WIND POWER OF UKRAINE 2022

WIND MARKET IN WARTIME

UWEA UKRAINIAN WIND ENERGY ASSOCIATION

ЦІКАВО Й ЗАХОПЛИВО, ДОСТУПНО І ВОДНОЧАС ҐРУНТОВНО ПРО СУЧАСНІ ТЕХНОЛОГІЇ У ВІТРОЕНЕРГЕТИЦІ!

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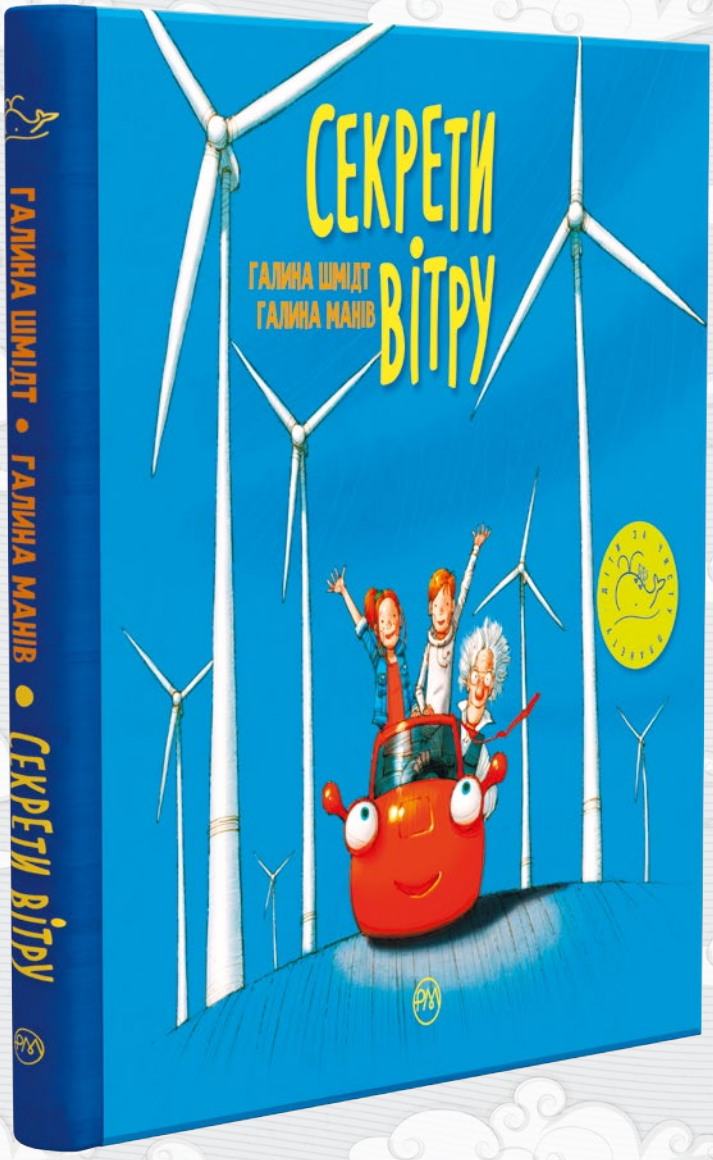

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Ukrainian Wind Market Overview 2022 has been developed by **Public Union Ukrainian Wind Energy Association** in collaboration with **LCF Law Group.**

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 Energ Saving of Ukraine, and the State Enterprise Guaranteed Buyer for sharing their expert views on the current status of renewable energy and wind energy, in particular, and their prospects in Ukraine.

AUTHORS:
Andriy Konechenkov, Chairman of the UWEA Board, Director, **Ukrainian Wind Energy Agency-K LLC**
Galyna Shmidt, Member of the UWEA Board, Head of the **International Department, Ukrainian Wind Energy Agency-K LLC**
Ivan Bondarchuk, LL.M, Counsel, Head of Energy, **LCF Law Group** *(https://lcf.ua)*
Bohdan Horoshynskyi, Associate, **LCF Law Group** *(https://lcf.ua)*
Natalia Hutarevych, Senior Associate, **Sayenko Kharenko Attorney's office** *(https://sk.ua)*
Arsen Panasiuk, Industry and Construction Manager, **BUREAU VERITAS** Ukraine *(https://www.bureauveritas.com.ua)*
Igor Retivov, Senior Manager of Regulatory Affairs, **DTEK Renewables** *(https://renewables.dtek.com)*
Olga Shenk, Partner, **CMS Cameron McKenna Nabarro Olswang,** Kyiv Office Ukraine *(https://cms.law)*

The reported statistics are based on the information kindly provided by the National Energy and Utilities Regulatory Commission, PJSC NPC Ukrenergo, Ukrainian Wind Energy Agency-K LLC, the UWEA member companies and members of the UWEA Legal Committee.

The photos used in the Overview have been kindly provided by **MC Wind Parks of Ukraine LLC, Elementum Energy LLC, DTEK Renewables, Mykola Serdyuk, Kostyantyn Brizhnichenko, Andriy Konechenkov**

Published: February 2023

Tel. +380 (50) 223 29 96
Email: *uwea@i.ua, 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 "green" transformation of the Ukrainian energy system and its post-war recovery based on renewable energy.

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 2022, the UWEA unities 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 International Energy Agency, International Renewable Energy Agency, BloombergNEF, Wood Mackenzie, REN21. The UWEA is a full member of the World Wind Energy Association and the WindEurope.

Since 2020, the UWEA has promoted offshore wind in Ukraine. UWEA has become a co-founder of the Black Sea Offshore Wind Energy Federation *(BASOFWED)*. In October 2022, the Protocol on Initiating BASOFWED was signed by the wind energy associations from Turkey, Ukraine, Georgia and Bulgaria.

High-level professionalism of the association's experts is recognised by numerous awards. In 2017 the UWEA was awarded the Honorary award "Choice of Ukraine 2017" and in 2019 – the Honorary award "Choice of the Country 2019".

Since the beginning of the war unleashed by the russian federation against Ukraine, the UWEA has also been involved in volunteer activities.

LCF Law Group is a leader in Ukraine's legal market, specializing in a number of industries, such as Agribusiness, Banking & Finance, Energy & Natural resources, IT & Telecom, Gambling, Manufacturing & FMCG, Pharmaceuticals & Healthcare, Retail & Commerce, Transportation & Infrastructure.

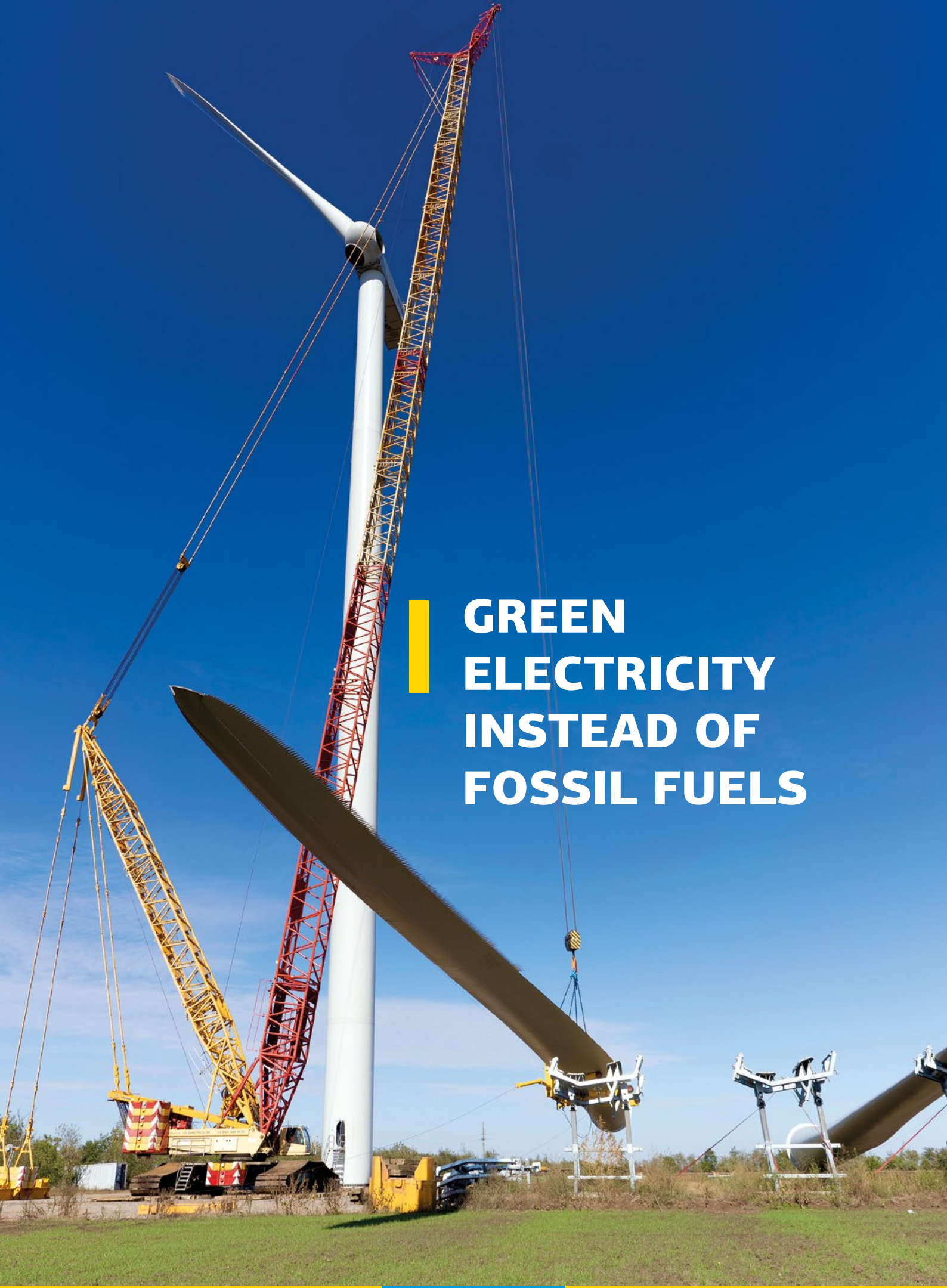
LCF provides legal advice on corporate, banking, and finance matters, as well as litigation services in administrative and civil law, bankruptcy, competition, commercial, corporate, employment, financial, IP, land, and tax law.

LCF and its leading professionals are recognized by international and local ratings, including Chambers Europe, Chambers Global, Best Lawyers, Benchmark litigation Europe, The legal 500, IFLR 1000, World tax, etc.

CONTENT

ACRONYMS AND ABBREVIATIONS

ASEU	Solar Energy Association of Ukraine
BioPP	Biomass Power Plant
BiogasPP	Biogas Power plant
CBAM	Carbon Border Adjustment Mechanism
CHP	Combined Head and Power Plant
CMU	Cabinet of Ministers of Ukraine
COP 26 / COP 27	26th / 27th UN Climate Change Conference of the Parties
DAM	Day-Ahead Market
DSO	Distribution System Operator
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
EC	European Commission
ECHR	European Court of Human Rights
EUEA	European-Ukrainian Energy Agency
FiT	Feed-in Tariff
GW	Gigawatt
GO	Guarantee of Origin
GWO	Global Wind Organisation
HPP	Hydro Power Plant
IEA	International Energy Agency
IFC	International Financial Corporation
IDM	Intraday Market
IDP	Internally Displaced Person
IPS of Ukraine	Integrated Power System of Ukraine
IRENA	International Renewable Energy Agency
IPS	Integrated Power System
kW	Kilowatt
MW	Megawatt
NEURC	National Energy and Utilities Regulatory Commission of Ukraine
NREAP	National Renewable Energy Action Plan
NPC	National Power Company
NPP	Nuclear Power Plant
NNEGC	National Nuclear Energy Generating Company
PPA	Power Purchase Agreement
PSH	Pumped Storage Hydroelectric Power Plant
PSO	Public Service Obligation
PV	Photovoltaics
PU	Public Union
PJSC	Public Join-Stock Company
PSHPP	Pumped Storage Power Plant
RE	Renewable Energy
RES	Renewable Energy Source
SAEE	State Agency on Energy Efficienc and Energy Saving of Ukraine
SE	State Enterprise
SPP	Solar Power Plant
sHPP	Small Hydro Power Plant
TC	Technical Conditions
TPP	Thermal Power Plant
TSO	Transmission System Operator
UARE	Ukrainian Association of Renewable Energy
UCGFEA	Ukrainian Classification of Goods of Foreign Economic Activity
UN	United Nations
USP	Universal Service Provider
WWEA	World Wind Energy Association
WPP	Wind Power Plant



GREEN ELECTRICITY INSTEAD OF FOSSIL FUELS

1.1. ELIMINATING EUROPE'S ENERGY DEPENDENCE ON RUSSIAN FOSSIL FUELS

2022 will be remembered as the year of a global energy crisis for the global energy industry. The global economic recovery from Covid in 2021 was interrupted by the russian federation's[1] invasion of Ukraine and russia's energy war against Europe.

According to World Energy Outlook 2022 by IEA, *"pressures on markets predated the russian federation's invasion of Ukraine, but its actions have tipped what was a strong recovery from the pandemic into full-blown turmoil in energy markets, causing severe damage to the global economy".*

Today, the world is in the midst of the energy crisis, with impacts that will be felt for years to come. Russia's unprovoked invasion of Ukraine in February 2022 has had far-reaching impacts on the global energy system, disrupting supply and demand patterns and fracturing long-standing trading relationships.

However, russia's attack on Ukraine has sparked unprecedented momentum for renewables. Fossil fuel supply disruptions have underlined the energy security benefits of domestically generated renewable electricity, leading many countries to strengthen policies supporting renewables. Meanwhile, higher fossil fuel prices worldwide have improved the competitiveness of solar PV and wind generation against other fuels. The russian energy war has highlighted the importance and effectiveness of renewable energy in achieving energy security and independence. Until February 24, 2022, renewable energy sources have been primarily considered by the global community as a tool for combating climate change and reducing greenhouse gas emissions.

IEA Executive Director Fatih Birol: *"Renewables were already expanding quickly, but the global energy crisis has kicked them into an extraordinary new phase of even faster growth as countries seek to capitalise on their energy security benefits. The world is set to add as much renewable power in the next 5 years as it did in the previous 20 years."*

In response to the hardships and global energy market disruption caused by russia's invasion of Ukraine, on May 18, 2022, the European Commission presented the REPowerEU. The plan aims at transforming the EU's energy system and phasing out its dependence on russian fossil fuels through energy efficienc and savings; energy supply diversification; clean-energy transition acceleration; investment and reform. REPowerEU emphasises the acceleration of green technologies, from solar photovoltaic to wind, and heat pumps to green hydrogen and proposes to increase the EU's headline 2030 target for renewables from 40% to 45%. The REPowerEU would bring the total renewable energy generation capacities to 1,236 GW by 2030, in comparison to the 1,067 GW by 2030, envisaged under Fit for 55 for 2030.

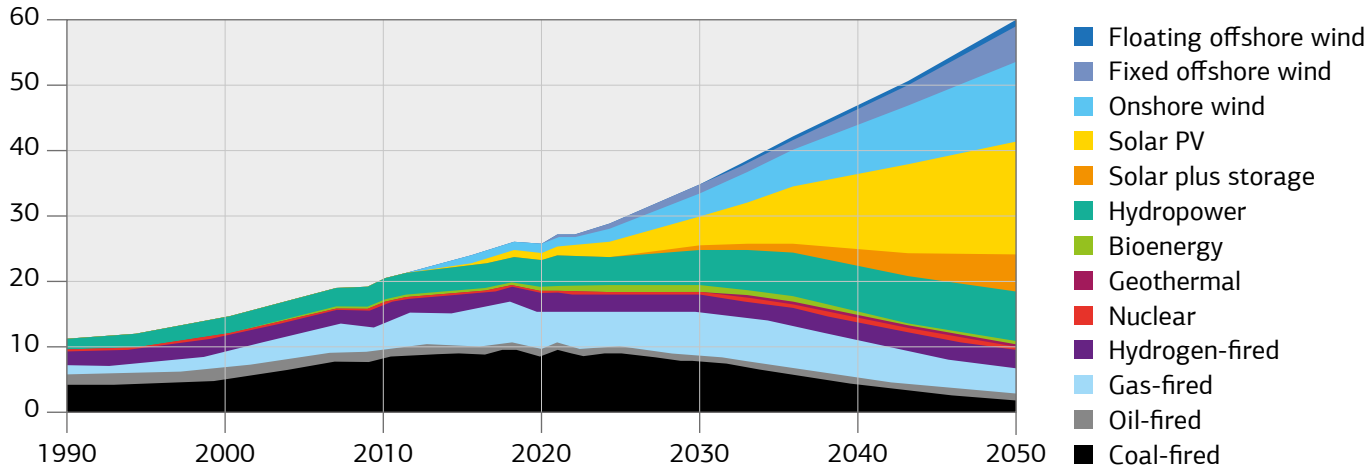
Europe's new energy security strategy prioritises renewables, and wind energy, as key technologies delivering simultaneously energy security, economic recovery, and the green transition. To succeed in its green transition, Europe needs to significantly increase its renewable energy capacity.

Wind energy covers 15% of Europe's electricity today but is set to grow to 43% by 2030 based on the European Commission's REPowerEU Action Plan. This means 510 GW of wind energy installations by 2030 up from 190 GW today. The European Commission wants wind energy to provide 50% of Europe's electricity in 2050. This entails 1,300 GW installed capacity by then at an average path of nearly 40 GW capacity per year.

The issue of energy security has increased the urgent need for more offshore wind power capacities around the world, especially in Europe. The European governments are increasing their targets for offshore wind and commit themselves to building 165 GW of offshore capacity by 2030. Thus, on May 18, 2022 heads of governments from the North Sea countries *(Germany, Denmark Netherlands and Belgium)* signed a cooperation agreement on offshore wind

[1] writing words in lowercase expresses the authors' disdain for the aggressor country

Figure 1.1. *World grid-connected electricity generation by power station type, 1990-2050, PWh/ year*



Historical data source: *IEA WEB (2022), GlobalData (2022)*
Source: *DNV Energy Transition Outlook 2022*

development and green hydrogen. They will target at least 65 GW by 2030 and 150 GW by 2050.

WindEurope: *"It is positive that governments recognise the importance of wind energy to their energy security and in fighting climate change, but they must make sure they are creating the right environment for investments and ensuring that the European supply chain can deliver."*

The European Union is more determined than ever to transition from expensive imported fossil fuels to competitive, clean and home-grown renewables. In the context of russia's aggression in Ukraine and to tackle the EU dependence on russian fossil fuels, the European Parliament approved additional measures in December 2022 to accelerate the share of renewables in the EU well ahead of 2030.

The decision for emergency measures to accelerate permitting had been reached in November already but the final green light was given at the 19 December Energy Council in a package deal with the agreement on an EU gas price cap. Notably the emergency measures on permitting mark the first time that the EU defines in law the **expansion of renewables as a matter of overriding public interest.**

According to the global forecast for 2050 by DNV, the share of fossil fuels in the electricity mix reduces sharply from the present 59% to only 12% in 2050. Solar PV and wind are already the cheapest forms of new electricity in most places, and by 2050 they will grow 20-fold and 10-fold, respectively. Solar PV takes a 38% share of electricity generated in 2050 and wind 31%. Nuclear will only manage to slightly increase present production levels due to its high costs and long lead times; its share of the electricity mix will therefore decline. The strong growth of renewables in electricity is the main reason why the fossil-fuel share of total energy use in 2050 is pushed to just below the 50% mark.

