the current issues faced by the renewable energy sector of Ukraine[80].

The UWEA, together with other RES industry associations, also appealed to the EBRD, IMF, World Bank, IFC, European Commission, Energy Community Secretariat, USAID, and High-Level Advisory Group to facilitate financing of the NPC Ukrenergo to repay existing debts in the market, as well as to discuss ways to stop the formation of new debts between different electricity market participants, in particular under the PSO for RES and PSO for households.

The Association concentrated on monitoring and proposing electricity transmission tariffs for the NPC Ukrenergo in 2024, along with addressing other TSO-related issues that sought input from representatives in the wind energy sector.

In addition, given the currency regulations and restrictions imposed on the market during martial law, the UWEA also appealed to the National Bank of Ukraine to enable Ukrainian wind companies to make payments abroad to their international investors and creditors. Defending the interests of Ukrainian renewable energy companies, UWEA also appealed to JSB Ukrgasbank to preserve assets and settle accounts with RES electricity producers whose generating facilities remain in the temporarily occupied territories.

[80] http://uwea.com.ua/ua/news/entry/energetichne-spvtovaristvo-rozpochina-proces-post-medac-v-ukran/

4.3. INTERNATIONAL EVENTS

For both the Government of Ukraine and the UWEA, ensuring the post war "green" recovery and transformation of the energy sector remains an important issue, which was the focus of most of last year's international events.

In addition, the UWEA joined the Energy Working Group established under the Ukraine Facility *(instrument)*, chaired by the First Deputy Prime Minister and Minister of Economy of Ukraine Yulia Svyrydenko. The program aims to create a foundation for the rapid recovery and development of the Ukrainian economy, within which the working group will develop the Ukraine Plan on priority reforms and key steps to ensure economic development and bring Ukraine closer to EU accession.

WIND AND HYDROGEN FOR POST-WAR ENERGY RECOVERY IN UKRAINE[81]

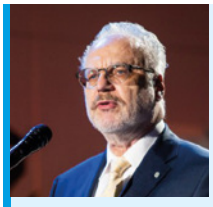
The widespread and rapid deployment of wind power and other renewable energy technologies, crucial for the post-war recovery of Ukraine's energy sector and economy, relies heavily on enhancing and sustaining sectoral legislation. This necessitates a shift from manual regulation of the electricity market to liberalization and increased flexibility. Modern wind energy technology, both onshore and offshore, is not only a globally recognised tool for combating climate change but also a key component for energy security and independence.

This was the topic of discussion at the Ukrainian session, which took place on 27 April 2023 on the side-lines of the largest international event of the European wind energy industry – WindEurope 2023. During the session, UWEA Board members, including Oleksandr Podprugin from Notus Energy and Sergiy Yevtushenko from UDP Renewables, along with Maksym Artemenko from Elementum Energy, shared their insights on the ongoing development of wind energy projects in Ukraine. They highlighted current challenges and proposed potential solutions. EBRD representative Edita Novorita emphasized the bank's readiness and willingness to play a central role in the country's recovery, including financing wind energy projects. The Ukrainian session was moderated by UWEA Board Member Ivan Bondarchuk, LCF. Wind generation for "green" hydrogen production was also depicted among other issues.

LATVIA 2023: WINDWORKS. MOVING ENERGY[82]

The largest wind energy conference in Latvia "WindWorks. Moving Energy" has become the most prominent wind industry event in the Baltic region over three years.

Policymakers and experts from Latvia, Estonia, Norway, the UK, Denmark and other European countries gathered in Riga on 19 April 2023 to find solutions for accelerating wind power development in the Baltic States. The conference participants discussed the new geopolitical reality and international cooperation



Egils Levits
President of Latvia

We must plan how to strengthen our energy infrastructure to increase the share of renewables in our economy. We should see the development of the global wind power sector as a broader economic opportunity that we can seize.

[81] http://uwea.com.ua/en/news/entry/vter-voden-dlya-pslyavonnogo-vdnovlennya-energetiki-ukrani

[82] https://uwea.com.ua/ru/news/entry/latvya-2023-windworks.-moving-energy/

in building an efficient European energy network. The conference was organized by the Latvian Wind Energy Association in cooperation with the Estonian Wind Energy Association.

Andriy Konechenkov
Chairman of the Board
UWEA

Russia's attempts to blackmail Europe over gas supplies have proved that no country today will be safe until it becomes energy independent... The path to energy independence is based on renewable, «homegrown» energy sources. Wind power bolsters our energy security, and combats climate change. Wind brings democracy, independence and peace.

UKRAINE RECOVERY CONFERENCE 2023[83]

On 21-22 June 2023, the United Kingdom and Ukraine co-hosted the Ukraine Recovery Conference in London, continuing a series of annual events, the last of which was hosted by Switzerland and Ukraine in Lugano.

The URC 2023 focused on mobilizing international support for Ukraine's economic and social stabilization and continued recovery from the war, including through emergency assistance for immediate needs and financing for private sector participation in the recovery process.

Leaders, ministers and representatives of 59 states, 32 international organizations and IFIs, more than 500 companies and 130 civil society organizations concentrated on exploring how the private sector could take a leading role in Ukraine's recovery by leveraging its expertise.

UWEA representatives spoke during the session "Energy Sector: Energy Systems for Sustainable Recovery". Oleksandr Podprugin, Deputy Chairman of the UWEA Board, presented the potential and prospects for the development of wind energy, both onshore and offshore.

UKRAINIAN-POLISH ROUNDTABLE AT PWEA 2023[84]

For the sixth year in a row, the small Polish town of Serock for three days became the centre of discussions about wind energy. It is here that the annual PWEA conference takes place in June, bringing together key decision-makers, opinion leaders, representatives of local authorities, wind energy businesses and environmental associations, the media and other stakeholders. For the UWEA, participating in discussions on international cooperation between Poland and Ukraine in the wind power sector has become a positive annual tradition.

[83] https://uwea.com.ua/ru/news/entry/ukranska-vtroenergetichna-asocacya-pdpisala-ugodu-pro-spvpracyu-z-renewable/

[84] http://uwea.com.ua/ua/news/entry/ukrano-polskij-kruglij-stl-na-pwea-2023/

An important highlight of the event was the Ukrainian-Polish roundtable "Restoration of Ukraine and Energy Transition in Poland", which took place on 20 June 2023. Participants of the event – representatives of powerful Ukrainian wind energy companies, and international and Polish financial institutions discussed the role of renewable energy, primarily wind energy, in the restoration of Ukraine and its energy sector. Fufan Chow, Manager of Infrastructure and Natural Resources, Europe and the South Caucasus at IFC, stressed IFC's plans to support private wind energy projects in Ukraine.

III ENERGY LAW CONFERENCE[85]

On 14 September 2023, the second part of the III Energy Law Conference organized by the Ukrainian Bar Association with the support of the international law firm White & Case and with the UWEA's informational support, was successfully held in Warsaw.

This year, the UWEA was represented by three wind energy experts: Andriy Konechenkov, Chairman of the UWEA Board, Ivan Bondarchuk, UWEA Board Member, Counsel, Head of Energy and Natural Resources practice at LCF Law Group, and Kyrylo Kostyria, Member of the Board of the UWEA Legal Committee, Head of Legal Department at UDP Renewables.

The UWEA representatives held a panel discussion on the investment potential of renewable energy in Central and Eastern Europe, including investments in the post-war restoration of renewable energy infrastructure in Ukraine, Poland's energy mix transformation path, and prospects for international financing of wind and solar projects in Ukraine and Poland.

BUSINESS FOR RECOVERING UKRAINE[86]

On 21-22 September 2023, a conference "Doing Business in Ukraine" was held in Washington, DC, USA, with the participation of the UWEA. The event was organized by CSIS – Center for Strategic and International Studies.

The conference provided an opportunity for representatives of the Ukrainian private sector and government to establish contacts with representatives of multinational companies and international financial institutions and to meet with representatives of the Biden administration and members of the US Congress. The talks focused on Ukraine's recovery and strengthening sectoral business cooperation, including trade relations, with the United States and

[85] http://uwea.com.ua/en/news/entry/konferencya-z-energetichnogo-prava/

[86] http://uwea.com.ua/en/news/entry/mozhlivost-bznesu-dlya-vdnovlennya-ukrani/

the G7 countries. The conference participants also discussed short-term actions to restore the national transportation infrastructure, energy and agricultural sectors, as well as the potential for attracting foreign investors to this process.

REBUILD UKRAINE 2023: ENERGY FOR UKRAINE'S RECOVERY[87]

On 14-15 November 2023, the Second International Exhibition and Conference ReBuild Ukraine 2023 "ReBuild Ukraine Powered by Energy" initiated by the Ministry of Energy of Ukraine, was held in Warsaw, Poland, with the participation of the UWEA.