"The world still needs a giant leap on climate ambition. The red line we must not cross is the line that takes our planet over the 1.5 degree temperature limit. To have any hope of keeping to 1.5, we need to massively invest in renewables and end our addiction to fossil fuels," **UN Secretary-General Antonio Guterres's** remarks on conclusion COP 27.

1.2. BUILDING NEW ENERGY SYSTEM OF UKRAINE

The russian invasion has exposed the vulnerability of Ukraine's energy system heavily dominated with fossil-fuelled power plants – nuclear and thermal. Russia's energy blackmail has demonstrated how dependent Europe was on russian energy carriers. That is why phasing out its dependence on russian "dirty" fossil fuels has become a key issue in today's EU energy policy.

Commenting on the REPowerEU proposal, European Commission President, Ursula von der Leyen, said: *"And with REPowerEU, we show that we can replace Russian fossil fuels by working on three levels. The first level is on the demand side. That is saving energy. Then on the supply side, it is, of course, diversifying away from Russia for fossil fuels and towards other reliable trustworthy suppliers. And the most important part: accelerating the clean energy transition, so massive investment in renewable energy."*

Energy efficien , diversification of energy supplies, and the development of renewable energy sources should become pillars of energy policy not only in the EU countries but in Ukraine as well.

Decarbonisation of the entire Ukrainian economy should be one of the main priorities for the energy sector. All energy specialists and experts in Ukraine agree with this thesis. However, some experts consider nuclear power as the main technology for decarbonising the economy and the main generation for Ukraine, forgetting that electricity production at Ukraine's NPPs is associated with a number of issues that cannot be resolved quickly.

For example, extending the service life or modernization of operating NPPs is a cornerstone of the Ukrainian nuclear power industry. The issues related to both the fuel supply and storage of spent nuclear fuel remain unresolved. Ukraine used to receive most of its nuclear services and nuclear fuel from russia. A centralized storage facility for spent nuclear fuel located in the Chornobyl exclusion zone, just 130 km from Kyiv, poses a potential threat to the population of the capital due to its proximity.

Russia's war on Ukraine has clearly demonstrated vulnerability of the countries that are completely dependent on nuclear power. Russia's seizure of the largest nuclear power plant in Europe, Zaporizhzhia NPP, is a vivid act of nuclear terrorism and poses a threat to international peace and security.

The situation in Ukraine's thermal power sector is even more complicated. Most of the thermal power plants operating today are coal-fired, causing huge environmental damage and adversely affecting the health of the local population. 52% of thermal power plants have been in operation for more than 60 years already. Along with high emissions of greenhouse gases into the environment, they are costly to run due to high maintenance costs and low efficien .

According to the National Plan for Emission Reduction from Large-Scale Burning Plants until 2033, Ukraine is obliged to upgrade or shut down a significant part of its thermal generation capacities. At the UN's 26th Climate Change Conference in Glasgow Ukraine committed to phasing out coal by 2035.

Ukraine's reliance on fossil and nuclear power makes us vulnerable to russian attacks. Therefore, instead of building back the fossil-fuelled energy infrastructure, post-war recovery and reconstruction of Ukraine should be based on renewables.

The draft National Renewable Energy Action Plan for the period up to 2030 has already set out targets to source 27% of the total final energy consumption by 2030, but Ukraine's ambitions on renewables must now be lifted in line with the EU targets. Ukraine can and should become a regional leader in decarbonising its economy and energy.

We indeed have no other alternatives. The world is getting rid of fossil fuel dependence. Nuclear power is not a solution for Ukraine. Not just because it can be a target for nuclear terrorism once more, it is too slow to build and too expensive in contrast to wind and solar which are readily available and much cheaper, and what is the most important, safer for both the environment and people.

EU Energy Commissioner Kadri Simson: *"We don't just want to rebuild the Ukrainian energy system of the past, we want to build it back better than before with two main goals in mind: Ukrainian energy independence and decarbonisation."*

15 CMS CELEBRATING 15 YEARS IN UKRAINE
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Infrastructure projects

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50+
Legislation developments

30
Investment and international arbitration proceedings

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So, what should Ukraine's energy sector look like after the war and what role should renewables play in energy supply? According to Prime Minister Denys Shmyhal, russian attacks push Ukraine to a radical reform – building a decentralized energy system.

Renewable energy coupled with energy efficien is the quickest and most effective way to combat dependence on russian fossil fuels. We should rethink the current energy-efficienc policy and introduce more strict energy saving requirements through imposing, for example, specific obligations on public utilities, as the EU has done.

It is also worth recalling that while Europe was dependent only on russian oil and gas, Ukraine was also dependent on russian electricity until March 2022. Synchronisation with the European power system not only freed Ukraine from this chain and made it possible to become an electricity exporter to Europe, but also laid the basis for modernizing the infrastructure and upgrading the power grids, which is also in line with the energy efficiency poli .

Ukraine's energy recovery should be based on renewables. Ukraine has huge wind potential, onshore and offshore, solar, hydro and bioresources. Moreover, Europe sees Ukraine as a future hub for the production of green hydrogen, which can be used to decarbonise every carbon-emitting sector of the economy.

All these technologies are the basis for energy independence and investment attractiveness. Given that the Ukrainian government took care of balancing these technologies through, for example, the adoption of legislation on energy storage systems, they are also becoming more and more infrastructurally acceptable. In addition, there is a significant potential for deployment of hybrid renewable power plants *(wind + solar + energy storage)* in the country to balance electricity supply and demand and increase the RES share in the national energy mix.

Given a strong political will, significant investment, and government support, the energy market of Ukraine will be flexible and open enough to be independent of russian energy resources. The renewables should be at the core of the concept of building a new energy system of Ukraine after the war

"Plans for energy decarbonisation and green transformation remain relevant. The war has made these challenges even more urgent. We will actively use the potential of renewable energy: solar, wind, hydropower generation, hydrogen technologies," **Denys Shmyhal Prime Minister of Ukraine.**

II ENERGY SECTOR OF UKRAINE IN WARTIME

2.1. ENERGY SECTOR OF UKRAINE

2.1.1. UKRAINE'S ENERGY SECTOR BEFORE THE WAR

In 2021, Ukraine's energy sector found itself at a crossroads, as the state was choosing the vector of energy sector development. The RES power sector was also in uncertainty. On the one hand, the state committed itself to decarbonising its economy and accelerating green energy transition. At COP26 in 2021, Ukraine presented its updated Nationally Determined Contribution under the Paris Agreement and committed to a target of ending coal-fired power generation by 2035 while massively investing in renewables. The State Agency on Energy Efficienc and Energy Saving of Ukraine drafted Ukraine's National Renewable Energy Action Plan for the period up to 2030.

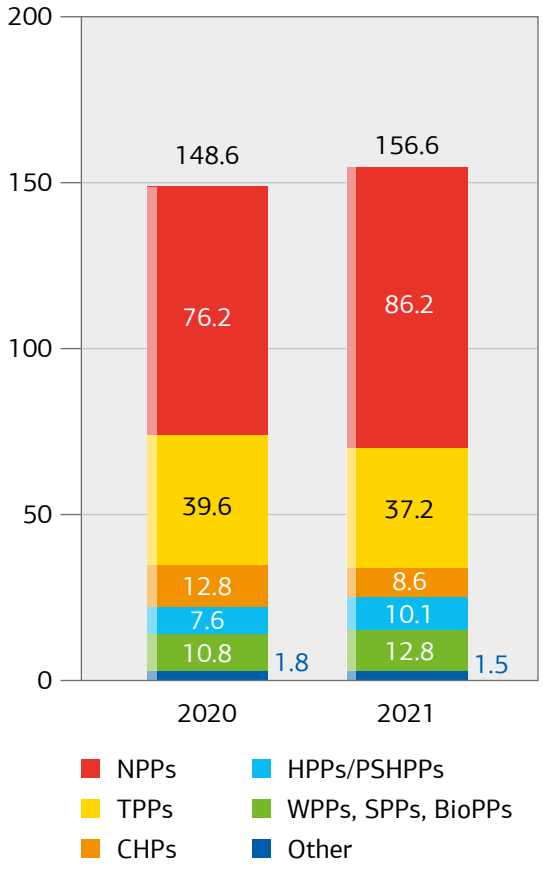
But on the other hand, RES deployment was hampered by artificially created barriers, which, in turn, had deepened the financial crisis in the RES market, while Ukraine's government continued to prioritise the outdated nuclear energy infrastructure.

The russian invasion has exposed the vulnerability of Ukraine's energy system, heavily dominated with fossil-fuelled power plants – nuclear and thermal. As of the end of 2021, nuclear power share in national electricity generation exceeded 55%, coal and natural gas accounted for 29,2%, hydro – for 6,5%, while renewables *(solar, wind, biomass/biogas)* accounted for 8,1%.

Ukraine's pre-war power system was characterized by a predominant share of basic capacities, most of which had already exhausted their lifetime. 12 nuclear power units, out of 15, have already reached the end of their 30-year design lifetime *(most reactors have an average age of 33 years),* and their operating licenses have been already extended for another 10–20 years. Another 1,000 MW will reach the end of their design lifetime in 2026. Therefore, Ukraine's dependence on nuclear power today is a matter of life and security of our society.

Thermal power is another large source of electricity generation in Ukraine. At the beginning of 2022, there were 12 thermal power plants *(TPPs)* in Ukraine with a total installed power capacity of 21.5 GW *(excluding the plants located in the territories temporarily occupied by russia before February 24, 2022).* Most TPPs used coal as a primary fuel. Due to the fact that much of the generation capacity was rather old and carbon-intensive, a significant number of coal-fired power plants were scheduled for closure still in 2021.

Figure 2.1.1. *Structure of electricity production in Ukraine 2020-2021, bln kWh*



Source: *NPC Ukrenergo, PU UWEA, 2021*

In terms of total installed capacity, hydropower ranks third after nuclear and thermal ones. With a total installed capacity of 6.6 GW at the beginning of 2022, hydropower played a crucial role in the functioning of the Ukrainian power systems, providing flexibility to the grid

2.1.2. SYNCHRONISING THE ENERGY SYSTEMS OF UKRAINE AND THE EU

Ukraine officiall announced its decision to become interconnected with ENTSO-E in far 2005. Active steps towards ENTSO-E have been made since 2017 when NPC Ukrenergo signed an agreement with operators of the ENTSO-E Continental Europe Region on the Conditions for further interconnections with Ukraine and Moldova. Before any interconnection could be achieved, Ukrenergo had to implement

Synchronisation with the European power system occurred 1.5 years earlier than planned.

several measures, including testing operations of the Ukrainian grid in an isolated mode. The first trial cut-off from the russian and Belarusian energy systems for technical analysis of the system's operation in an isolated mode was scheduled for February 24, 2022. On the same day, the russian army attacked Ukraine. But despite active military hostilities, NPC Ukrenergo successfully completed the system tests in an isolated mode planned for three days. Ukraine successfully passed its winter test and completed most of the technological steps necessary for synchronisation. After completing the tests, Ukraine decided not to resume parallel operation with the power systems of the russian aggressor and Belarus. Instead, on February 27, 2022, NPC Ukrenergo applied for emergency synchronisation with the European power system.

Following an urgent request by Ukraine for emergency synchronisation, the TSOs of Continental Europe agreed to start the trial synchronisation of the Continental European Power System with the power systems of Ukraine and Moldova on March 16, 2022.

Joining the ENTSO-E system enables Ukraine to be fully independent of russia and Belarus, which is paramount in wartime. Ukraine has made a great step forward towards its full independence from the russian aggressor, which has certainly strengthened the energy security of our country. It also boosts potential investors' interest in Ukraine's electricity sector, making it more transparent and open. Building up the resilience of the Common Energy System would make it easier to support the subsequent RES development and their integration into Ukraine's electrical energy market, which is in line with the Ukraine-EU Association Agreement. Ukraine's disconnection from the power system of russian federation leads to the loss of the latter's strategic influence on the electricity sector not only in Ukraine but also in the European countries.

2.1.3. ELECTRICITY EXPORT TO THE EU

Ukraine's urgent electricity grid synchronisation with that of the EU made trade in electricity between Ukraine and the EU possible. On June 7, 2022, Continental Europe TSOs made an along-awaited decision and approved NPC Ukrenergo's request to re-launch electricity export from Ukraine.

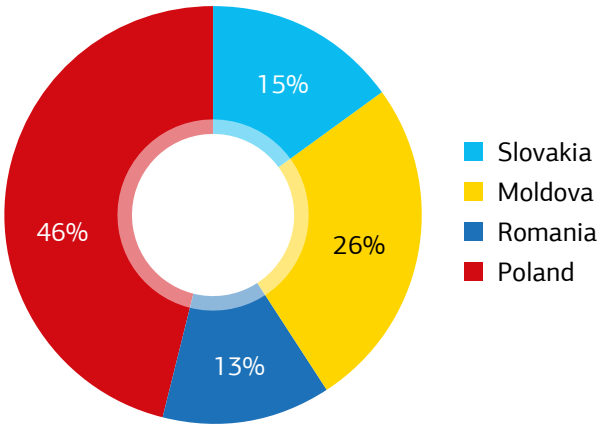
As of June 30, 2022, Ukraine started commercial electricity exports to neighbouring countries via Romania with an initial volume of 100 MW and a further possibility to increase the volume gradually after the monthly ENTSO-E impact assessment on the European energy system.

The reports of ENTSO-E technical experts confirmed that the export of Ukrainian electricity to the power grid synchronised with continental Europe was stable, and there was no negative impact on the system. As a result, ENTSO-E allowed an increase of electricity export from Ukraine by 2.5 times since July 30, 2022.

According to the NPC Ukrenergo, as early as September 2022, the total amount of available transmission capacity of power networks between

Artur Lorkowski, Director of the Energy Community Secretariat: *"Synchronization means European assistance in case of emergency needs, thus increasing the stability of the Ukrainian and Moldovan power systems. After the russian military aggression stops, synchronization will translate into more energy security and more benefits for consumers on both sides."*

Figure 2.1.3. *Electricity export from Ukraine after synchronisation of the Ukraine's power system with ENTSO-E, 2022*



Source: *PU UWEA, 2022*

the energy systems of Ukraine and the EU increased to 300 MW during the day and evening hours, and 250 MW – at night.

Consequently, the gradual increase of export capacities made it possible to earn income both for electricity producers and the transmission system operator NPC Ukrenergo who sold transborder capacities. The competitive price of Ukrainian electricity made it possible to fully realize the amount of electricity put up for auction.

According to NPC Ukrenergo, from June 30 to September 18, 2022, the company earned more than UAH 4.9 billion *(approximately EUR 137.5 million).* Ukrainian electricity was exported to Romania, Slovakia, and Poland.

According to Minister of Energy of Ukraine German Galushchenko, technically Ukraine's power system could already provide up to 1,690 MW of electricity for export. After the implementation of additional technical measures, the capacity for the sale of electricity abroad may increase to 4-5 GW.

However, a massive missile attack by russia on October 10, 2022, forced the Government to order a hold on electricity exports to the European countries from October 11, 2022, and introduced internal demand correction measures to stabilize its energy system.

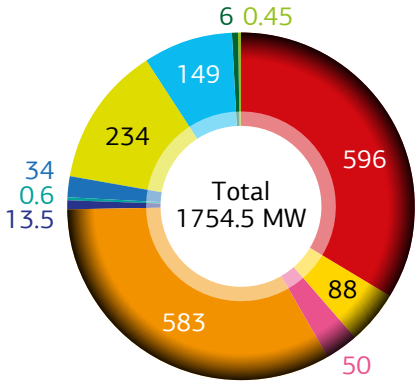
2.1.4. RUSSIA'S ENERGY TERRORISM

The full-scale military aggression by the russian federation launched on February 24, 2022, has a massive and devastating impact on Ukraine's energy sector. Because of their economic, humanitarian and geopolitical importance, energy infrastructure facilities were among the primary targets for the russian army. Energy infrastructure facilities, such as high-voltage grids, transformers and substations have been systematically shelled and destroyed by the russian troops since the very first days of the war.

According to the damage assessment carried out within the framework of the National Council for the Recovery of Ukraine from the Consequences of the War, as of December 2022, the total amount of documented damage to Ukraine's infrastructure due to the full-scale invasion launched by russia on February 24, 2022, is estimated at USD 137.8 billion *(at replacement cost).*

Russia's aggression and temporary occupation of some territories of Ukraine deprived the country of a significant part of the green generation. It should be noted, that the best solar and wind resources are located in the southern part of the country. Unfortunately, these territories were occupied by the enemy in the first month of the war, and it is here that active hostilities are currently taking place. Consequently, wind farms located in parts of the Kherson and Zaporizhzhia regions had to be shut down, primarily due to personnel safety issues.

Figure 2.1.4. *Preliminary assessment of damages to Ukraine's wind power sector, MW (as of December 31, 2022)*



Wind Farms Shut Down / Damaged 1317.0 MW
- Zaporizhzhia Region
- Donetsk Region
- Luhansk Region
- Kherson Region

Wind Farms Under Operation 437.5 MW
- Donetsk Region
- Ivano-Franskivsk Region
- Lviv Region
- Mykolaiv Region
- Odesa Region
- Ternopil Region
- Kyiv Region

Source: *NEURC, PU UWEA, 2022*

According to the UWEA data, as of December 31, 2022, about 1,317 MW out of 1,755 MW of total installed wind capacity *(75%)* were out of operation.

In addition, at least 10 wind turbines are known to have been damaged in the course of the war, but the real number could be higher, as wind farm operators currently do not have any access to most wind farm sites located in the territories occupied by the russian aggressor.

According to the Ministry of Energy and the UWEA's data, preliminary estimates of losses from destroyed, damaged, or stolen wind farm equipment exceeds EUR 50 million. Another EUR 500 million was lost due to the forced downtime of wind farms. These figures are expected to grow in the coming months as the war continues.

Since October 2022, hundreds of russian missiles and drones have been deliberately destroying Ukraine's energy infrastructure. And the largest in Europe Zaporizhzhia NPP has been occupied by russia since March 4 and turned into a military base. According to NPC Ukrenergo as of early January 2023, Ukraine suffered 11 missile and 14 drone massive attacks, which resulted in damaging or destroying 50% of the power system. In particular, russian missiles hit all thermal power plants and most hydroelectric power plants.

The Parliament of Ukraine appealed to all nations of the world to recognize russian attacks on Ukraine's energy infrastructure facilities as the eternal russian policy of the genocide of the Ukrainian people. The relevant Statement on Energy Terrorism of the russian federation was issued by the Verkhovna Rada of Ukraine on December 1, 2022.

RENEWABLE ENERGY DEVELOPMENT IN UKRAINE: STATUS AND PROSPECTS. WIND ENERGY SECTOR.

Despite all the challenges of 2022, Ukraine keeps on going towards energy transformation, taking into account the priority of energy security, decarbonisation and accelerating integration into the EU.

Renewable energy sources, including wind, certainly play a leading role in the Ukrainian power sector transformation.

Ukraine is unique in its diversity of resources and is one of the countries in Europe that have almost the greatest potential for power production from wind energy. This is confirmed by the data of the Ukrainian Wind Energy Association *(UWEA)*, the Institute of Renewable Energy of the National Academy of Sciences of Ukraine, the World Bank and other organizations and institutions.

The total potential of wind power plants exceeds 680 GW, more than a third of which, 250 GW, is the potential of offshore wind farms, says the Institute of Renewable Energy of the National Academy of Sciences of Ukraine.[2] With regard to onshore wind technologies, the steppe zone is the most attractive for their implementation.

There are significant prospects for offshore wind energy in Ukraine: the shallow water areas of the Azov and Black Seas, the Dnieper Cascade and Dniester reservoirs, the Sivash Bay and others allow for cost-effective offshore wind turbines installation. This is verified by the World Bank's research.[3] All the above indicators prove the high attractiveness of Ukraine's wind energy sector.

To use the great wind energy potential, Ukraine is working on creating favourable conditions, focusing on the European practice and the experience of leading countries.

As a member of the Energy Community, Ukraine is implementing the 4th Energy Package of the EU legislation "Clean Energy for All Europeans", which includes a number of directives. One of them is EU Directive 2018/2001 of December 11, 2018 on the promotion of the use of energy produced from renewable energy sources *(RED II)*.[4]

To accelerate renewable energy sources deployment in Ukraine in a harmonised way and implement RED II EU Directive, the State Agency on Energy Efficienc and Energy Saving of Ukraine *(SAEE)* has drafted the Cabinet of Ministers of Ukraine Order "On the National Renewable Energy Action Plan until 2030". It sets a new goal aimed at increasing the share of energy from renewable energy sources in gross final energy consumption by 3 times: from 9% in 2020 to 27% in 2030.

In particular, wind energy capacity is supposed to grow by 3.7 GW totalling 5.4 GW by 2030 up from 1.75 GW today, while electricity generation from the wind is expected to reach 15.8 TWh in 2030.

In order to deliver these goals and raise investments, the draft National Renewable Energy Action Plan for the period up to 2030 envisages several measures to create favourable conditions to ensure the balanced roll-out of renewables in the country, including wind, in particular:

- promotion of market-based mechanisms for RES electricity production;
- introduction of Guarantees of Origin;
- promotion of small distributed generation;
- development of offshore wind energy
- implementation of renewable energy auctions;
- creation of conditions for the local manufacture of RES equipment;
- regulation of RES equipment utilization;
- development of a Biodiversity Sensitivity Map.

[2] https://www.ive.org.ua/wp-content/uploads/atlas.pdf

[3] https://documents1.worldbank.org/curated/en/709391586844502062/pdf/Technical-Potential-for-Offshore-Wind-in-Ukraine-Map.pdf

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC

Such measures should give an even greater impetus to the wind power deployment, one of the most promising technologies in Installing energy generating capacities and further sustainable development of the energy industry.

As of December 1, 2022, the total installed RES capacity in Ukraine under feed-in tariff amounted to 9,94 GW *(excluding the occupied territory of the AR Crimea).* With new 81,6 MW of wind added to the grid, total installed wind capacity reached 1.75 GW by the end of 2022. The total RES capacity in the 12 months of 2022 grew by 312,6 MW *(including SPPs in private households).*

However, according to the UWEA, russia's military aggression has shut down about 1.3 GW *(80%)* of wind power plants, which are mostly concentrated in the southern parts of Ukraine. In addition, the construction of 11 onshore wind projects has been put on hold.

In order to enable the completion of the above-mentioned wind power projects *(totalling about 800 MW),* Implementation of which was put on hold because of russia's military aggression, the Cabinet of Ministers of Ukraine developed and registered in the Verkhovna Rada of Ukraine a draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on Extension of the Term for Commissioning Renewable Energy Facilities under Power Purchase Contracts at the Feed-In Tariff Concluded by December 31, 2019".

It is worth mentioning another strategic aim. Accelerating wide-scale deployment of wind and other RES will promote launching local manufacture of wind turbines and other RES equipment. It will have a positive impact on the national economy in the post-war recovery period.

The SAEE also sees a significant role of wind energy in the context of the hydrogen economy formation and development. The Agency has taken an active part in preparing the draft Strategy for the Hydrogen Energy Development in Ukraine within the framework of the working group established by the Ministry of Energy of Ukraine. The work was carried out with the participation of central executive authorities, enterprises, associations, experts under the chairmanship of the working group's head – deputy Minister of Energy Yuliia Pidkomorna and the deputy head of the working group – Head of the State Agency on Energy Efficienc and Energy Saving of Ukraine Valerii Bezus. The draft Hydrogen Strategy of Ukraine envisages, in particular, the installation of 10 GW of electrolysers and 40 GW of renewable energy plants by 2030. Such an ambitious goal obviously requires the large-scale deployment of renewable energy sources.

Compared to other renewable energy sources, wind power perhaps has the most advantageous perspective for green hydrogen production. Installing electrolysers powered by wind will not entail extra load on the grid while ensuring "clean" energy generation. Therefore, it is important to foresee the expansion of wind energy capacities for hydrogen production.

Guarantees of Origin is one of the key mechanisms for stimulating the use of energy from renewable sources, particularly on the consumer side. The State Agency on Energy Efficienc and Energy Saving of Ukraine has already developed the register of guarantees of origin for biomethane and currently is working on the introduction of such a mechanism for electricity from RES.

The State Agency on Energy Efficienc and Energy Saving of Ukraine has already developed and submitted to the Ministry of Energy a draft law "On Amendments to the Law of Ukraine "On Alternative Energy Sources" on Introduction of a Unified System of Circulation of Guarantees of Origin". The goal is to create a single platform for all types of registers of Guarantees of Origin for all energy sources in accordance with the new requirements of the EU RED II Directive. There must be absolute trust in this mechanism. In the SAEE view, recognition of Guarantees of Origin issued in Ukraine by the European partners is of key importance. In general, this mechanism will ensure accelerating Ukraine's economy's decarbonisation process. It will strengthen the national economy's competitiveness, development prospects in the conditions of global green transformation.

In general, despite any obstacles, after the victory of Ukraine, wind and other renewables will play a significant role in the country's further sustainable progress.

2.2. RENEWABLE ENERGY SECTOR

2.2.1 DECREASE IN RENEWABLE ELECTRICITY GENERATION

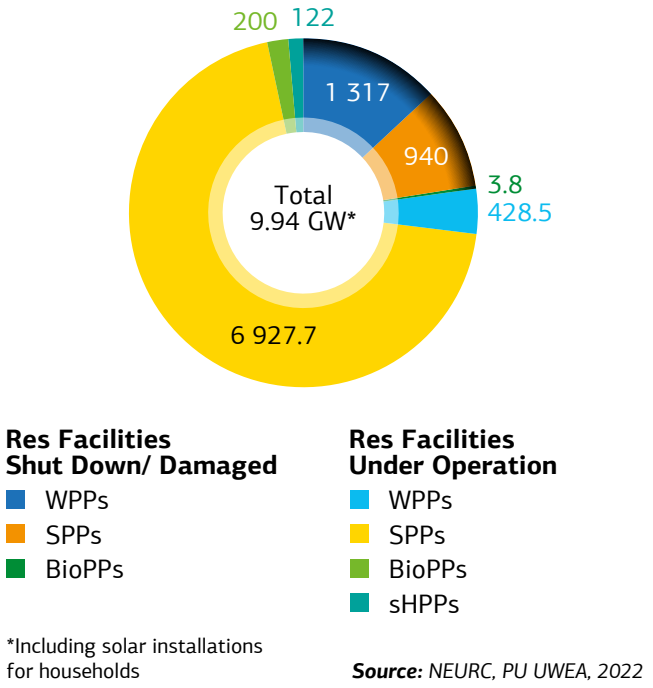
The total capacity of all renewable energy facilities reached 9.65 GW at the end of 2021, including 6.4 GW of industrial SPPs and 1.68 GW of WPPs. The majority of industrial RES power plants *(namely about 60% of total solar plants and more than 85% of total wind farms)* are concentrated in the southern and south-eastern regions of Ukraine – regions that have been or are currently under russian occupation. Thus, about 75% *(~1.3 GW)* of total wind capacity and about 15% *(~1 GW)* of total solar capacity installed in Ukraine have been destroyed, damaged or under occupation. According to various expert estimates, as of the end of December 2022, about 23% of renewable power plants installed in Ukraine have already been affected.

The Bioenergy Association of Ukraine, reported damage to 1.8 MW of bioenergy capacity in Chernihiv. Another BioPPs totalling 2 MW are currently located in the occupied territories of the Donetsk region, namely in Volnovakha and Mariupol.

Fortunately, most sHPPs continue to operate and supply green electricity to the grid. The reduction in small hydropower capacity is insignificant

It is worth emphasizing that real data on losses and damages may be higher; because of the impossibility of physical access to the sites, the level of damage to those RES facilities being under the occupation of russian terrorists is not known for certain.

Figure 2.2.1.1. *Preliminary assessment of damages to the Ukraine's RES sector, MW (as of December 31, 2022)*

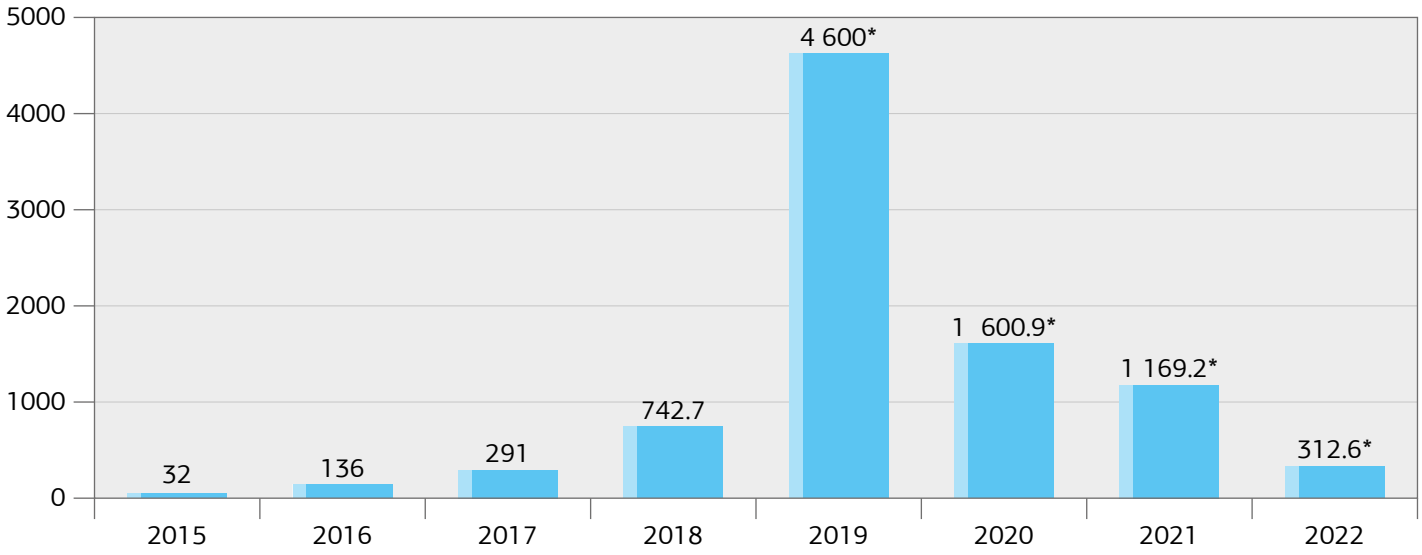


*Including solar installations for households

Source: *NEURC, PU UWEA, 2022*

However, the war did not completely stop the renewable energy deployment in the country. In 2022, 107.6 MW *(excluding SPPs for private households)* were added to the grid, including 81.6 MW of WPPs, 8.8 MW of BioPPs, 15 MW of SPPs and 1.2 MW of

Figure 2.2.1.2. *Annual RES additions in Ukraine, 2015-2022, MW*



*Including solar installations for households

Source: *NEURC, PU UWEA 2022*

sHPPs. Thus, the total installed capacity of renewable energy at the end of 2022 amounted to 9.94 GW.

After the outbreak of the war, the first half of 2022 was marked by a significant curtailment of renewable electricity. According to NPC Ukrenergo, the total volume of RES curtailments in the period between March and May 2022 reached nearly 585 million kWh, which, on average, corresponds to 20% of the potentially possible electricity production: from 23.9% in March to 13.2% in April 2022.

The high levels of RES curtailments in March could be explained by the fact that the country's power system was operating in emergency mode after the outbreak of war. Electricity output in April was slightly stabilized by favourable hydrological conditions. In May 2022, the second flood peak along with an increase in solar irradiation and a decrease in electricity consumption enhanced the rate of curtailed green electricity.

Overall, in 2022, only 9.45 billion kWh of renewable electricity was supplied to Ukraine's grids. The drop in electricity production from RES caused by russia's invasion of Ukraine exceeded 5.6 billion kWh, including more than 4 billion kWh from wind.

Considering 14.85 billion kWh of green electricity assumed by the Forecast Electricity Balance of the IPS of Ukraine for 2022, adopted by the Government in November 2021, the decrease in renewable electricity generation reached nearly 36.7% in 2022.

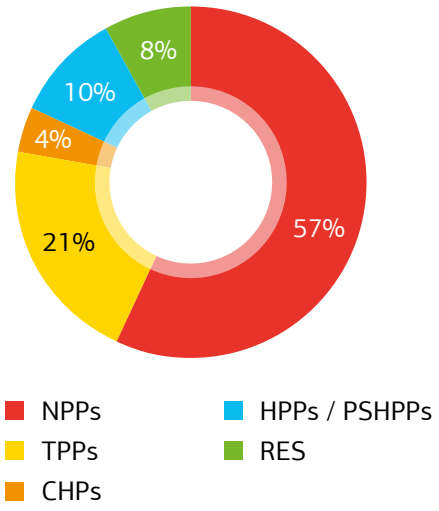
2.2.2. DEEPENING FINANCIAL CRISIS IN THE RES MARKET

The unprovoked war unleashed in Ukraine by russian aggressor has deepened the financial crisis in the country's energy sector. The lack of funds has become an urgent problem for all sectors of the Ukrainian energy system. However, it had a particularly painful effect on the sector of renewable energy. It became a matter of survival.

First of all, this can be explained by top priorities for Ukraine's energy system on the first days of the war: to ensure the stable functioning of base load generation and reliable operation of the Ukrainian power system in an isolated mode from the power systems of russia and Belarus in preparation for synchronisation with the European ENTSO-E. Addressing Renewable Energy sectors' problems did not become the Government's priority.

In particular, the issues related to repayment of the debts to RES producers for 2021 were temporarily postponed, while ongoing settlements with RES producers were first completely suspended, and then the percentage of payments for electricity supplied in 2022 was reduced for the duration of martial law.

Figure 2.2.1.3. *RES share in electricity production, 11 months, 2022*



Source: *NEURC, PU UWEA, 2022*

Starting in March 2022, the Ministry of Energy of Ukraine artificially limited the level of settlements with RES producers. Thus, by its Order No. 103 dated March 4, 2022, the Ministry of Energy of Ukraine completely stopped payments for renewable energy and ordered SE Guaranteed Buyer to use all funds available to repay the debt to SE NNEGC Energoatom and PrJSC NPC Ukrenergo.

Later the same month, by its Order No. 140 dated March 28, 2022 *(which in turn, cancelled the previous Ministry's Order No. 103 dated 04.03.2022),* the Ministry of Energy of Ukraine artificially limited the level of payments to RES producers. In particular, until the beginning of July 2022, the level of settlements with RES producers was reduced to some percentage of the weighted average FiT rate set for 2021. SE Guaranteed Buyer was ordered to allocate the remaining part of the funds from the sold electricity from RES producers to settlements with SE NNEGC Energoatom *(60%)* and NPC Ukrenergo *(40%).* Pay-out percentages were set up for each renewable, in particular: solar – 15%, wind – 16%, small hydro – 35%, biogas – 40% and biomass – 60%.

Public information campaign to solve financia crises in the RES market launched by RES industry associations resulted in Order of Ministry of Energy No. 206 dated June 15, 2022, which entered into force on July 5, 2022 and set new pay-out percentages. Though the imposed level of payments to the RES producers was extremely low, namely 18%, but, on the other hand, SE Guaranteed Buyer was obliged to allocate all funds to settlements with "green" generation exclusively.

Such negative practice of manual control of the electricity market has actually artificially brought the renewable energy industry to bankruptcy. It is worth noting, the RES industry has not challenged such discrimination financial policy before the court because considered it temporary and necessary for the sustainable functioning of the energy sector in the first months of the war. However, this level of settlements was clearly insufficien to maintain financial liquidity, especially for solar and wind companies.

Payments for electricity imbalances are another problem that has significantly exacerbated the plight of RES producers. RES producers have become hostages to Guaranteed Buyer's trading activities. In some months of 2022, unprecedented fines for imbalances reached 30-90% of the cost of supplied electricity and significantly exceeded the cost of imbalances created by RES producers themselves. Such situation resulted in significant losses incurred by the companies in excessive charges billed for electricity imbalance. According to the RES experts' assessments, the total losses exceed UAH 4-5 billion, while the actual losses of RES producers may even be higher.

To a large extent, the reason for such fine was the actions of other market participants, over which RES producers had no leverage, including SE Guaranteed Buyer. According to the amendments to the formula for calculating imbalances, adopted by NEURC Resolution No. 46 dated January 15, 2021, RES producers are obliged to pay for Guaranteed Buyer's lost profit

Meanwhile, the Supreme Court of Ukraine, in its ruling in case No. 640/4069/21 of September 8, 2022, declared illegal the amendments to the formula for calculating imbalances adopted by the NEURC from January 15, 2021, and abolished them. The Court finds that RES producers "should not be liable for the trading activities of Guaranteed Buyer and should have no obligation to reimburse a portion of the cost of setting Guaranteed Buyer electricity imbalance. RES producers' responsibility to Guaranteed Buyer shall be within the limits of the actually incurred costs associated with the settlement of the electricity imbalances, which Guaranteed Buyer has undergone as a result of deviation of the actual hourly volumes of electricity supply from hourly schedule of electricity supply".

Upon considering Guaranteed Buyer's request to clarify the court ruling, the District Administrative Court of Kyiv, in turn, noted that the provisions of NEURC Resolution No. 46 dated January 15, 2021 *(regarding amendments to paragraph 9.3 of Chapter 9 of the Procedure for Purchasing Electricity Generated from Alternative Energy Sources by Guaranteed Buyer)* were recognised as unlawful from the moment of their adoption. According to the court, the above-mentioned amendments had not implied any legal consequences in terms of settlements between Guaranteed Buyer and RES producers.

In addition, only in June 2022 NPC Ukrenergo started settlement with RES producers for curtailments in the current year. As of December 31, 2022, NPC Ukrenergo managed to pay off for the RES curtailments in full only for January-April 2022.

According to Guaranteed Buyer, the ruling of the Supreme Court of Ukraine made for the company impossible to calculate the share of its imbalance settlement, *(since an "old" formula has been recognised as illegal and a "new" one has not been approved yet)* which to be considered for calculating the cost of the service for the increase of the share of electricity generated from RES.[5] Therefore, the calculations of the cost of the service for the increase of the share of RES electricity for August-December 2022 were not carried out.

Unfortunately, no specific measures have been taken to resolve the problem, despite numerous appeals by the UWEA and other RES industry associations to the NEURC to reimburse losses *(overpaid funds)* incurred by RES producers as a result of the Regulator's unlawful decision on the formula for calculating the share of Guaranteed Buyer's imbalance settlement, adopted in 2021. To address the issue, in November 2022, RES producers, members of the RES industry associations, presented a new formula for calculating the share of imbalance settlement considering the interests of all market stakeholders. Unfortunately, the market has not so far received a clear response from the NEURC to its proposal.