The event brought together representatives of the Government of Ukraine and state-owned energy companies, public and private players in the energy markets of the EU, the US, and Canada, as well as leading disruptors.

Andriy Konechenkov
Chairman of the Board
UWEA

Restoration of Ukraine's energy system is impossible without attracting investments. Ukraine must create transparent, attractive conditions for Western investors. This event provided an opportunity to meet with many leading companies and organizations, primarily from the EU, who are committed to actively participate in the reconstruction of our country.

UWEA had its own stand at the exhibition and drew the attention of visitors to the prospects for the RES development in Ukraine and wind energy in particular, both during and after the war.

[87] http://uwea.com.ua/en/news/entry/uvea-na-rebuild-ukraine-2023-energya-dlya-vdnovlennya-ukrani/

4.4. WEBINARS

In 2023, the UWEA continued to conduct webinars on both general and practical aspects of the development of the national wind energy industry, focusing on two key issues: wind power producers' entering the free market and, more generally, the potential for further development of wind energy in Ukraine, in particular offshore wind.

SELLING GREEN ELECTRICITY ON THE FREE MARKET[88]

UWEA hosted a webinar on 25 July, 2023 "Selling Green Electricity on the Free Market". The event, dedicated to the challenges associated with trading "green" electricity on free market, provided an opportunity for the association's members and other RES market stakeholders to receive expert opinion from electricity trading company KENK, which has been operating in all segments of the Ukrainian electricity market since 2018, and law firm Sayenko Kharenko on the benefits and challenges related to RES electricity producer entering free market and the specifics of cooperation with traders.

LEGAL AND TECHNICAL CHALLENGES FOR UNLEASHING UKRAINE'S WIND ENERGY POTENTIAL[89]

A webinar on legal and technical challenges for unleashing Ukraine's wind energy potential organized by the Ministry of Energy of Ukraine and the Danish Energy Agency with the support of the UWEA and the UBA was successfully held on 11 December 2023 within the framework of the Ukraine-Denmark Energy Partnership Program.

Deputy Minister of Energy of Ukraine Yaroslav Demchenkov welcomed the audience and reaffirmed the Government's commitment to transforming Ukraine into a European energy hub and achieving carbon neutrality by 2050, stressing the wind energy leading role.

A mid-term report with a preliminary feasibility study of the offshore wind energy potential of Ukraine by experts from the Danish University of Technology *(DTU)* was presented to the participants.

Andriy Konechenkov, Chairman of the UWEA Board, and Ivan Bondarchuk, the UWEA Board Member, Chairman of the UBA Committee on Energy, Oil and Gas, Course at LCF Law Group, highlighted key provisions of the Concept for the development of wind energy in Ukraine until 2030, developed by the UWEA.

[88] http://uwea.com.ua/en/news/entry/serya-vebnarv-uvea-2023-prodazh-zeleno-elektroenerg-na-vlnomu-rinku/

[89] http://uwea.com.ua/en/news/entry/pravov-ta-tehnchn-vikliki-dlya-rozkrittya-vtroenergetichnogo-potencalu-ukra/

EXPERT PLATFORM ON GREEN TRANSFORMATION IN UKRAINE

A Ukrainian platform about green technologies and green energy, where **the most pressing issues in the field of green transformation** are discussed in simple terms.

We **bring together internationally recognized experts** who know what it takes to achieve **100% RE goals**.

@100GREEN

GLOBAL 100% RE UKRAINE

100re.org.ua

4.5. EXTENSION OF PARTNERSHIPS

In 2023, much like the preceding years, UWEA continued to strengthen existing partnerships and establish new ones. We value each existing and future partner and look forward to the possibility of jointly implementing many valuable wind projects in Ukraine and abroad.

UNITING GERMAN AND UKRAINIAN RENEWABLE ENERGY ASSOCIATIONS[90]

"Energy Transition – Securing a Green Future" was the slogan of the Berlin Energy Transition Dialogue, one of the largest international climate change dialogue forums, held on 28-29 March 2023.

With the participation of the Minister of Energy of Ukraine Herman Halushchenko, two documents on cooperation in the energy sector between Ukraine and Germany were signed at the forum, namely: The Joint Declaration on Framework Cooperation between the Ministry of Energy of Ukraine and the Eastern Committee of German Business, as well as the Memorandum of Understanding and Cooperation between Renewable Energy Associations of Ukraine and Germany, signed by Global 100 RE Ukraine and the German Federation for Renewable Energy *(BEE – Bundesverband Erneuerbare Energie e.V.)*, including UWEA, ASEU, UABIO, the German Wind Energy Association *(Bundesverband WindEnergie e.V. (BWE))*, the German Solar Association *(Bundesverband Solarwirtschaft e.V. (BSW))* and the German Biogas Association *(Fachverband Biogas e.V. (FvB))*.