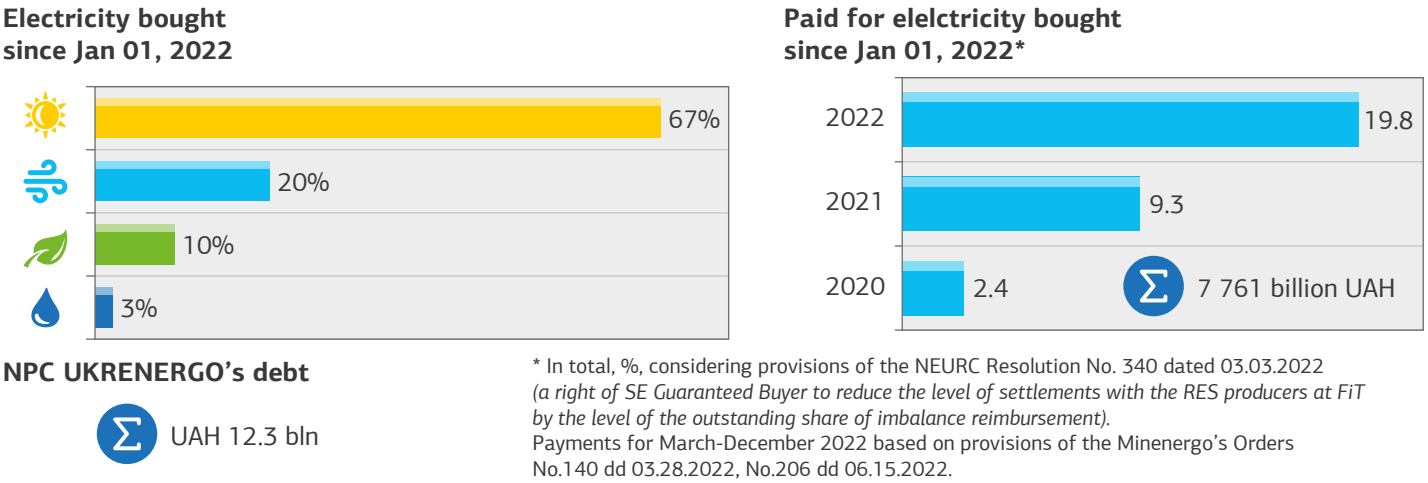
After imposition of martial law in Ukraine, the NEURC stopped the adjustment of the feed-in tariff in accordance with changes in the UAH-EUR exchange between April and September 2022. With its decision, the NEURC violated provisions of the Law of Ukraine

[5] RES producers mainly operate on the bilateral contracts market, selling their output at the Green Tariff directly to Guaranteed Buyer. The latter then re-sells the electricity on the DAM and IDM. The difference between the Green ariff and the price of electricity sold at the AM and IDM is reimbursed to Guaranteed Buyer by the Ukrainian TSO NPC Ukrenergo, as a payment for Guaranteed Buyer's services for the increase of the share of electricity generated from RES.

We will restore.
We will rebuild.
We will win.

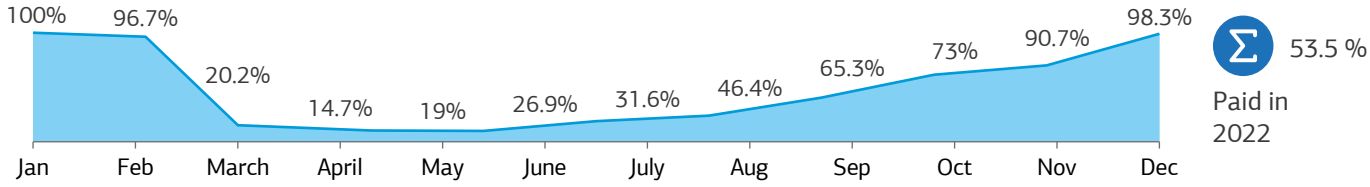
DTEK | DTEK Renewables

Figure 2.2.2. *Level of settlements with RES producers at FiT, as of December 26, 2022*

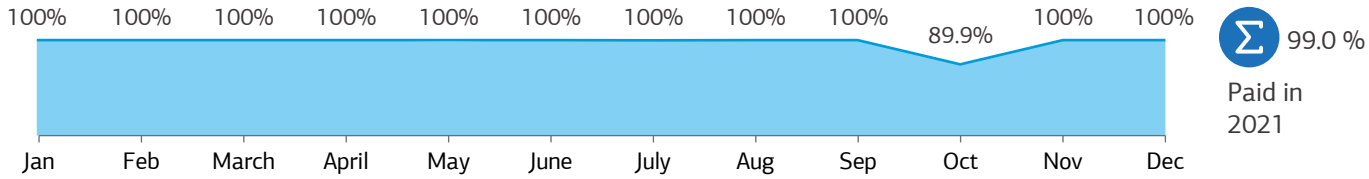


* In total, %, considering provisions of the NEURC Resolution No. 340 dated 03.03.2022 *(a right of SE Guaranteed Buyer to reduce the level of settlements with the RES producers at FiT by the level of the outstanding share of imbalance reimbursement).*
Payments for March-December 2022 based on provisions of the Minenergo's Orders No.140 dd 03.28.2022, No.206 dd 06.15.2022.

Paid for electricity delivered in 2022 *(per month)*



Paid in 2022 for electricity delivered in 2021 *(per month)*



Source: *SE Guaranteed Buyer, 2022*

"On Alternative Energy Sources", which obliges the Regulator to adjust tariffs on a quarterly basis according to the average officia exchange rate of the NBU. This means that after a significant devaluation of hryvnia, the RES sector did not receive about 21% of the funds necessary to repay foreign currency loans.

According to SE Guaranteed Buyer, as of December 26, 2022, the level of settlements with RES producers amounts to 99% for electricity supplied in 2021 and only 53,5% for 2022 deliveries. It should be noted that the calculations for March-December 2022 were made taking into account the provisions of Orders of the Ministry of Energy of Ukraine No. 140 dated March 28, 2022 and No. 206 dated June 15, 2022.

As of December 26, 2022 the debt of NPC Ukrenergo to SE Guaranteed Buyer is estimated at approximately UAH 15.0 billion *(appr. EUR 386 million).* The failure of NPC Ukrenergo to pay for the service for the increase of the share of electricity generated from RES is one the major reasons for such a low level of payment for green electricity.

ГАРАНТОВАНИЙ ПОКУПЕЦЬ
державне підприємство

STATE ENTERPRISE GUARANTEED BUYER

The full-scale military invasion and active hostilities waged by the russian federation on Ukraine became a challenge for both Ukrainian society and energy companies. March 2022 was a crucial period in which the fate of Ukrainian statehood in general and the prospects for the existence of the energy sector and SE Guaranteed Buyer, in particular, were decided.

At the end of February and the beginning of March 2022, the company had quite a few critical problems: the debt to renewable energy producers for 2020-2021 amounted to UAH 11.7 billion *(USD 316.9 million),* the impossibility to predict the amount of electricity purchased from renewable energy producers, as well as sales volumes.

Despite numerous air raid alerts, mass missile attacks, and periodic power outages, the priority was to do everything possible to ensure that the company continued to perform its duties properly and be accountable to its contractors.

In March, the company had to work almost blindly, as it received metering data only three days afte delivery, and not all of it. It was impossible to assess the situation retrospectively.

In such difficul conditions, SE Guaranteed Buyer managed to pay off almost all the debts to renewable energy producers for the previous periods *(100% for 2020 and 99% for 2021).*

At the end of the year, the company increased the level of settlements by 79% *(compared to March 2022).* The rate of settlements with RES producers for electricity supplied in 2022 reached 53.5%. At the same time, since the introduction of martial law in Ukraine, the company has paid exactly what it earned on the market.

The main problem is surplus «green» electricity in the spring and summer, which is sold to the balancing market almost free of charge. Such additional activities of Guaranteed Buyer as electricity export and direct electricity deliveries to the end-users could solve the problem. To date, however, State Enterprise Guaranteed Buyer is not entitled to perform such operations.

Selling electricity under export contracts, in addition to the obvious advantages of the profitabl sale of surpluses, will bring additional bonuses: the price on the European markets is many times higher than on the domestic market, which in turn, will contribute to the profitability of Guaranteed Buyer and, as a result, would improve the settlements with RES producers and ease the burden on the budget and the services of NPC Ukrenergo.

According to forecasts, the additional income of Guaranteed Buyer from export operations will amount to at least UAH 65 million *(USD 1.76 million)* per month. Moreover, as a result of electricity exports, there will be an increase in foreign currency earnings for Ukraine.

In addition to the direct trade effect, the supply of electricity to consumers will considerably raise the stability of the power supply for domestic consumers in the face of the energy terror of the aggressor state.

In parallel with the problems described above, there is a discussion in the energy environment about introducing additional control over the activities of Guaranteed Buyer, including by “green” producers’ representatives.

Transforming the company into a joint-stock company with 100% state ownership of the authorized capital could be the option.

The main advantage of this model is that managers and members of supervisory boards are elected through a transparent process. At the same time, “green” producers will be able to nominate their representatives to the supervisory board of Guaranteed Buyer.

The corporate model of state-owned enterprises has proven to be a positive one in terms of observing principles of transparent activity of state-owned companies, minimizing corruption risks and political instability, and creating an efficien and competitive state-owned sector.

As a joint-stock company, Guaranteed Buyer will be able to become a full-fledged member of the European energy community and independently raise funds for the development and financing of “green” projects.

A separate, but no less important, initiative of the company is the introduction and functioning of the institution of Guarantees of Origin of electricity.

The Guarantee of Origin is the only way to prove that a certain amount of electrical energy was generated from renewable sources, which is recognized by the international community.

Moreover, Ukraine, as a contracting party to the Energy Community, is obliged to introduce Guarantees of Origin of electricity from RES in accordance with the requirements of Directive 2009/28/EC.

It makes sense for Guaranteed Buyer to become one of the entities trading in the Guarantees of Origin.

According to preliminary estimates, Guaranteed Buyer will get an additional source to cover the costs related to fulfilling its financial obligations to RES producers, potentially in the amount of UAH 23–300 million *(USD 623K – 8.1 million).*

In summary, despite the difficul situation in the energy sector, SE Guaranteed Buyer is taking all possible measures to ensure the existence of the current model of support for RES producers, including improving settlements with RES producers, and easing the burden on NPC Ukrenergo.

2.2.3. COMPENSATION FOR DAMAGES CAUSED BY THE RUSSIAN AGGRESSION

The unlawful, full-scale russian invasion has caused unprecedented damage. Multiple infrastructure facilities, housing stock, and other assets of individuals and legal entities in Ukraine have been damaged or destroyed because of the hostilities. According to the Kyiv School of Economics, the amount of direct documented damage to Ukraine's infrastructure has already reached almost USD 138 billion.

From the first days of the full-scale war, the affected parties sought remedies that can help them properly secure their violated rights and interests. However, they found that there were no unified rules on how to document damage, assess the war losses, and recover them from the aggressor state and other responsible parties. Even after almost a year of the great war in Ukraine, the affected persons often do not know how to act properly if their property is/will be destroyed or damaged because of hostilities.

The purpose of this brochure is to help concerned persons understand the key stages of the war damage recording, assessment, and compensation process. The brochure prepared by leading technical, legal and financial experts, offers a clear plan of action in case the assets have been destroyed or damaged by the war. It also allows learning about the already available options and the latest trends in national jurisprudence regarding the recovery of war damages from the aggressor state.

Although some of the legal mechanisms for damage compensation are still under implementation and the process of compensation of damages against the aggressor country can be quite complicated, we are confident that this brochure will be useful for all who are interested in understanding how to record, assess and recover damages caused by the war in Ukraine correctly.

Compensation for damages caused by the russian aggression

The unlawful, full-scale russian invasion has caused unprecedented damage. Multiple infrastructure facilities, housing stock and other assets of individuals and legal entities in Ukraine have been damaged or destroyed because of the hostilities. Direct amount of documented damage to Ukraine's infrastructure has already exceeded hundred billion U.S. Dollars. Although some of the legal mechanisms for damage compensation are still under development and implementation, all affected persons can already take actions that will allow them to effectively protect their violated rights and interests. Below are the key stages and an algorithm of actions that will help recover damages caused by the military russian aggression.

Process stages

Stage 1 – Preparation

1. Forming the damage lists
2. Information gathering
3. Selection of executors
4. Determination of terms

Important:
1. To make a decision on the model of losses valuation

Stage 2 – Acting

1. Fixation of the damage (Technical report)
2. Valuation of losses
3. Recovery of the damage

Important:
1. The results of the work must be agreed with all involved parties

What you need to know...

Legal acts

1. Method of loses valuation
2. Order for determining damage and losses
3. Methods of inspection of buildings
4. Order on the collection, processing, and accounting of information on damaged real estate
5. Survey procedure
6. The procedure for performing urgent work to eliminate the consequences of armed aggression
7. The procedure for dismantling
8. Methods for determining the amount of

Fixation of losses

Organizational stage

- Formation and approval of the working group
- Formation of lists of fixed assets (FA) and commodity values (CV) that have been damaged

Work team information:
- Inventory Commission
- Technical and Independent Experts
- Expert laboratories and organizations

Stage of fixing losses

- Initial visit – Inventory
- Approval of FA and CV lists
- Main visit - Detailed visual inspection and FA and CV condition fixation
- Collection of information and documents

Information:
- Fixing the facts and FA and CV condition
- Collecting testimony about the event
- DO NOT carry out dismantling work

Stage of report preparation

- Analyze of information and documents
- Initial report issuing*
- Conducting additional inspections and examinations (if necessary)
- Final (Technical) report issuing

Information:
* - Initial report is issued in case of additional examinations and tests necessity

Valuation of losses

Collection of information stage

- Analysis of information about the object
- Analysis of information about the consequences of a destructive impact
- Collection of documentation

Information required:
1. Technical report on fixing damages
2. Evidence and facts
3. Other information and documentation

Valuation model definition stage

According to the valuation of losses methodology, there are three model options:
- Determining the amount of real losses;
- Determination of lost profits;
- Determination of expenses necessary for the restoration of property and property rights.

Information:
1. The choice of model affects the scope and structure of works. It is advisable to make a decision on the model of valuation of losses before fixing the damage

Valuation stage

- On-site inspection and inspection of the facility
- Detailed description of the property
- Making calculations
- Forming a conclusion

Information:
1. The valuation must be carried out in accordance with the Methodology of valuation of losses

Recovery of demages

Preparatory stage

- Collection of evidence
- Definition of the method of protection
- Determination of the place of protection

Information required:
1. Technical report on fixing damages
2. Valuation report/conclusion
3. Evidence and facts

Submission stage

- Preparation and submission of a procedural document to a judicial/ administrative institution

Information:
1. National and foreign courts
2. International judicial institutions (ECHR, ICC)
3. Special compensation commissions

Executive stage

- Initiation of executive proceedings in Ukraine
- Recognition and enforcement of court decisions in foreign jurisdictions

Information:
1. Ukraine has already satisfied dozens of claims for recovery of losses against the rf
2. Special commissions for damages are still only being formed in Ukraine and at the international level

Fixation of losses is carried out by independent inspection bodies with technical experts onboard.
Valuation of damages is carried out by subjects of valuation activity in accordance with the current legislation.
Legal support is provided by lawyers and other qualified legal advisers in Ukraine.

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ASSET EXPERTISE

2.3. WIND POWER SECTOR

2.3.1. COMMISSIONING OF WIND POWER PLANTS IN WARTIME

The war in Ukraine is devastating as any war is. It's difficul to develop any sector of economy during wartime. Moreover, before the war the Ukrainian wind power market had already faced a number of challenges, including financial and regulatory problems. Unfortunately, the war only exacerbated these problems.

According to the UWEA's prognosis made at the end of 2021, in 2022 Ukraine assumed at least 1,000 MW of new wind power capacity. In addition, about 4,000 MW of wind power capacity has already received building permits.

The war put wind projects that were already in development and construction phase on hold. As of the end of 2021, the lion's share of infrastructure works at some wind project sites were completed and wind turbines mounting was planned for the first half of 2022. Wind turbines were purchased and stored in a warehouse, and in some cases, they were even delivered to the construction sites. First of all, this concerns at least 300 MW of wind turbines ready for installation at wind farm sites.

Today, Ukrainian laws make incentives for electricity generation at wind power plants available to business entities that intend to produce electricity and have commissioned their power stations within 3 years after the conclusion of power purchase agreements based on the feed-in tariff If the agreement concerned was concluded before December 31, 2019, technical specifications for the power station to be grid-connected were valid until December 31, 2022.

Because of the armed aggression of the russian federation, most domestic and international RES investors were unable to complete their wind power plant construction projects in 2022. These could potentially generate at least 1 billion kWh of green energy annually, which is vital for maintaining Ukraine's energy security in the context of the continuous shelling of critical infrastructure facilities.

81,6 MW of wind were added in 2022 and another around 30 MW constructed in 2022 are scheduled for commissioning in Q1 2023. That might not seem like large figures to some. But with the ruthless and bloody war that russia unleashed in Ukraine this is a feat achieved by Ukraine's wind power engineers. The construction and commissioning of new wind power capacities during these challenging times is vivid proof of the viability of wind energy technologies.

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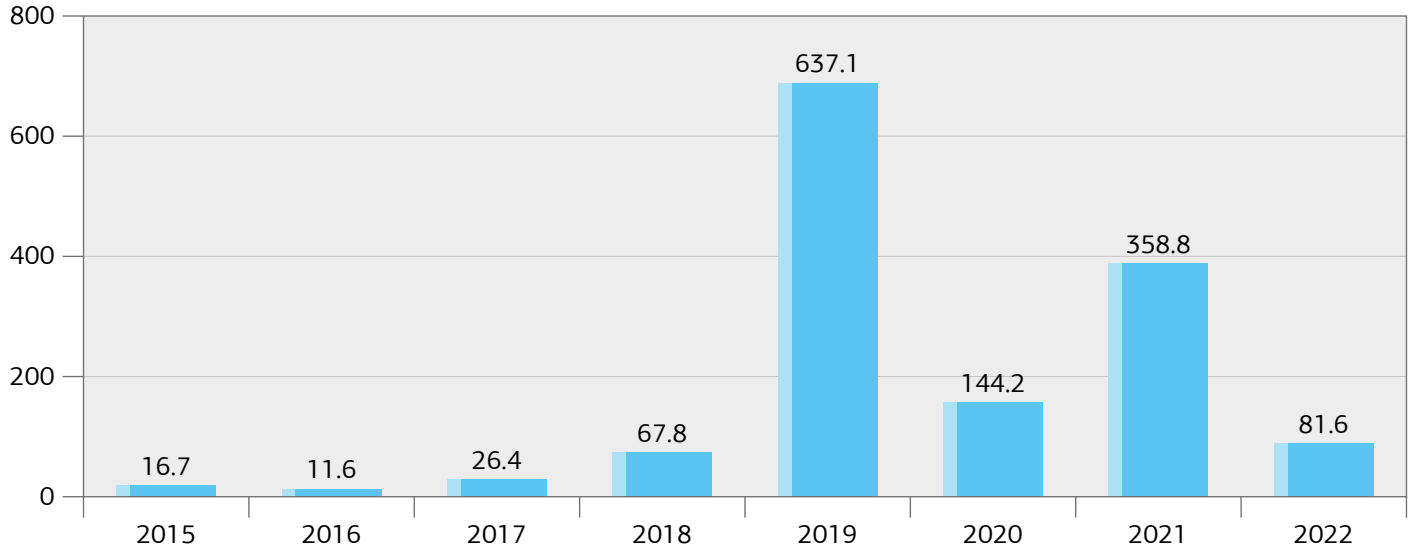
Figure 2.3.1.1. *Annual wind power additions, 2015–2022, MW*



Source: *NEURC, PU UWEA, 2022*

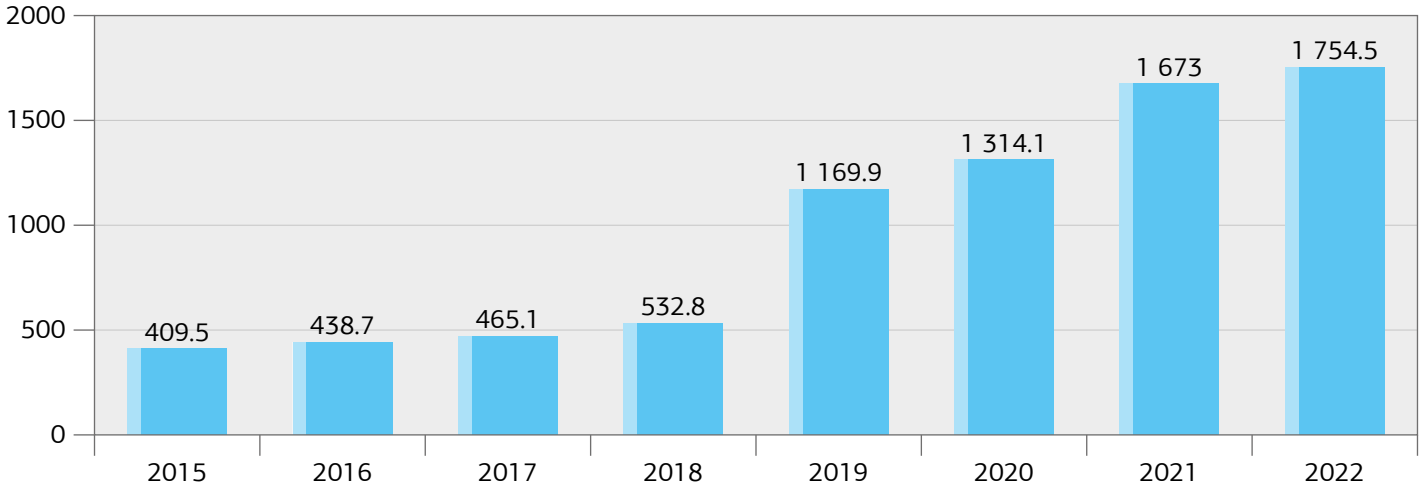
It's worth noting, that Ukraine's existing feed-in tariff for new wind power plants keeps electricity prices at or below market levels, e.g. the feed-in tariff for wind energy projects commissioned this year is 8.82 eurocents per kWh. On the other hand, the weighted average price of electricity on the day-ahead market was UAH 3.44 per kWh *(~9.2 eurocents per kWh) in Q4 2022.*

Back in the autumn of 2022, the Ministry of Energy drafted a bill which is designed to address the problem above by extending the due date for the construction and commissioning of wind power plants for the sale of electricity at the feed-in tariff by two years. However, at the time of writing this report, the draft law is still pending debate by the relevant Verkhovna Rada committees. It should be noted that the timely adoption of this law would send a positive signal to the RES market.