Memorandum of Understanding and Cooperation between the Renewable Energy Associations of Ukraine and Germany envisages cooperation between Ukrainian and German RES industry associations, transferring knowledge and exchanging experience in the "green" energy transition in Germany and Ukraine, and introducing renewable energy technologies at the local level.

Oleksandr Dombrovskyi
Chairman of the Board
Global 100% RE Ukraine

In this way, we have launched not only cooperation between Global 100% RE Ukraine and the German Renewable Energy Federation, but also between a wide range of leading industry associations. Such cooperation will stimulate real action in both countries.

[90] http://uwea.com.ua/en/news/entry/obdnannya-nmeckih-ta-ukranskih-asocacj-vde-spriyatime-zelenomu-energetichno/

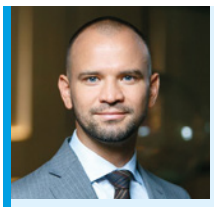
MEMORANDUM OF UNDERSTANDING WITH COWI[91]

On 10 May 2023, the international consulting group COWI and the UWEA signed a Memorandum of Understanding to cooperate in the development of green energy in Ukraine, focusing on onshore and offshore wind energy. The Memorandum outlines collaboration on projects, including legal gap analysis, the development of a wind energy roadmap, and wind potential assessment.

MEMORANDUM OF COOPERATION WITH RENEWABLEUK[92]

On 22 June 2023, the UWEA signed a Memorandum of Cooperation with RenewableUK, the largest association in the United Kingdom. The signing took place during the International Conference on Renewable Ukraine, which was held on 21-22 June 2023 in London, UK.

The Memorandum defines renewable energy as the basis for combating climate change and achieving a sustainable energy future. The document sets a number of goals to strengthen cooperation between the associations, promote economic growth and decarbonisation of the energy sectors of Ukraine and the UK, and ensure the development of trade between the renewable energy sectors of the signing countries.



Oleksandr Podprugin
Deputy Chairman
of the UWEA Board

Through our cooperation with RenewableUK, we are taking a step towards harnessing the potential of renewable energy. This cooperation is particularly important for Ukraine as a sign of our continued support in the fight against russian aggression. The challenges facing our country and our ambitious sustainable development goals require enormous efforts from Ukraine and real technological and industrial cooperation with our true partners.

MEMORANDUM OF COOPERATION WITH THE REBUILD UKRAINE POWERED BY ENERGY PROJECT[93]

As part of the previously mentioned Second International Exhibition and Conference ReBuild Ukraine 2023, held last year in Poland, Andriy Konechenkov, Chairman of the UWEA Board, and Olena Kononenko, Head of the international project "ReBuild Ukraine powered by Energy", signed a Memorandum of Cooperation aimed at sustainable growth of the wind energy sector and "green" reconstruction of the Ukrainian energy industry.

Olena Kononenko
Project Director
ReBuild Ukraine

The partnership with the Ukrainian Wind Energy Association plays an important role in our common goals of implementing green technologies and ensuring a sustainable energy future.

[91] http://uwea.com.ua/en/news/entry/memorandum-pro-vzamorozumnnya-mzh-cowi-ta-uvea-schodo-spriyannya-vdnovlenny/

[92] http://uwea.com.ua/en/news/entry/ukranska-vtroenergetichna-asocacya-pdpisala-ugodu-pro-spvpracyu-z-renewable/

[93] http://uwea.com.ua/en/news/entry/rebuild-ukraine-powered-by-energy

4.6. VOLUNTEER ACTIVITY

SOLAR ENERGY WILL SUPPORT THE IRPIN COMMUNITY

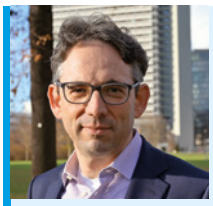
On 08 March 2023, two autonomous mobile solar power plants with electricity storage were handed over to the local community of Irpin, Kyiv Region: one for Kozynets Family Medicine Outpatient Clinic in Bucha district, and the other one for the Irpin Lyceum of Innovative Technologies "ILIT".

Russian rocket attacks on the power grid led to massive power outages in all regions of Ukraine. Governments and citizens from all over the world supported Ukrainians by providing Ukraine with equipment to restore energy infrastructure damaged by russian shelling.