Despite wartime, the construction of wind farms keeps going, though at a slow pace. Here, of course, we are talking about regions where no active hostilities are taking place.

Wind energy remained second, after solar energy, in the national RES sector in terms of installed capacities. With a total installed capacity of **1,754.5 MW,** the share of wind accounts for 17,7% of the total RES capacity in Ukraine.

Figure 2.3.1.2. *Installed wind capacity, mainland Ukraine, 2015–2022, MW*



Source: *NEURC, PU UWEA, 2022*

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2.3.2. GUARANTEES OF ORIGIN

Ukrainian legislation on the guarantees of origin for electricity

In November 2022, a special date was passed in the legislation of Ukraine – a decade since the Law of Ukraine "On Electricity" was amended with the regulation on the guarantees of origin for electricity, a document confirming that a share or a certain amount of electricity is produced from alternative energy sources.

Later, in 2013, guarantees of origin appeared in the Law of Ukraine "On Alternative Energy Sources".

It is crucial that the mechanism for confirming the origin of electricity and issuing relevant guarantees has not been implemented in practice and no guarantee of origin has been issued. Therefore, let us consider whether guarantees of origin for electricity are necessary in Ukraine and let's try to predict whether the next legislative anniversary will be more effective.

In general, guarantees of origin are a tool that allows responsible and conscious end consumers to confirm that they consume green electricity, production of which does not add carbon emissions to the atmosphere and does not negatively affect the environment. Such a tool is necessary because electricity has the same physical properties and it is impossible to establish otherwise that it is produced from renewable sources and not from coal, gas, gas-oil, large hydro or nuclear generation.

This tool is actively used in the EU countries and therefore its practical implementation is an important stage of cooperation with these countries in export issues, approximation of electricity market regulation to the European one and, in general, development of renewable energy regulation in Ukraine.

Implementation of the mechanism for guarantees of origin for electricity

Although the process of implementation is well-known and has many examples in other countries, it is associated in each country with institutional capacity building – creation of competent and authorised institutions that can properly establish processes necessary for the implementation of the guarantees of origin.

Generally, the process of launching the guarantees of origin inside the country can be divided into two stages:

- organisation of the process within the country, which requires establishment of regulation, creation of necessary institutions and software, establishment of effective processes for issuing and circulation of guarantees of origin for electricity;
- organisation of the process at the international level, which also has two components – establishment of processes for the recognition and use of foreign guarantees of origin within the country, and recognition of national guarantees of origin by third countries, that is, establishment of processes that allow foreign consumers to use the tool created within the country.

The Energy Community Secretariat actively assists Ukraine and other Contracting Parties with these tasks. Thus, Secretariat organised the development of electronic registers for guarantees of origin for renewable electricity for each Contracting Party. Joining this project allows organising the issuance of guarantees of origin within the Contracting Party and ensures recognition of such guarantees at the regional level among the Contracting Parties participating in the project. Participation is voluntary and requires the conclusion of an agreement between the issuing authority of the Contracting Party and the service provider *(register developer)* on the launch of a national electronic register for guarantees of origin for energy from renewable sources. The deadline for signing the agreement is June 2023, until then the service provider will keep the national registers and all configuration in standby mode. Georgia became the first Contracting Party to conclude the agreement and gain access to the national registry in December 2022.

Over the past year, implementation of the mechanism of guarantees of origin has also been actively discussed in Ukraine. This is due to the growing interest from the renewable generation, which is increasingly focused on participation in market processes, as the potential opportunity to fall under the feed-in tariff mechanism remained with a very limited number of developers, but even generation that received feed-in tariff, due to the imperfection of its implementation, is actively considering entering the electricity market, including the international one. And the guarantees of origin should be the mechanism for identifying advantages of renewable electricity in these markets.

However, during the discussion of this issue in Ukraine, the problem arose of determining the main "player" – a person responsible for issuing guarantees of origin. Discussions have started with the State Agency on Energy Efficienc and Energy Saving of Ukraine, as this institution is specified in the existing legislation of 2013 as the one that should issue guarantees of origin. In November 2022, the SAEE noted that it continued to improve legislation to create a single platform of registers for guarantees of origin for all types of energy from renewable sources[6] *(namely for electricity, biomethane, and potentially green hydrogen)* without specifying, however, which documents the agency is working on.

In its turn, the Ministry of Energy of Ukraine has developed a draft law in which the transmission system operator *(NPC Ukrenergo)* is authorized for issuing guarantees of origin for renewable electricity.

While discussing the draft law, the NEURC reported that it had proposed its conceptual approach to the Ministry of Energy, according to which the functions of administering the system would be fulfilled by the Regulator. On September 6, 2022, a meeting on that issue was held at the initiative of the NEURC and with the participation of the Ministry of Energy, NPC Ukrenergo, SE Guaranteed Buyer, JSC "Market operator", where it was agreed to jointly finalise the draft law necessary for the effective implementation of the system of guarantees of origin in Ukraine in a short time, for its further submission to the Cabinet of Ministers of Ukraine and the Parliament.[7]

Legislative initiatives on the implementation of guarantees of origin in Ukraine

The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on Implementation of Register of Issuance, Use and Cancellation of the Guarantee of Origin for Electricity Produced from Renewable Energy Sources" *(registration No. 9012)*[8] was registered in the Parliament on February 13, 2023 *(the Draft Law)*. The Draft Law contains the following scheme for confirming, issuing, circulating, and cancelling guarantees of origin for electricity:

- a guarantee of origin is an electronic document confirming that electricity is produced from renewable energy sources. Guarantees of origin are formed in the register;
- the register for guarantees of origin is an electronic system for keeping records of information on the issuance, use, and cancellation of guarantees of origin, as well as providing information on them;
- a system of issuing, using, and cancelling guarantees of origin should be established, its functioning is ensured by the NEURC;
- producers of electricity from RES and consumers *(including energy cooperatives and private households)* that have installed generating units for production of electricity from RES have the right to obtain a guarantee of origin;
- a guarantee of origin is issued by the NEURC in accordance with the procedure adopted by the NEURC under the approval of the Ministry of Energy;
- a guarantee of origin is valid for 12 months from the date of electricity generation. Guarantee of origin expires prematurely, if the electricity facility or consumer's generating unit is excluded from the register of guarantees of origin;
- a guarantee of origin is granted free of charge based on information submitted by the commercial metering administrator or an application for obtaining a guarantee of origin;

[6] https://www.kmu.gov.ua/news/garantiyi-pohodzhennya-zelenoyi-energiyi-shche-odin-instrument-pidtrimki-nizkovuglecevogo-rozvitku-ukrayini

[7] https://www.nerc.gov.ua/news/zaprovadzhennya-sistemi-garantij-pohodzhennya-energiyi-neobhidnij-krok-dlya-pidtrimki-rozvitku-vidnovlyuvanoyi-energetiki

[8] https://itd.rada.gov.ua/billInfo/Bills/Card/41361 https://itd.rada.gov.ua/billInfo/Bills/Card/41361 https://itd.rada.gov.ua/billInfo/Bills/Card/41361

- producers and consumers *(including energy cooperatives and private households)* may transfer *(including sell)* a guarantee of origin during its validity period;
- a guarantee of origin is used to disclose information to end-users of electricity about sources of energy in the overall structure of the balance of electricity purchased by the electricity supplier and/or generated at its electricity units;
- if a guarantee of origin was sold/transferred separately from electricity produced from RES, such electricity is not identified as energy produced from RES;
- guarantees of origin for electricity produced under the feed-in tariff or produced by consumers *(including energy cooperatives)* at installations with an installed capacity of less than 150 kW are automatically transferred to the Guaranteed Buyer. Further, Guaranteed Buyer may transfer guarantees of origin to buyers of renewable electricity under bilateral agreements and is obliged to auction off guarantees of origin that have not been transferred under bilateral agreements;
- guarantees of origin for electricity produced by private households' generating facilities in the amount sold to a universal service provider under the feed-in tariff are automatically transferred to the relevant USP. The USP is obliged to sell such guarantees of origin at auction;
- the initial sale of guarantees of origin by the Guaranteed Buyer and the USP is carried out at electronic auctions organised by the market operator. It is important that the proceeds from the sale must be used to cover Guaranteed Buyer's/USP's expenses for the performance of special duties for the purchase of electricity at the feed-in tariff or providing services to ensure an increase in the share of electricity production from alternative energy sources, which expands the sources of covering the costs of paying the feed-in tariff
- recognition of guarantees of origin issued by foreign countries, as well as the procedure for using Ukrainian guarantees of origin in foreign countries, should be determined in accordance with the international agreement on interaction of registers concluded between the NEURC and the holder of the foreign register;
- the NEURC's main tasks were supplemented by ensuring the integration of the Ukrainian register of guarantees of origin into the regional register of the Energy Community and facilitating Ukraine's full membership in the Association of Issuing Bodies. In case NEURC does not recognise a guarantee of origin issued in a state that is a Contracting Party to the Energy Community, the NEURC shall notify the Energy Community Secretariat.

It is worth noting that currently, the Draft Law is generally in line with the regulation of guarantees of origin provided for in Directive *(EU)* 2018/2001. At the same time, many essential and procedural issues have been transferred to the level of bylaws to be approved by the NEURC.

Thus, we have positive developments in the issue of developing regulation on guarantees of origin for electricity from RES in Ukraine. However, it is important that the deadline for Ukraine, as a Contracting Party to the Energy Community, to implement Directive *(EU)* 2018/2001 expired on December 31, 2022. Thus, this international obligation was not fulfilled in time. Although Ukraine has excusable circumstances, Ukraine declares an active path to green reconstruction, decarbonisation, and green transition. This approach should stimulate acceleration of the adoption of legislation on guarantees of origin and the launch of a mechanism for issuing and circulating guarantees of origin for electricity produced from renewable energy sources.

Ministry of Energy of Ukraine

THE STATUS OF RENEWABLE ELECTRICITY AND PLANS FOR ITS FURTHER DEVELOPMENT

The rapid renewable electricity growth in recent years has been driven by the "green" tariff *(Feed-in tariff* model introduced in Ukraine. As of the beginning of 2022, the total installed renewable capacity exceeded 9.5 GW *(excluding RES capacities located in the territories temporarily occupied by russia before February 24, 2022).* The total investment in the RES industry has reached more than USD 12 billion.

In 2021, Ukraine's share of energy from renewable sources in the power sector reached 13.8% *(including large HPPs).* Ukraine has exceeded the strategic target of 11% of renewable energy in the power sector in 2020, set by the National Renewable Energy Action Plan for the period up to 2020, approved by Resolution of Cabinet of Ministers of Ukraine No. 902-p. dated October 1, 2014.

After signing the Memorandum of Understanding aimed at resolving problematic issues in the renewable energy sector, on June 10, 2020, the RES industry remained relatively stable, despite a number of technical and economic problems caused by the rapid increase in generation with unpredictable output schedule, in 2019-2020. The level of settlements with electricity producers under the FiT was quite high. By raising loans from state banks and issuing "green" bonds by NPC Ukrenergo, the state fully repaid debts accumulated in 2020, with gradually repaying debt for 2021 *(99% as of the end of 2021).*

The full-scale military aggression by the russian federation, launched on February 24, 2022, has significantly affected the whole energy system of Ukraine including the renewable energy sector.

Currently, about a quarter of the installed RES capacities are located in the occupied territories. The situation is particularly difficul in the wind power sector, 80% of wind generation capacity are located in the occupied territories of the Kherson and Zaporizhzhia regions.

RES facilities in the occupied territories have almost stopped their operations because of the damage to transmission substations and power lines, shelling of personnel, and hindering of access to the sites.

There are registered cases of theft of equipment by invaders from the seized RES power plants. "Green" facilities have been devastated by russian shelling. In particular, several wind turbines have been burned down as a result of projectiles hitting them, solar and biopower plants have been destroyed.

As a result, the volume of "green" electricity generation has decreased almost twice.

Since the beginning of the full-scale military aggression, electricity consumption in Ukraine has dropped significantl . Thus, in 2022, electricity consumption decreased by ~30% compared to 2021. In addition, due to the hostilities, the level of payment settlements in the electricity market has dramatically dropped.

This, in turn, has adversely affected NPC Ukrenergo's income and its ability to pay in full for the service of ensuring the share of electricity production from alternative sources provided by SE Guaranteed Buyer to cover feed-in tariff payments for RES producers.

To ensure the functioning of RES producers, the Ministry of Energy of Ukraine issued Orders No. 140 dated March 28, 2022 and No. 206 dated June 15, 2022, which determined the percentage of the weighted average feed-in tariffs for 2021 *(depending on the type of alternative energy source)* for settlements with producers under the feed-in tariff. As of the end of 2022, the level of settlements between SE Guaranteed Buyer and RES producers under the feed-in tariff in 2022 amounted to 53.5%

The allocation algorithm introduced by Orders of the Ministry of Energy of Ukraine No. 140 dated March 28, 2022 and No. 206 dated June 15, 2022 is a temporary and forced step for the period of martial law in Ukraine. It is worth noting, that such RES electricity support mechanism as feed-in tariff *(FiT)*, as well as the state's guarantees of its invariability, as set out in Articles 91–94 of the Law of Ukraine "On Alternative Energy Sources", has not been changed and is still in force.

The Ministry of Energy of Ukraine continues to work to increase payments to RES producers under the FiT, taking into account the state's ability to fulfi its obligations during the period of martial law, the need to maintain investor confidence and ensure the sustainable functioning of the renewable electricity sector.

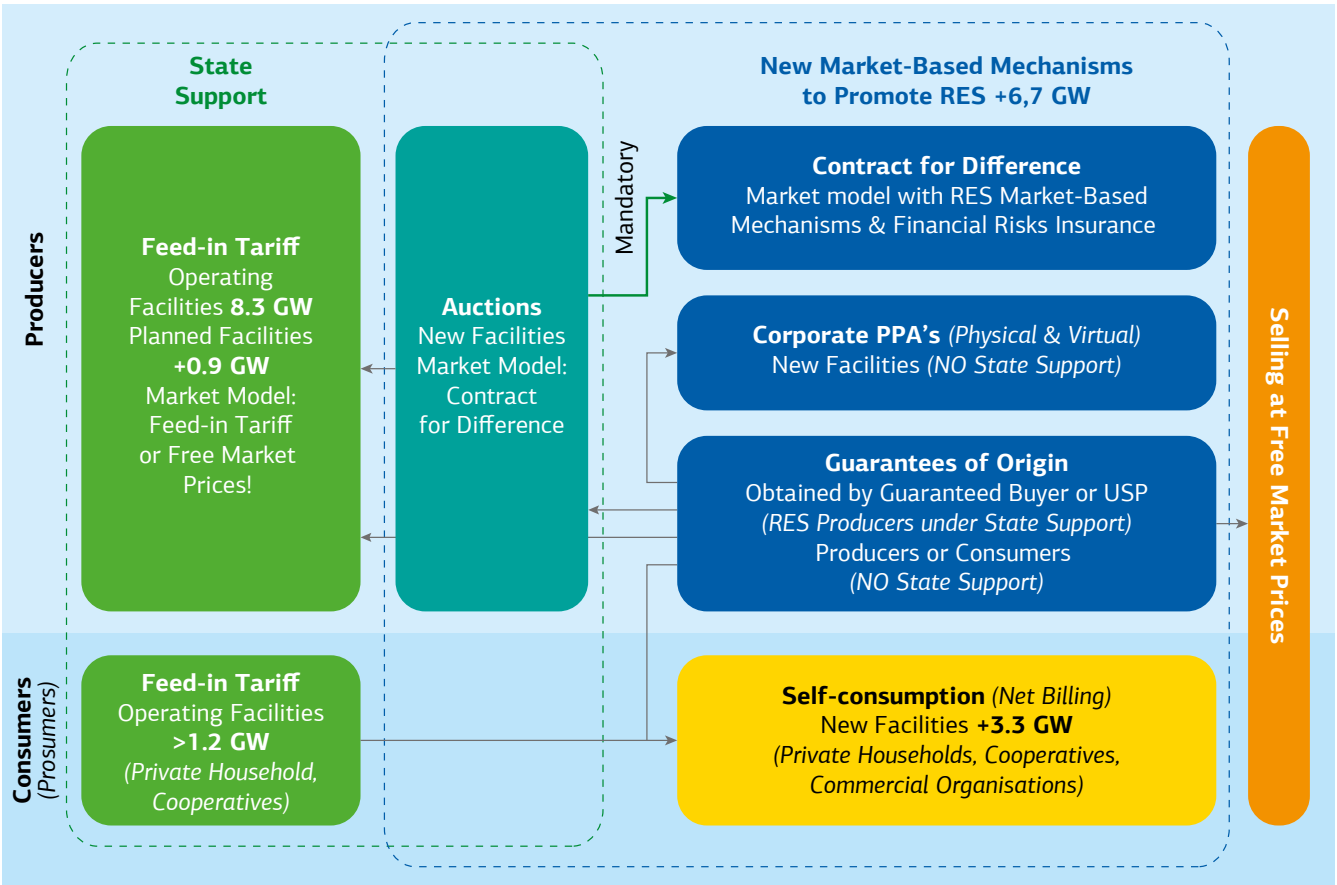
As for the future, Ukraine, like the rest of Europe, relies on renewable energy sources to shape its future energy mix. According to the draft National Renewable Energy Action Plan for the period up to 2030, the draft National Energy Strategy of Ukraine up to 2050 and the National Economy Strategy of Ukraine for the period up to 2030, the RES share in electricity production should reach 25% in 2030, which is a twice increase compared to 2021. To reach this target, about USD 10 billion of private investment should be raised.

The Ministry of Energy, together with the State Agency on Energy Efficienc and Energy Saving, has developed a draft Order of the Cabinet of Ministers of Ukraine "On the National Renewable Energy Action Plan for the period up to 2030", to approve the above-mentioned NREAP as well as an action plan for its implementation. In 2023, the draft Order will be submitted to the Government for consideration in accordance with the established procedure.

It should be noted that NREAP 2030 envisages an increase in electricity production from RES primarily through the development of wind power. Thus, it is planned to more than triple the volume of electricity generated from the wind, from 3.8 billion kWh in 2021 to 15.8 billion kWh in 2030. To this end, 3.7 GW of new wind capacities are planned to be added, of which 0.3 GW are offshore WPPs, and commissioning is scheduled in 2028.

The further renewable energy development in Ukraine, when the war ends, is planned to be based on competitive and market-based solutions by creating conditions for raising private investment.

Functioning of RES electricity sector



1. Implementation of RES facilities on market terms including Corporate PPA

The Verkhovna Rada of Ukraine adopted Law of Ukraine No. 2479-IX dated June 29, 2022, "On the Peculiarities of Regulating Relations in the Natural Gas Market and in the Field of Heat Supply During Martial Law and the Subsequent Restoration of Their Functioning", which has introduced a tool for concluding a virtual corporate PPA *(Contract for difference)* and enabled RES producers with state support and being members of the balancing group of the guaranteed buyer to leave the balancing group and sell electricity on the market at free prices without losing their eligibility for FiT *(the ability to return to the balancing group of the guaranteed buyer).*

The Ministry of Energy of Ukraine has also drafte a Law of Ukraine "On Amendments to Certain Laws of Ukraine on Stimulating the Production of Electricity from Alternative Energy Sources on a Market Basis" aimed, in particular, at removing regulatory barriers to the conclusion of direct power purchase agreements between RES producers and other market participants *(Corporate PPAs).* The Draft Law was submitted to the Government for consideration in accordance with the established procedure.

2. Renewable Energy Support Quota Distribution Auctions

The Cabinet of Ministers of Ukraine approved Resolution by the Ministry of Energy No. 889 dated August 2, 2022 "On Introducing Amendments to Resolutions of the Cabinet of Ministers of Ukraine No. 420 dated May 23, 2018, and No. 1175 dated December 27, 2019" to improve the procedure for conducting renewable energy support quota distribution auctions in line with Law of Ukraine No. 810-IX.

In addition, the Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding Stimulation of Electricity Production from Alternative Energy Sources on a Market Basis" provides for holding auctions mandatory based on the CfD model. Such Contracts for difference are to be concluded between the auction winner and Guaranteed Buyer. Auctions are expected to be launched after the end of martial law.

3. Implementing Guarantees of Origin of Renewable Electricity

The Ministry of Energy of Ukraine has developed the Draft Law "On Amendments to Certain Laws of Ukraine Regarding the Introduction of the Register of Issuance, Use and Cancellation of the Guarantee of Origin of Electricity Produced from Renewable Energy Sources" aimed at creating an effective mechanism for issuing, using and cancelling GO for electricity generated from RES to facilitate the commissioning of new renewable energy facilities on a market-basis. The Draft Law was submitted to the Government for consideration in accordance with the established procedure.[9]

According to the Draft Law, the National Energy and Utilities Regulatory Commission *(Regulator)* is authorized for issuing GO for renewable electricity.

It should be noted that the transmission system operator creates and administers the relevant registers and databases in the electricity market, in particular, regarding the RES facilities *(their location, type, installed capacity, etc.),* and records the actual volumes of electricity supplied by such producers, i.e., the information based on which guarantees of origin are issued. Therefore, the Draft Law stipulates that the commercial metering administrator will ensure the maintenance of the technical component of the register.

At the same time, the Draft Law defines the market operator as the institution responsible for bidding for guarantees of origin of electricity from renewables.

The Draft Law stipulates that inspections of RES electricity facilities will be carried out by the Regulator, while inspections of consumer's generating facilities will be carried out by a commission consisting of the distribution system operator and the State Agency for Energy and Energy Supervision.

The Draft Law also stipulates that the holder of the guarantees of origin for electricity generated at the feed-in tariff or a winner of the future green auctions will be a guaranteed buyer (for producers) or a universal service provider *(for consumers).*

It is envisaged that in the future the Ukrainian register of GO should be integrated into the regional register of the Energy Community, and Ukraine should become a full member of the Association of Issuing Bodies.

4. Completion of the Construction of Renewable Electricity Generating Facilities at the "Green" Tariff Suspended Due to the Full-Scal Aggression of russian federation

On October 8, 2022 the Cabinet of Ministers of Ukraine approved the Draft Law of Ukraine «On Introduction of Amendments to Certain Laws of Ukraine Regarding the Extension of the Term of

[9] The Verkhovna Rada of Ukraine registered the draft law on ebruary 13, 2023, registration No. 9012

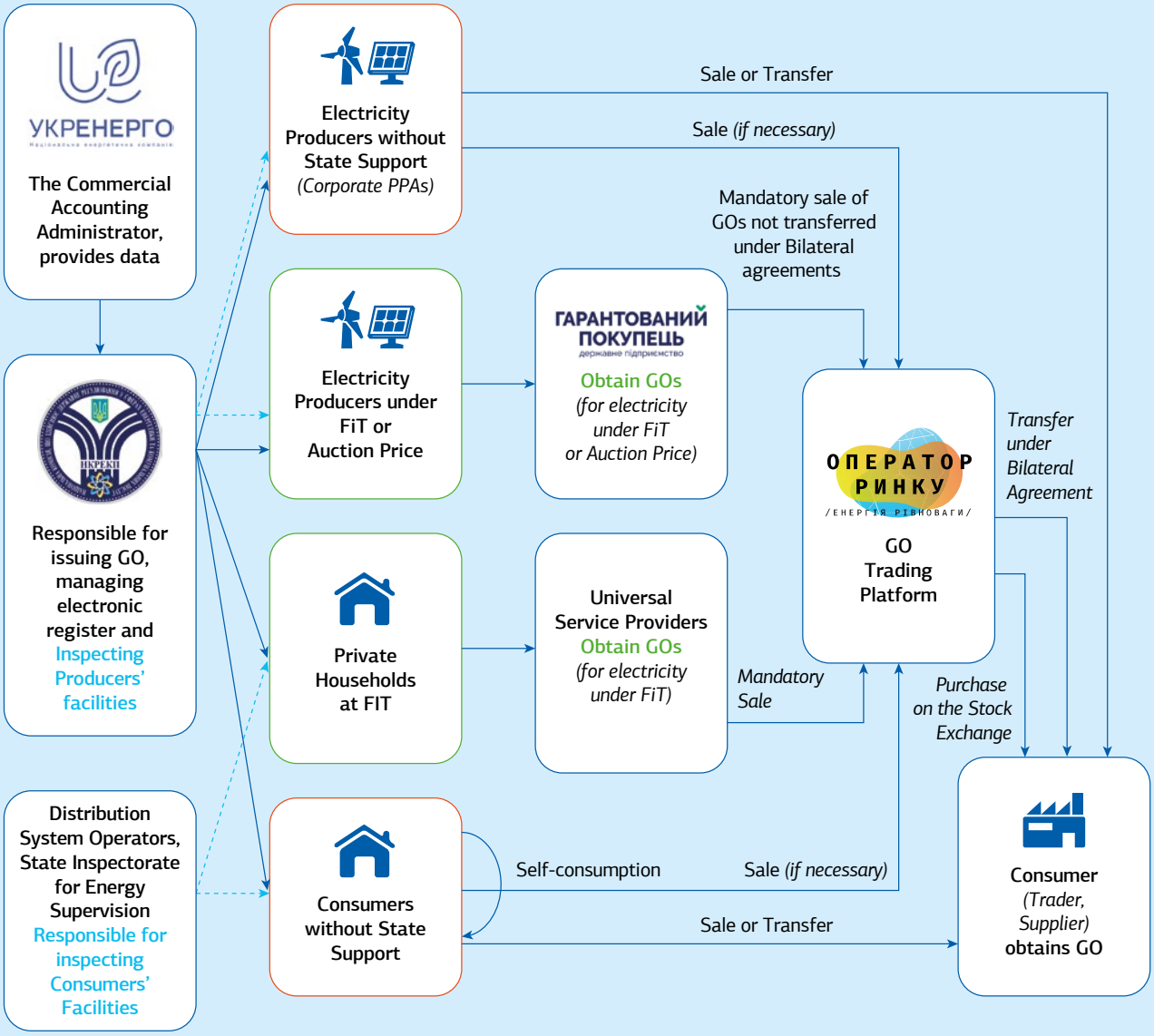
Guarantee of Origin Mechanism

Register of Issuance, Use and Cancellation of the Guarantee of Origin of Electricity from RES

The need to introduce guarantees of origin of electricity from renewable sources is an urgent market requirement.

Renewable Energy Guarantee of Origin will

- make Buyers interested in purchasing “green” electricity;
- reduce the TSO’s expenses to fulfil PSO to ensure an increase of the share of electricity generation from alternative sources;
- stimulate the implementation of new RES projects under market conditions *(without state support);*
- reduce exporters’ CBAM fees for future exports of goods to the EU *(to leave funds inside Ukraine).*
- The implementation of GOs is in line with Ukraine's commitments to implement European legislation *(to promote European integration processes).*



Commissioning Renewable Energy Facilities under the Electricity Purchase and Sale Agreement at the “Green” Tariff Concluded Before December 31, 2019”. Draft Law No. 8191 registered in the Verkhovna Rada of Ukraine on November 8, 2022, that create conditions for the completion of the construction of RES projects, primarily wind ones, has been suspended due to the full-scale aggression unleashed by the russian federation against Ukraine, through 2 years extension of the terms of a plant commissioning and the validity of technical conditions for grid connections.

5. Distributed Generation

The Ministry of Energy of Ukraine drafted Law "On Introducing Amendments to Certain Laws of Ukraine Regarding Improving the Conditions for Supporting the Production of Electricity from the Alternative Energy Sources by the Consumer's Electricity Generating Installations" aimed at ensuring stable development of generating installations of consumers. The Draft Law envisages the Net Billing support model to be used by households, energy cooperatives, and non-household consumers. The Draft Law was submitted to the Government for consideration in accordance with the established procedure.[10]

6. Energy Storage Systems

Ensuring the effective integration of renewable energy facilities into the power grid requires the construction of new balancing capacities. According to the draft NREAP, Ukraine will need **1,250 MW of new highly manoeuvrable capacity** with the possibility of quick start-up and **640 MW of energy storage systems.** Private investment is expected to reach ~ **USD 2.5 billion.**

On February 15, 2022 Verkhovna Rada of Ukraine adopted Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding Energy Storage Systems" No. 2046-IX which provides for the regulation of the legal, economic, and organisational framework for the functioning of energy storage systems in the electricity market.

To implement the provisions of the Law, the NEURC adopted a number of amendments to existing regulation to ensure the implementation and operation of energy storage facilities in the electricity market.

7. Offshore ind

It is also worth noting that in 2023 Ministry of Energy of Ukraine plans to set up a Working Group and start drafting the legislation to regulate the legal, economic, and organisational framework for the development of offshore wind in Ukraine

[10] The Verkhovna Rada of Ukraine registered the draft law on ebruary 13, 2023, registration No. 9011

2.3.3. UKRAINE'S POST-WAR ENERGY RECOVERY

Ukraine's European integration will become a major factor to determine the direction of the post-war recovery of Ukraine's energy sector. Despite the war, Ukraine made significant progress towards the European integration. The synchronisation of the electricity network of Ukraine with the Continental European power system was the biggest breakthrough. The country's course towards the EU will require greening its national power sector in line with the requirements of the Fourth Energy package of the EU legislation "Clean Energy for All Europeans" *(entered into force in 2019),* aimed at transitioning from fossil fuels to cleaner energy and fulfilling the EU's Paris Agreement commitments to reduce greenhouse gas emissions. The green transition, which is already being implemented in the EU, should become the basis for rebuilding Ukraine's energy sector.

In July 2022 at the conference in Lugano, Ukraine presented a powerful and comprehensive plan for recovery of the country. Ukraine's Recovery Plan aimed at accelerating sustainable economic growth is designed for 10 years till 2032 and identifies 15 National Programs to achieve key results including a list of measures for the post-war recovery and development of Ukraine, proposals for priority reforms and strategic initiatives, and a list of regulations that need to be adopted and implemented for the effective recovery and development of Ukraine in wartime and post-war periods.

Ukraine Recovery Vision: "Strong European Ukraine is a magnet for international investments".

The main goal of the Recovery Plan is not just to rebuild the destroyed or damaged facilities, but to fundamentally transform the state into a new European country based on the principles of a green economy. Ukraine is to make a huge step from a transitional to a developing economy by 2032.

The energy sector is one of the important strategic sectors of reconstruction. Destruction of critical infrastructure, occupation, and energy terrorism brought significant negative changes to the country's energy sector, including the renewable energy sector, which before the war was slower than the country needed, but developed.

The National Program "Energy Independence and Green Deal" implementation of which is estimated at USD 130 billion comprises several targeted projects addressing critical issues such as decarbonisation, optimisation of the energy mix and balancing the power system, energy efficien . Priorities are given to the initiatives which meet the requirements of the European Green Deal, contribute to the fulfilment of Ukraine's international energy obligations, increase the share of carbon-neutral energy resources in the energy mix.

"We have to become, and we will become, as there is no other option, a leader in building modern green energy. This will allow us to create a decentralized energy system that cannot be destroyed by anything, any missile strikes. Today, everyone can see, it is dangerous when cities depend on several large thermal or power plants. A modern city needs decentralized sources of energy. Only green energy can really provide this," President of Ukraine **Volodymyr Zelenskyy.**

KEY projects to deploy renewables:

- 5-10 GW wind and solar;
- Local manufacture of RES equipment;
- 3.5 GW HPPs / PSHPPs;
- 30+ GW RES for H2 production;
- ~15 GW electrolyzer capacity and H_2 infrastructure;
- biofuels production *(bioethanol, biodiesel, biogas/ biomethane)*
- 1.5-2 GW peak power capacities and 0.7-1 GW batteries;
- smart grids;
- expanding interconnectors with ENTSO-E ~7 GW

In April 2022, the President of Ukraine created the National Council for the Recovery of Ukraine from the Consequences of the War in April 2022 *(hereinafter, the "Council").* 24 working groups were set up by the Council to develop a plan for the post-war recovery and development of Ukraine. These working groups worked on a wide variety of issues, including energy security, construction, urban planning, modernization of cities and regions, social protection, and environmental safety.

Representatives of the UWEA were members of the Working Group on Energy Security and actively provided their proposals and comments to the draft Recovery Plan. The UWEA experts emphasized that the reconstruction of the Ukrainian energy system should be based on the industry's latest technologies, focusing on energy efficien , perspective, reliability, and sustainability: ***"Ukraine has to accelerate the expansion of renewable energy sources in Ukraine starting from 2024."***

The plan envisions decarbonisation of the power sector. By 2032, Ukraine plans to phase out coal *(a reduction by 90% from the 2021 level),* and expand nuclear and renewables to reach 93% of carbon-free-fuel mix in the power sector. By 2050, Ukraine's power mix should have 96% of carbon-free fuels while electricity production should increase by a factor of 2.8 from the 2021 level.

However, although renewables can play a major role in decarbonisation, Recovery Plan envisages delivering the above goals primarily by increasing nuclear capacity rather than accelerating the introduction of renewable energy sources. In particular, it provides for another extension of the service life of nuclear units *(as of the end of 2021, the service time of 12 reactors has already been extended for 20-20 years),* higher utilization of existing nuclear generation capacities, and construction of new 2 nuclear units at Khmelnytsky NPP. In addition, the Recovery Plan also envisages the construction of a nuclear fuel fabrication plant and nuclear waste storage facility.

2.3.4. ACCELERATING DEPLOYMENT OF WIND POWER

Despite the war, the UWEA is optimistic in its forecasts for further expansion of wind power in the country. In recent years, Ukraine's wind energy sector has attracted a significant number of international investors. Investors from Sweden, Norway, France, the United States, Turkey, Germany, China, and Poland were actively developing wind projects in Ukraine before the war. About EUR 3.5 billion has been invested in Ukraine's national wind energy sector alone.

Under the war conditions, it is challenging for potential investors to finance the projects and technologies that would contribute to an energy transition. However, it's time to think about the revitalization of the economy. Ukraine needs to utilize expertise to combine cutting-edge technologies and renewables to accelerate the green energy transition.

Ukraine possesses huge wind, solar and biomass resources to ensure the widespread deployment of these technologies. Stable policy and firm targets will create the market certainty needed to raise investment to rebuild after the war. In line with the EU's goals, Ukraine should strive to generate at least 40% of its electricity from renewable sources by 2032, through a combination of onshore and offshor wind as well rooftop and ground-mounted solar

To make that happen, predictable market-based mechanisms to drive investments, such as renewable auctions and contracts for difference should be introduced in Ukraine as soon as possible. We need to implement the full range of investment vehicles for renewable energy, including corporate PPA and guarantees of origin.

EU Energy Commissioner **Kadri Simson:** *"From the energy perspective, renewables, in our view, are the foundation of your future sustainable energy system. It's what will drive the future EU energy system and we hope that Ukraine will firmly be a part of that.*

Ukraine's post-war recovery period will open up new opportunities for investors not only to develop new onshore and offshore wind projects but to produce renewable hydrogen. Ukraine has been identified as a key partner in the European Alliance for Clean Hydrogen in the production and supply *(export)* of hydrogen *(given the natural resources, the interconnected infrastructure, and the level of technological development).* Research is underway in Ukraine to explore the production opportunities of the low-carbon price-competitive hydrogen, and the supply pathways.

The green model of Ukraine's post-war recovery requires the support of international partners, primarily the EU. Ukraine and the EU should set up a strong and sustained technological, industrial, and investment partnership to drive the necessary investments in renewables, and in a resilient and fully synchronised electricity grid.

Key measures to accelerate the deployment of wind energy in Ukraine:

- to define at the legislative level the expansion of wind power and other RES as a matter of overriding public interest;
- to identify wind energy as one of the priority investment areas in Ukraine;
- to set up clear short-term *(by 2025),* medium-term *(by 2032),* and long-term *(by 2050)* targets for wind energy deployment in Ukraine, supported by predictable market-based mechanisms to drive investments *(green auctions, contracts for difference, corporate PPA, etc.);*
- to accelerate permit-granting projects for wind projects;
- to set up a dedicated "Renewables for Ukraine" vehicle as part of the joint EC-Ukraine reconstruction platform "RebuildUkraine";
- to draft and adopt offshore wind legislation along with relevant strategy;
- to draft and adopt legislation for hybrid renewable power plants;
- to introduce Guarantees of Origin;
- to set appropriate Carbon tax at the rate average in the EU;
- to reduce customs duties and remove other barriers for wind equipment deliveries to Ukraine *(with the subsequent transition to a single market regime with the EU).*
- to revive the national machine-building sector and integrate it into the European Union market. Ukraine has every opportunity to establish domestic manufacture of wind energy equipment. According to the Savills Nearshoring Index 2020, Ukraine ranked second among forty featured countries, in terms of its competitiveness as a destination country.