In order to help civilians, the World Wind Energy Association *(WWEA)* and the Global 100% RE Platform launched the campaign #Renewables4Ukraine to raise funds for donating renewable energy equipment for emergency humanitarian aid in Ukraine, in particular stand-alone solar systems.

The initial two 3 kW solar mobile systems were donated to the Irpin City Centre for Primary Health Care on 26 December 2022.

In December 2022, the Finnish NGO joined the #Renewables4Ukraine campaign. It was thanks to their generous donation that the local community of Irpin received two more mobile solar stations in March 2023. The peculiarity of the joint EKOenergy-WWEA-UWEA project is that it not only helps people solve energy problems, but also has an educational purpose, namely, demonstrating in practice the benefits of renewable energy sources that Ukraine is so rich in and teaching young people how to use them.



Stefan Gsänger
Secretary General
WWEA

While the equipment we can donate to our friends in Ukraine is only a drop in the ocean, given the devastation caused by the russian army, we believe these solar installations are an important sign of solidarity from the international renewable energy community with the people of Ukraine. May these donations help the clinic to care for its patients and the students of the lyceum to acquire the skills that are so necessary for a good future for Ukraine.

[93] http://uwea.com.ua/ua/news/entry/sonyachna-energya-dopomogatime-rpnsko-gromad/

ANNEX. ABBREVIATIONS AND ACRONYMS

ASEU Solar Energy Association of Ukraine
BioPP Biomass Power Plant
BiogasPP Biogas Power plant
bln billion
BM Balancing Market
BP British Petroleum
CCUS Carbon Capture, Storage and Utilisation
CEO Chief Executive Officer
CHP Combined heat and power
CMU Cabinet of Ministers of Ukraine
CO_2 Carbon dioxide
COP28 28th UN Climate Change Conference of the Parties
CfD Contract for Difference
DAM Day-Ahead Market
DNV An international accredited registrar and classification society headquartered in Høvik, Norway
DSO Distribution System Operator
EBRD European Bank for Reconstruction and Development
ECHR European Court of Human Rights
EIA Environmental Impact Assessment
ENTSO-E European Network of Transmission System Operators for Electricity
EU European Union
EUR Euro
EC European Commission
EPC Engineering, procurement and construction
ESG Environmental, Social and Governance
EUEA European-Ukrainian Energy Agency
FIDIC International Federation of Consulting Engineers
FiP Feed-in Premium
FiT Feed-in Tariff
GE General Electric
GWEC Global Wind Energy Council
GW Gigawatt
HPP Hydro Power Plant
IAEA International Atomic Energy Agency
IEA International Energy Agency
IFC International Financial Corporation
IFI International Financial Institution
IDM Intraday Market
IMF International Monetary fund
IPS Integrated Power System of Ukraine
IRENA International Renewable Energy Agency
JSB Joint Stock Bank
JSC Joint Stock Company
kV Kilovolt
kW Kilowatt
LDES Long Duration Energy Storage
LLC Limited Liability Company
LL.M Master of Laws
LLP Limited Liability Partnership
MC Managing Company
mln million
MW Megawatt
NCDS National Security and Defence Council
NEF New Energy Finance
NEURC National Energy and Utilities Regulatory Commission of Ukraine
NGO Non-Governmental Organisation
NPC National Power Company
NPP Nuclear Power Plant
NNEGC National Nuclear Energy Generating Company
OECD Organization for Economic Co-operation and Development
Plc Public Limited Company
PPA Power Purchase Agreement
PSH Pumped Storage Hydroelectric Power Plant
PSE Polish TSO – Polskie Sieci Elektroenergetyczne S.A.
PSO Public Service Obligation
PV Photovoltaics
PU Public Union
PSPP Pumped Storage Power Plant
RE Renewable Energy
REN21 Renewable Energy Policy Network for the 21st Century
RES Renewable Energy Source
RtB Ready to Build status
SAEE State Agency on Energy Efficiency and Energy Saving of Ukraine
SE State Enterprise
SPP Solar Power Plant
sHPP Small Hydro Power Plant
TPP Thermal Power Plant
TSO Transmission System Operator
TW Terawatt
TWh Terawatt hour
UABIO Bioenergy Association of Ukraine
UAH Ukrainian Hryvnia
UARE Ukrainian Association of Renewable Energy
UBA Ukrainian Bar Association
UK United Kingdom
UN United Nations
UNDP United Nations Development Programme
URC Ukraine Recovery Conference
US United States
USAID United States Agency for International Development
USD United States dollar
UWEA Ukrainian Wind Energy Association
VAT Value Added Tax
VVER/ WWER Water-water energetic reactor is a series of pressurized water reactor designs originally developed in the Soviet Union
WEF World Economic Forum
WPP Wind power plant
WTG Wind turbine generator
WWEA World Wind Energy Association