III CHANGES IN LEGISLATION

3.1. 2021/2022: EXPECTATIONS AND REALITY OF MARTIAL LAW

In the UWEA analytical report "Ukraine's Wind Power Market Overview: One Year Before the War", the authors identified the main regulatory acts expected to be approved in 2022. The chart below provides a summary of the status of implementation of these regulatory initiatives. As we can see, most of the initiatives expected by the wind energy industry and intended to ensure its further sustainable development have not been implemented. At the same time, the Verkhovna Rada of Ukraine, the NEURC, and the Ministry of Energy of Ukraine mostly took measures to ensure stability and restore the electricity market in the conditions caused by the war. In addition to the above, a range of other laws and regulations were adopted, which are summarized below in this section.

No.	Regulatory act	Summary	Status of implementation
1	**The Draft Law of Ukraine "On State Environmental Control" No. 3091**	In order to implement the provisions of the EU-Ukraine Treaty on strengthening the function of state environmental control, the Draft Law No. 3091 pr vides for reforming the system of state environmental control, including its expansion, improving the planning procedure, ensuring transparency, efficiency and legali .	*As of January 18, 2023, the Draft Law of Ukraine No. 3091 has not been adopted as a whole.* After being adopted as a basi on July 15, 2021, the draft law is being prepared for the second reading in the Ukraine's Parliament.
2	**The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on Prevention of the Cruel Treatment of Animals and Fulfilment of International Obligations on the Protection of Wild Animals" No. 5342**	Particular provisions of the Draft Law No. 5342 ar aimed at protecting birds from negative impacts caused by the operational wind farms. In particular, the authors of the Draft Law propose 1) to prohibit the operation of wind farms that are not equipped with special equipment for the protection of birds; 2) to prohibit the placement of wind farms on bird migration routes.	*As of January 18, 2023, the Draft Law of Ukraine No. 5342 has not been adopted as a basis.*
3	**The Draft Law of Ukraine "On Amendments to the Tax Code of Ukraine on Stabilization of Payments on Electricity Market" No. 5399**	The Draft Law No. 5399 envisages the application of th cash-based method of calculating income tax and VAT on electricity sold under the feed-in tariff *(calculation and payment of taxes by RES producers, taking into account the share of electricity actually paid for by the State Enterprise Guaranteed Buyer*) until January 1, 2026.	*As of January 18, 2023, the Draft Law of Ukraine No. 5399 is pending for consideration by the Verkhovna Rada of Ukraine.* *At the same time, the problem of calculation of the income tax for RES producers was resolved in July 2022.* According to Law of Ukraine No. 2480-IX dated 29.07.2022, RES producers have the right to apply the cash-based method to VAT and income tax until 01.01.2024, with regard to the cost of output electricity and load reduction services that were not paid by the SE Guaranteed Buyer/NPC Ukrenergo.

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Holleman Ukraine
Ukrainian wind energy association
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Volodymyrska, 47, of. 3
Kyiv, Ukraine 01001
+380 44 455 88 87
info@lcf.ua

4	**The Draft Law of Ukraine "On Amendments to the Law of Ukraine "On Environmental Impact Assessment" regarding the improvement of the environmental impact assessment procedure" No. 5766**	The Draft Law No. 5766 envisages impr vement of the environmental impact assessment procedure, in particular by implementing electronic document management rules, defining the grounds or refusal to issue an EIA conclusion and the right of the applicant to reapply after the grounds or refusal have been eliminated, etc.	*As of January 18, 2023, the Draft Law of Ukraine No. 5766 has not been adopted as a basis.*
5	**The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on Stimulation of Electricity Production from Alternative Energy Sources on a Market Basis"**	On August 28, 2021, the Ministry of Energy published the Draft Law of Ukraine "On Amendments to Certai Laws of Ukraine on Stimulation of Electricity Production from Alternative Energy Sources on a Market Basis" to grant RES electricity producers the right to sell electricity in the market on their own. In the draft la , the Ministry of Energy proposes to switch from the feed-in-tariff system to the eed-in-Premium mechanism, i.e. contracts for difference. According to the proposed mechanism, RES producers should be entitled to sell electricity in competitive segments of the electricity market with an additional incriment paid by the SE Guaranteed Buyer in the amount of the difference between the established feed-in tariff and the electricity selling price	*As of January 18, 2023, the draft law has not been adopted by the Verkhovna Rada of Ukraine.*
6	**The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on the Development of Energy Storage Systems" No. 5436-d**	The Draft Law No. 5436-d defines the legal standing the "storage system operator" and the requirements for its operations, in particular, re. licensing in the electricity market. At the same time, the draft law envisages additiona rights for RES producers, in particular, regarding the use of energy storage systems without revision of the feed-in tariff and without obtaining the relevant licens subject to the following prerequisites: • the output capacity does not exceed the installed *(licensed)* capacity of the power plants of such RES producer; • the energy storage system is used to accumulate electricity generated by the licensed power plants of such RES producer.	The Draft Law No. 5436-d wa adopted as a whole on February 15, 2022 and entered into force on June 16, 2022.[11]
7	**The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine *(Regarding the Settlement of Issues of Ensuring the Security of Electricity and Natural Gas Supply)"***	On December 20, 2021, the Ministry of Energy promulgated on its website the updated Draft Law "O Amendments to Certain Laws of Ukraine *(Regarding the Settlement of Issues of Ensuring the Security of Electricity and Natural Gas Supply)".* The provisions of the draft law envisaged amendment to the Law of Ukraine "On the Natural Gas Market" and the Law of Ukraine "On Electricity Market" to strengthen measures of state control and supervision over energy markets participants.	*As of January 18, 2023, the draft law has not been adopted.*

[11] https://zakon.rada.gov.ua/laws/show/2046-20#Text1

8	**The Draft Law of Ukraine "On Amendments to the Law of Ukraine "On Electricity Market" regarding the introduction of a temporary administration in case of a threat of violation of the security of electricity supply"**	On December 1, 2021, the Ministry of Energy published the Draft Law of Ukraine "On Amendments to th Law of Ukraine "On Electricity Market" regarding the introduction of a temporary administration in case of a threat of violation of the security of electricity supply". According to the proposed draft la , the Cabinet of Ministers of Ukraine was authorized to introduce a temporary administration to: • business entities operating in the energy sphere in case of violation of security of supply, the criteria/ types of which are specified in the Rules on Security of Electricity Supply; • electricity market participants that are natural monopolies in case of violation of the licensing requirements for the commercial activities of such entities.	*As of January 18, 2023, the draft law has not been adopted.*
9	**The Draft Law of Ukraine "On Amendments to Certain Laws of Ukraine on Prevention of Abuse in Wholesale Energy Markets" No. 5322**	The Draft Law No. 5322 aims to implement E Regulation No. 1227/2011 dated October 25, 2011 on the integrity and transparency of the wholesale energy market *(REMIT).* The provisions of the Draft La , in particular, envisage a list of violations *(abuses)* that may be committed by wholesale energy markets participants, as well as the NEURC's powers to investigate the relevant violations and the liability measures that may be applied to violators.	On September 20, 2022, the draft Law of Ukraine No. 532 was adopted by the Verkhovna Rada of Ukraine as a basis with a reduction in the period of preparation for the second reading. *As of January 18, 2023, the draft law has not been adopted and is being prepared for the second reading.* The European Commission is expected to provide its conclusion on the compliance of the content of the Draft La No. 5322 with the provisions of the EU energy legislation.
10	**The Draft Resolution of the Cabinet of Ministers of Ukraine "On Amendments to Certain Resolutions of the Cabinet of Ministers of Ukraine on Improvement of Competitive Conditions of Stimulating Electricity Production from Alternative Energy Sources"**	On May 14, 2021, the Ministry of Energy published the Draft Resolution "On Amendments to Certai Resolutions of the Cabinet of Ministers of Ukraine on Improvement of Competitive Conditions of Stimulation of Electricity Production from Alternative Energy Sources". The Resolution improves the procedure of conducting "green" auctions for the construction of renewable energy facilities in line with European standards and practices. According to information from the developers of the regulatory act, the auction procedure will become more flexible, transparent, and efficient. It makes it possible reduce the price of "green" electricity on a competitive market basis and allows the state to regulate the volume of new renewable energy capacities, their types *(solar/wind/biomass),* and location in accordance with the capabilities and needs of the power system. Thus, the resolution introduces a schedule of auctions for the next year and sets indicative quota indicators for 4 years. The Resolution also envisages the opportunity of forming additional quotas in case of intensificatio of certain market segments and an increase in requests from investors.	On August 2, 2022, the Cabinet of Ministers of Ukraine passed the Resolution No. 889 "On Amendments to the Resolutions of the Cabinet of Ministers of Ukraine No. 420 dated May 23, 2018, and No. 1175 dated December 27, 2019", developed by the Ministry of Energy.[12]

[12] https://zakon.rada.gov.ua/laws/show/889-2022-%D0%BF#Text

		The Resolution introduces the opportunity to hold auctions to set the maximum capacity of a renewable energy facility. This will prevent the monopolization of the industry and promote the development of small and medium-sized businesses that install small-scale facilities. In addition, the resolution envisages the opportunity to set regional quotas, that allows optimizing the location of renewable energy facilities, taking into account the technical particularities of the transmission system, the regional balance of supply and demand, and the energy potential of renewable energy sources in certain areas. This will facilitate the construction of renewable energy facilities in energy-deficient regions, areas with free capacitie for connection, and to conduct separate auctions to stimulate the socio-economic development of the regions.[13]	
11	**The Draft Resolution of the NEURC "On Approval of the Methodology for Setting Price Caps in the Day-Ahead Market, Intraday Market and Balancing Market and Amendments to Certain Resolutions of the NEURC"**	The methodology envisaged by the NEURC's draft Resolution is necessary to set the price cap, i.e. temporary minimum and/or maximum price limits, in the day-ahead market, intraday market, and balancing market for each trading zone with appropriate justification in case of significant price fluctuatio	*The NEURC's Resolution No. 1221 was adopted on September 27, 2022.*[14]

3.1.1. INTEGRATION OF THE IPS OF UKRAINE AND ENTSO-E

On March 11, 2022, Ukraine joined the ENTSO-E interconnected power system of Continental Europe and on March 16, technical tests for connection to the ENTSO-E interconnected power system of Continental Europe were completed.

On April 26, 2022, an agreement was signed in Warsaw granting the NPC Ukrenergo the status of an observer member of ENTSO-E, the European network of electricity transmission system operators.

The status of an observer member will allow the NPC Ukrenergo to join the international association of European transmission system operators. As an observer member, the Ukrainian operator will be able to participate in the meetings of the ENTSO-E Regional Group "Continental Europe". Representatives of the company will be able to join ENTSO-E working and expert groups dealing with electricity market development, balancing, ancillary services, electronic data exchange, development of cyber security in the electricity sector, integration of renewable energy sources, etc.

In the long run, the integration of the IPS of Ukraine with continental Europe will contribute to the development of the electricity market, renewable energy projects, and attract additional investments.

At the same time, the realization of such opportunities will require significant resources and work, in particular, to implement ENTSO-E's international technical and regulatory mechanisms, such as REMIT, IGCC[15] and TERRE[16].

3.1.2.MEASURES TO ENSURE THE STABILITY OF THE FUNCTIONING OF THE ELECTRICITY MARKET, CONSUMER INTERESTS, AND ENSURE ENERGY SECURITY DURING THE WAR

Ensuring the stability of the functioning of the electricity market, securing consumers' interests, and energy security during the war became a priority of state energy policy in 2022.

As part of this streamline, the following measures were taken in the electricity market.

[13] https://mev.gov.ua/novyna/udoskonalennya-protsedury-zelenykh-auktsioniv-za-yevropeyskymy-standartamy-zabezpechyt (mev.gov.ua)

[14] https://zakon.rada.gov.ua/rada/show/v1221874-22#Text

[15] The International Grid Control Cooperation *(IGCC)* initiative is an international initiative within which grid operators from different states offs electricity imbalances.

[16] The Project TERRE *(Trans European Replacement Reserves Exchange)* was the next step towards the creation of a pan-European balancing electricity market in the form of a platform for the mutual exchange of balancing electricity.

Extension of special obligations in the electricity market to ensure the availability of electricity for the population

On October 28, 2022, the Cabinet of Ministers of Ukraine adopted the Resolution No. 1206 "On Amendments to the Resolution of the Cabinet of Ministers of Ukraine No. 483 dated June 5, 2019". The Resolution envisages the extension of the special obligations imposed on electricity market participants to ensure the public interest in the operation of the electricity market. Thus, preferential electricity prices for household consumers will remain in place during the autumn-winter period of 2022/2023 – until March 31, 2023.

The fixed tariff is: for individual household consumers – UAH 1.44/kWh for consumption up to 250 kWh per month and UAH 1.68/kWh for consumption over 250 kWh per month;

1.68 UAH/kWh regardless of the volume of consumption – for collective household consumers, dormitories, legal entities that own or hold property used for compact settlement of internally displaced persons in the part of satisfying IDPs' own needs, in summer cottage and summer cottage building cooperatives, garden associations, garage building cooperatives for technical purposes and territory lighting, for religious organizations in the part of using electric energy for communal and household needs.

Introduction of special obligations in the electricity market for electricity exporters to EU member states

On July 7, 2022, the CMU adopted the Resolution No. 775 "On Imposing Special Obligations on Electricity Market Participants Engaged in Electricity Export Operations to Ensure the Public Interest in the Process of Functioning of the Electricity Market During Martial Law".

The public interest for which special obligations are imposed on electricity market participants is to provide services to ensure the security of electricity supply in the area of uninterrupted functioning of the electricity market in accordance with the Rules on Security of Electricity Supply approved by the Ministry of Energy *(hereinafter referred to as the service on ensuring the security of electricity supply)* and to provide services to ensure the availability of electricity for household consumers.

Special obligations are imposed on the following electricity market participants:

- business entities that export electricity to the EU member states *(hereinafter referred to as electricity exporters);*
- guaranteed buyer;
- transmission system operator;
- universal service providers.

The cost of the service is 80% of electricity export revenues. The revenues are excluded exporters' expenses for dispatch *(operational and technological)* management services, electricity transmission, and expenses for access to the physical right to transfer interconnection in Ukraine. At the same time, the exporter's revenue exists in the event of a positive difference between the price in the day-ahead markets of the importing state and Ukraine for the relevant billing month.

As a result of the implementation of this mechanism, 80% of the exporters' profits from electricity exports to the EU states were used to cover the financial deficit of the SE Guaranteed Buyer and the NPC Ukrenergo and were used, in particular, for settlements with RES producers.

Introduction of special obligations in the electricity market to create a strategic coal reserve for the autumn-winter period

On July 22, 2022, the Cabinet of Ministers of Ukraine by its Resolution No. 838 "On Approval of the Regulation on the Imposition of Special Obligations on the Transmission System Operator for Ensuring the Public Interest in the Process of Functioning of the Electricity Market" imposed special obligations on the transmission system operator for ensuring the public interest in the process of functioning of the electricity market. Within the framework of the new special obligations, the transmission system operator shall provide targeted interest-free reimbursable assistance to the state-owned enterprise Ukrvuhillya in the amount necessary to purchase coal products in the amount of up to 1 million tons at the market price, but not exceeding UAH 2.5 billion, for the needs of electricity producers.

As a result of the execution of the above resolution, the transmission system operator failed to fulfil its obligations to the SE Guaranteed Buyer for the corresponding amount for the service for ensuring an increase in the share of electricity production from alternative sources.

Payment of debts to RES for 2021

In accordance with the provisions of the Law of Ukraine No. 2479 dated 29.07.2022, the Final and Transitional Provisions of the Law of Ukraine "On Electricity Market" were supplemented by clause 112 on the distribution of funds received by the transmission system operator from the distribution of the cross-border interconnection, which:

1) available as of July 31, 2022, for the following purposes:

- 10% – for the needs of the transmission system operator;
- 45% – for the repayment of the transmission system operator's debt, which was formed in the balancing market;

- 45% – for the repayment of the transmission system operator's debt to the guaranteed buyer. The Guaranteed Buyer was obliged to transfer the funds to SE NNEGC Energoatom and RES producers in proportion to the debt owed to them.

2) received by the transmission system operator from August 1, 2022, to January 1, 2023, for the following purposes:

- 50% – for the repayment of the transmission system operator's debt formed in the balancing market;
- 50% – for the repayment of the transmission system operator's debt to the guaranteed buyer.

The Guaranteed Buyer was obliged to transfer the funds to SE NNEGC Energoatom and RES producers in proportion to the debt owed to them.

Such changes allowed the settlement of accounts with RES producers for the output electricity at the feed-in tariff in 2021 y 99%.

Restrictions on settlements with RES producers

On March 4, 2022, the Ministry of Energy passed the Order No. 103 "On Settlements in the Electricity Market", according to which the SE Guaranteed Buyer was obliged to allocate funds *(except for those necessary to ensure the company's business activities)* received from the sale of electricity, including electricity generated from renewable energy sources, to settle accounts with SE NNEGC Energoatom *(the repayment of electricity debts for 2020-2021)* and the NPC Ukrenergo during martial law.

According to the order of the Ministry of Energy No. 140 dated 28.03.2022, the previous order No. 103 dated 04.03.2022 was canceled, but the maximum amounts of funds to be transferred from the current account of the SE Guaranteed Buyer to RES electricity producers for the produced electricity were set. The amounts of funds were determined depending on the established percentage of the weighted average feed-in tariff for 2021 for energy producers from the respective source, namely: SPP – 15%; WPP – 16%; small hydropower plants – 35%; biogas – 40%; biomass – 60%. After settlements with renewable energy producers, the remaining funds of the SE Guaranteed Buyer were transferred to the SE NNEGC Energoatom and the NPC Ukrenergo.

In accordance with the order of the Ministry of Energy No. 206 dated 15.06.2022, which entered into force on July 5, 2022, the share of payments to SPP and WPP operators was increased to 18% of the weighted average feed-in tariff for the previous year, and for biomass producers – up to 75%. If there is a balance of funds remaining on the current account after meeting the previous distribution indicators, this balance is distributed and sent to producers in proportion to the amount of charges for the respective producer made taking into account the same indicators, but not more than the cost of commercial products of the billing period calculated at the feed-in tariff or the such producer.

Tariffs or the services of the transmission system operator – the NPC Ukrenergo

On December 1, 2021, the NEURC adopted the Resolution No. 2455 "On Setting the Tariff for Dispatch *(Operational and Technological)* Management Services of the NPC Ukrenergo for 2022". The Resolution stipulates that the tariff for dispatch *(operational and technological)* management services for the Ukrenergo was set at UAH 62.13/MWh *(excluding VAT)*.

On December 21, 2022, the NEURC adopted the Resolution No. 1788 "On Setting the Tariff for Electricity Transmission Services of the NPC Ukrenergo". The Resolution stipulates that the tariff for electricity transmission services for the Ukrenergo was set at the level of:

- 380.28 UAH/MWh *(excluding VAT)* from 01.01.2023 to 31.03.2023 *(inclusive);*
- 430.25 UAH/MWh *(excluding VAT)* from 01.04.2023 to 30.06.2023 *(inclusive);*
- 485.10 UAH/MWh *(excluding VAT)* from 01.07.2023 to 31.12.2023 *(inclusive).*

By the same resolution, the tariff for electricity transmission services was set for the first time for "green" electrometallurgy enterprises for 2023 at the level of 209.42 UAH/MWh.

On December 21, 2022, the NEURC adopted the Resolution No. 1789 "On Setting the Tariff for Dispatch *(Operational and Technological)* Management Services of the NPC Ukrenergo".