UWEA MEMBERS

Vestas
NORDEX
acciona Windpower
GOLDWIND 金风科技
FairWind
EMERGY
ФРЕНДЛІ Індустріальний парк ВІНДТЕХНОЛОДЖІ
VINDKRAFT UKRAINA
ENERCON ENERGY FOR THE WORLD
VINDKRAFT TAVRIYA
VINDKRAFT KALANCHAK
GÜRİŞ
elementum energy
eurocape New Energy
ЮЖНЕ ЕНЕРДЖІ
SEP СИВАШЕНЕРГОПРОМ
DTEK
ECO OPTIMA green energy for life
WIND ENERGY
WIND PARKS OF UKRAINE
acciona Energy
Wind Solar Energy WSE
ATLAS GLOBAL ENERGY
UDP Renewables
ERU ENERGY RESOURCES OF UKRAINE
ECU ЕНЕРГЕТИЧНА КОМПАНІЯ УКРАЇНИ
MCL Management • Consulting • Law
KNESS
EP ENERPROF
FENIX REPOWER
ENGINEERING COMPANY PROFESSOR KATZENBACH
МЕТРОПОЛІЯ НАУКОВО-ТЕХНІЧНА КОМПАНІЯ
Invenergy
АЛЬТЕРНАТИВНА ЕНЕРГЕТИКА ПРИКАРПАТТЯ
KENK КРИВОРІЗЬКА ЕНЕРГЕТИЧНА КОМПАНІЯ
NOTUS ENERGY
Sika БУДУЄМО ДОВІРУ
Greenville ENERGY
GRESA group 1991
CWP UKRAINE


IKNET
ENERGY ENGINEERING


STABLE
ENERGY


DMCC
engineering


BUREAU VERITAS
1828
BUREAU
VERITAS


HEAVY IS EASY!
HOLLEMAN


DEALEX
WE CARE


CRANE
UKRAINE


TAD


ekstrem işler
ROPE ACCESS | TRAINING


УНІПРОМ


МЕГАНОМ
УКРАЇНА


К
Б
К


adviRES
RENEWABLING UKRAINE


DEUTSCHE
WINDGUARD


GEO
NET


TRANCOM


SIEMENS
energy


МБК
СІНЕРГІЯ


WINSTON
&STRAWN
LLP


SAYENKO KHARENKO
NEWLAW FIRM


Arzinger


DENTONS


INTEGRITES


EVERLEGAL


LCF


Baker
McKenzie.


ASTERS


ACQUIS
LAW FIRM


CMS
law·tax·future


altelaw


Singa
Energies


UWEA-K


EKSİM


ВІТРИ ХМЕЛЬНИЧЧИНИ


ataseven
GROUP


ELECTROSERVICE-PIVDEN' LLC
FROM ONE TO EVERYONE


WF
WIND
FARM


PROVENTUS
RENEWABLES


UKRAINIAN GREEN
TECHNOLOGY CONSULTING


Global Capital Finance

NOTES

UWEA-K

Ukrainian Wind Energy Agency-K is your reliable information partner in the global wind industry

Українське вітроенергетичне агентство-К – Ваш надійний інформаційний партнер у світовій вітроенергетичній промисловості

Ukrainian Wind Energy Agency

UWEA-K LLC

BC Lavrskyi
20, Lavrska str., off. 316
Kyiv, 01601, Ukraine
tel. +38050 2232996

Українське вітроенергетичне агентство

ТОВ УВЕА-К

БЦ «Лаврський»
Вулиця Лаврська, 20, оф. 316
Київ, 01601, Україна
тел. +38050 2232996

WindEnergy Hamburg

The global on & offshore event

24 — 27 September 2024

Driving the energy transition. *Together!*

The entire energy industry is facing major challenges. Be there when the global wind energy industry meets and presents its solutions for the future of renewable energies. Be inspired and make new valuable contacts. See you in Hamburg!

windenergyhamburg.com

Organised by: Hamburg Messe + Congress

Global Partner: GWEC Global Wind Energy Council

European Partner: WindEurope

Partners: BWE Bundesverband WindEnergie; VDMA Power Systems; Messe Husum Congress