The resolution stipulates that the tariff for dispatch *(operational and technological)* management services for the Ukrenergo was set at the level of:

- 68.28 UAH/MWh *(excluding VAT)* from 01.01.2023 to 31.03.2023 *(inclusive);*
- 80.87 UAH/MWh *(excluding VAT)* from 01.04.2023 to 30.06.2023 *(inclusive);*
- 95.54 UAH/MWh *(excluding VAT)* from 01.07.2023 to 31.12.2023 *(inclusive).*

Revision of the feed-in tariff

On September 30 and December 30, 2022, the NEURC adopted the Resolutions No. 1235 and No. 1959, respectively, on setting feed-in tariff and increased feed-in tariffs in line with the Euro exchange rate.

Contrary to the requirements of the Law of Ukraine "On Alternative Energy Sources", the feed-in tariff was not revised for the 2nd and 3rd quarters of 2022.

Temporary procedure for connecting energy facilities to power grids

On March 26, 2022, the NEURC passed the Resolution No. 352 and approved the temporary procedure for connection to the power grids for the period of martial law *(hereinafter – the Temporary Procedure),* which, in particular, envisages:

- termination of Chapter IV of the Code of Distribution Systems and the Methodology *(Procedure)* for the formation of fees for connection to the transmission and distribution systems, which regulate the procedure for connecting customers' power facilities to power grids;
- the right of distribution system operators, in case of impossibility to provide connection services under the concluded agreements, to notify customers of the impossibility of fulfillment of obligations due to force majeure circumstances before their offici termination;
- connection of consumers' power facilities under the Temporary Procedure performed during the period of martial law requires reconnection afte its termination in accordance with the general rules provided for in the Distribution Systems Code.

The cost of temporary connection for strategically important facilities is free of charge, and for other facilities intended for electricity consumption, it is paid based on the actual costs incurred by the DSO while providing the temporary connection service. The customer of such a service may independently provide its resources to the DSO for connection to the DSO's grids.

On October 18, 2022, the NEURC at its meeting adopted amendments to the Resolution No. 352 dated 26.03.2022, which made it possible to temporarily connect generating facilities. At the same time, according to the Temporary Procedure, **the connection can be provided only if there is a capacity reserve in the 10*(6)* – 35 kV grids.**

Inspections of the NEURC

After the introduction of martial law in Ukraine, the vast majority of state control measures were suspended by a resolution of the Cabinet of Ministers of Ukraine.

Based on the results of a detailed analysis of the state of functioning of the energy markets, the Government of Ukraine, by its resolutions dated May 13, 2022, and August 27, 2022, authorized the NEURC to conduct unscheduled off-site inspections and scheduled off-site inspections, respectively, during the martial law period.

On December 6, 2022, the CMU adopted amendments to the Resolution No. 303, which allow the NEURC to conduct unscheduled on-site inspections as well.

The resolution on the resumption of scheduled and unscheduled inspections of compliance by business entities operating in the energy and utilities sectors with the legislation in these spheres and license conditions was adopted by the Regulator in its resolution adopted at its meeting on 19 December 2022.

In addition, on December 13, 2022, the NEURC adopted the resolution according to which the days during which events occurred that negatively affected the course of the inspection *(scheduled or unscheduled on-site inspection)* and significantly impeded its conduct will not be taken into account in calculating the time limit for such an inspection.

Exemption from customs duties and taxation of imports of goods for the restoration of electricity facilities

On December 13, 2022, the Verkhovna Rada of Ukraine adopted the Law of Ukraine No. 2836-IX and 2837-IX amending the Customs Code of Ukraine and the Tax Code of Ukraine. According to these Laws, until May 1, 2023, import operations, in particular, are exempt from taxation:

- goods for the restoration of energy infrastructure according to the list of UCGFEA codes[17];
- goods provided free of charge by the Energy Community as assistance in favor of business entities licensed for certain types of business activities in the electricity market *(electricity generation, electricity transmission, electricity distribution)* and imported by such entities into the customs territory of Ukraine for the purposes of restoration and repair of infrastructure.

3.1.3. MEASURES TO ENSURE INVESTMENT ATTRACTIVENESS, STABILITY OF OPERATION AND DEVELOPMENT OF RES PROJECTS

Notwithstanding the challenges of the electricity market and changes in the priorities of state regulation of the industry caused by the war, Ukraine has adopted a number of legal acts aimed at ensuring the further development of the industry.

[17] Codes of UCGFEA: 2710 19 93 00; 3914 00 00 00, 7020 00 80 00, 7225 11 00 00, 7325 10 00 00, 7605 11 00 00, 7607 *(only for industrial use),* 8407 90 10 00, 8407 90 80 00, 8407 90 90 00, 8408 90 41 00, 8408 90 43 00, 8408 90 45 00, 8408 90 47 00, 8408 90 61 00, 8408 90 65 00, 8408 90 67 00, 8408 90 81 00, 8408 90 85 90, 8408 90 89 90, 8421 21 00 00, 8421 99 90 00, 8481 80 59 00, 8501 61 80 90, 8501 62 00 90, 8501 63 00 90, 8501 64 00 00, 8502 *(power generating units),* 8503 00, 8504 *(transformers, parts of transformers, inverters, except for 8504 21 00 00, 8504 22 10 00, 8504 22 90 00, 8504 23 00 00, 8504 31 21 00, 8504 31 29 00, 8504 31 80 00, 8504 32 00 90, 8504 50 95 90, and civil aviation goods),* 8507 20 *(except for civil aviation goods),* 8507 30, 8507 40 00 00, 8507 50 00 00, 8507 60 00 00, 8507 80 00 00, 8507 90 (except for civil aviation goods), 8517 62 00 00, 8517 69 90 00, 8517 70 00 90, 8535, 8536, 8537, 8546, 8547 90 00 00, 9014 80 00 00, 9025 19 80 98.

In addition to the Law of Ukraine No. 2046-IX "On Amendments to Certain Laws of Ukraine on the Development of Energy Storage Systems"[18], which is described above in this section[19], the following legal and regulatory initiatives are worth highlighting.

Implementation of the right of RES producers to freely withdraw from the balancing group of the Guaranteed Buyer

In accordance with the provisions of the Law of Ukraine No. 2479 dated 29.07.2022, Article 71 of the Law of Ukraine "On Electricity Market" was amended to allow RES electricity producers selling electricity at the feed-in tariff or auction price to sell electricity in the day-ahead market and/or intraday market and/or bilateral agreements market and the balancing market.

RES electricity producers that decide to exercise the right to sell electricity in other market segments temporarily withdraw from the balancing group of the SE Guaranteed Buyer without losing the feed-in tariff/auction price and may resume participation in the balancing group of the SE Guaranteed Buyer if they decide to return to selling electricity at the feed-in tariff/auction price

Introduction of conditions for concluding a Virtual PPA

Pursuant to the provisions of Law of Ukraine No. 2479 dated 29.07.2022, Article 71 of the Law of Ukraine "On Electricity Market" was amended to allow RES producers that do not use the support mechanisms provided for by the Law of Ukraine "On Alternative Energy Sources" to enter into an agreement with the electricity consumer to provide a service to ensure the stability of the electricity price.

Although such an agreement does not determine the obligations of the parties with respect to the physical supply of electricity, it does determine the rules of settlements if the market price of electricity exceeds or is less than the price agreed by the parties *(the so-called "strike price").* According to the terms of the agreement, the consumer makes additional payments to the RES Producer if the price of electricity in the market is less than the strike price agreed by the parties, and the RES Producer shall compensate the consumer's expenses if the price in the market increases and exceeds the strike price.

In accordance with the provisions of the Law No. 2479 dated 29.07.2022, an agreement on the provision of electricity price stability services may be concluded for a period of 1 year or more with notification of the transmission system operator of its conclusion.

Standard form of an agreement for land easements for energy and electricity transmission facilities.

On January 26, 2022, the Cabinet of Ministers of Ukraine adopted the Resolution No. 49 "On Approval of the Standard Form of an Agreement on Establishment of a Land Easement for the Placement of Energy Facilities and Electricity Transmission", by which it approved the standard form of an agreement on the establishment of a land easement for the placement of energy facilities and electricity transmission.

Concept for the introduction and development of the green bond market in Ukraine

On February 23, 2022, the Cabinet of Ministers of Ukraine adopted the Order No. 175-p and approved the Concept for the Introduction and Development of the Green Bond Market in Ukraine.

The purpose of the Concept is to define the directions, tasks, and timelines for the formation of a state policy for the introduction of a green bond market, which will allow for attracting financing for environmental projects, as well as to create legal and institutional prerequisites for the development of such a market in Ukraine and increase its investment attractiveness.

The Concept envisages:

- establishment of a taxonomy, internationally compliant rules, and incentives for the green bond market;
- raising awareness of the introduction of the green bond market;
- streamlining the market of independent appraisers and verifiers of green bonds
- establishing cooperation with international financial organizations and funds
- preparation and implementation of pilot projects for the issuance of green bonds by various categories of issuers;
- attracting international development banks to invest in green bonds of Ukraine;
- creating a register of projects of national importance for the implementation of which sovereign green bonds can be issued;
- creating favorable conditions for attracting financing to the market *(government-targeted programs, promotion on foreign capital markets).*

Concept for the implementation of smart grids by 2035

On October 14, 2022, the Cabinet of Ministers of Ukraine adopted the Order No. 908-p "On Approval of the Concept for the Implementation of Smart Grids in Ukraine until 2035"[20]. The Concept aims to gradually reduce electricity losses in the grids, to ensure a

[18] htpps://zakon.rada.gov.ua/laws/show/2046-20#Text
[19] comparative table: draft Law No 5436-
[20] htpps://zakon.rada.gov.ua/laws/show/908-2022-%D1%80#Text

WIND AERO

БЕЗПІЛОТНИЙ СЕРВІС ДІАГНОСТИКИ

<<<

Тел +380 (50) 471 19 54
Email windaero.ua@gmail.com

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reduction in CO_2 emissions, to increase investments in the modernization of power grids, as well as to ensure the improvement of the quality and reliability of electricity supply for electricity consumers.

The concept envisages that the development of smart grids will reduce greenhouse gas emissions by managing electricity demand and smoothing the daily electricity load schedule of the power system, increasing the efficienc of using generating capacities, and facilitating the integration of renewable energy sources into the power grid. As a result of the implementation of the Action Plan for the Concept's implementation, it is expected to reduce electricity losses in the power grids in Ukraine from 11.6% to 7.5%, or by 6 billion kWh, which is equivalent to 3 million tons of burned coal at TPPs by 2035.

License conditions for conducting business activities in energy storage

On July 22, 2022, the NEURC adopted the Resolution No. 798 and approved the Licensing Conditions for Conducting Business Activities in Energy Storage pursuant to the Law of Ukraine No. 2046-IX "On Amendments to Certain Laws of Ukraine on the Development of Energy Storage Systems" dated February 15, 2022.

The Licensing Conditions for Conducting Business Activities in Energy Storage regulate the activities of energy storage licensees in the electricity market, in particular, to establish an exhaustive list of documents to be attached to the application for a license for conducting business activities in energy storage, as well as to determine an exhaustive list of requirements that must be met in the course of conducting licensed activities.

Determining the conditions for the operation of energy storage systems

On September 30, 2022, the NEURC adopted the Resolution No. 1234 and amended the Transmission System Code on the legal regulation of energy storage systems aimed at implementing the Law of Ukraine No. 2046-IX dated February 15, 2022, which entered into force on June 16, 2022 "On Amendments to Certain Laws of Ukraine on the Development of Energy Storage Systems".

In accordance with the provisions of the NEURC's Resolution No. 1234, 110 kV ESSs with a rated installed capacity above 20 MW and ESSs with a rated installed capacity of 20 MW or below may be connected to the NPC Ukrenergo's grids based on a feasibility study.

Cancellation of the formula for calculating the share of the imbalance paid by RES producers in favor of the SE Guaranteed Buyer

On September 8, 2022, in accordance with the judgment of the Supreme Court of Ukraine in case No. 640/4069/21, the provisions of the NEURC's Resolution No. 46 dated January 15, 2021 *(regarding the new version of clause 9.3 of Chapter 9 of the Procedure for the Purchase of Electrical Energy Generated from Alternative Energy Sources by the Guaranteed Buyer)* were invalidated.

In its judgment, the Supreme Court noted:

- RES producers shall not be liable for the trading activities of the Guaranteed Buyer and shall not be obliged to reimburse a share of the cost of settlement of the imbalance of electrical energy of the Guaranteed Buyer;
- RES Producers' liability to the Guaranteed Buyer shall be within the limits of the actual costs incurred related to the settlement of electricity imbalances incurred by the Guaranteed Buyer as a result of deviations of the actual hourly volumes of output of electricity from the hourly schedules of electricity output.

On October 28, 2022, the District Administrative Court of Kyiv, considering the application of the SE Guaranteed Buyer for clarification of the court judgment, noted that the provisions of the NEURC's Resolution No. 46 dated January 15, 2021 *(regarding the new version of clause 9.3 of Chapter 9 of the Procedure for the Purchase of Electrical Energy Generated from Alternative Energy Sources by the Guaranteed Buyer)* were found to be unlawful from the moment of their adoption and did not create legal consequences in the settlements between the SE Guaranteed Buyer and RES producers.

3.2. EXPECTED CHANGES IN THE REGULATORY ENVIRONMENT IN THE WIND ENERGY SECTOR IN 2023

Considering the current situation in the Ukrainian wind energy sector due to the war, industry players' expectations in the field of regulatory and legal policy are limited to three main areas.

First, it is necessary to ensure the functioning and sustainable financing of existing wind farm projects, to create conditions for the restoration of wind farms damaged due to the war, as well as for the completion of projects whose construction was suspended due to the war.

Second, it is necessary to create the basis for further rapid development of the industry and the development of new wind energy projects by identifying opportunities and conditions for their support and creating conditions for the gradual entry of RES producers into a competitive electricity market. In particular, to define plans and priorities for the development of Ukraine's energy sector and the RES sector and to set goals with the state programmatic documents.

Third, in order to determine a transparent legal regulation of the industry for the long-term period, the Verkhovna Rada of Ukraine needs to complete consideration of the draft laws awaiting hearings in Parliament.

In view of this, the following measures and initiatives can be prioritized for 2023.

3.2.1. MEASURES FOR ENSURING THE FUNCTIONING, SOUND FINANCIAL POSITION, AND REBUILDING OF WIND ENERGY PROJECTS

The Draft Law of Ukraine No. 8191 date 08.11.2022 "On Amendments to Certain Laws of Ukraine on Extension of the Term for Commissioning of Renewable Energy Facilities under Power Purchase Agreements at the feed-in tariff concluded be ore December 31, 2019"

The Draft Law of Ukraine No. 8191 dated 08.11.2022 is intended to create conditions for the completion of the construction of wind farm projects that were suspended due to the war. The provisions of the draft law envisage amendments to the Law of Ukraine "On Alternative Energy Sources", the Law of Ukraine "On Electricity Market" and the Law of Ukraine "On Regulation of Municipal Planning Activity" regarding:

- extension of the technical conditions for connection of alternative energy facilities *(except for solar power plants)* to power grids – until December 31, 2023;
- an additional opportunity to extend the technical conditions until December 31, 2024, in case of payment of the cost and the approval of the project documentation of the relevant connection by the transmission system operator the NPC Ukrenergo, distribution system operators;
- a two-year extension of the period for the construction and commissioning of wind power plants for the sale of electricity at the feed-in tariff

Extension of the term of action of the provision on the distribution of funds received by the transmission system operator from the distribution of the cross-border interconnection capacity

The transmission system operator has no sources to pay the debt of the SE Guaranteed Buyer for the service for ensuring an increase in the share of electricity production from alternative sources in 2022.

The funds received by the transmission system operator from the distribution of the cross-border interconnection capacity are one of the sources to reduce the debt to the SE Guaranteed Buyer in 2023-2024.

Extension of the term of action of the provisions of the Customs Code of Ukraine and the Tax Code of Ukraine regarding exemption from import duties and taxation of imports of goods for the restoration of electricity facilities

On December 13, 2022, the Verkhovna Rada of Ukraine adopted the Laws of Ukraine No. 2836-IX and 2837-IX amending the Customs Code of Ukraine and the Tax Code of Ukraine. According to these Laws, until May 1, 2023, the import of goods for the restoration of energy infrastructure is exempt from taxation.

At the same time, as of the date of this document, approx. 80% of the wind farms in Ukraine are located in the occupied territory, and their owners do not have access to the power plants for technical inspection and to carry out restoration measures.

In view of this, in order to ensure the effective restoration of wind energy, it is advisable to extend the provisions of the Customs Code of Ukraine and the Tax Code of Ukraine introduced by the Laws No. 2836-IX and 2837-IX dated December 13, 2022.

Creation of conditions for major repairs and reconstruction of electricity facilities damaged due to the war

In accordance with clause 2.3. of the Procedure for Establishing, Revising, and Terminating the Feed-in Tariff for Electricity for Business Entities, Electricity Consumers, including Energy Cooperatives, and Private Households whose Generating Units Produce Electricity from Alternative Energy Sources, approved by the NEURC's Resolution No. 1817 dated August 30, 2019 *(Procedure No. 1817),* the NEURC has the right to revise the feed-in tariff established for an electricity facility after major repairs and/or reconstruction.

In order to protect and restore the rights of RES producers, it is advisable to ensure that the provisions of Procedure No. 1817 are amended, according to which major repairs and reconstruction of alternative energy facilities damaged due to the war with the russian federation do not entail a revision of the feed-in tariff

Settlement of problematic issues with the adoption and approval of the cost of the service for ensuring an increase in the share of electricity production from alternative sources

In accordance with Article 65 of the Law of Ukraine "On Electricity Market", the Regulator approves the cost of the service for ensuring an increase in the share of electricity production from alternative sources, for which the SE Guaranteed Buyer must provide the Regulator with signed acts of acceptance and transfer of services between the SE Guaranteed Buyer and the transmission system operator.

Since 2021, the RES sector has not been able to receive funds from the SE Guaranteed Buyer for output electric energy at the feed-in tariff due to the lack of agreement on the cost of the service between the SE Guaranteed Buyer and the transmission system operator and the failure of the Regulator to approve its cost. It is necessary to establish a mechanism in which RES producers will not depend on state-owned enterprises and the actions of the Regulator.

3.2.2. DETERMINATION OF LONG-TERM MECHANISMS FOR SUPPORTING THE DEVELOPMENT OF WIND ENERGY, AND CREATING OF CONDITIONS FOR THE ENTRY OF RES PRODUCERS INTO THE COMPETITIVE ELECTRICITY MARKET

The Draft Law of Ukraine "On Amendment to Certain Laws of Ukraine on Stimulation of Electrical Energy Production from Alternative Energy Sources on a Market Basis"

On August 28, 2021, the Ministry of Energy published the Draft Law of Ukraine "On Amendment to Certain Laws of Ukraine on Stimulation of Electrical Energy Production from Alternative Energy Sources on a Market Basis" to grant RES electricity producers the right to sell electricity in the market independently.

In the draft law, the Ministry of Energy proposes to switch from the Feed-in-tariff system to the Feed-in-Premium mechanism, i.e. contracts for difference. According to the proposed mechanism, RES producers shall be entitled to sell electricity in competitive segments of the electricity market with an additional incriment paid by the State Enterprise "Guaranteed Buyer" in the amount of the difference between the established feed-in tariff and the electricity selling price.

While considering the draft law in the Verkhovna Rada of Ukraine, it is necessary to ensure that any changes are voluntary for existing RES facilities and fulfillment of payment obligations

The Draft Law of Ukraine "On Amendments t Certain Laws of Ukraine on the Introduction of a Register of Issuance, Use, and Termination of the Guarantee of Origin of Electric Energy Produced from Renewable Energy Sources"

On August 25, 2022, the Ministry of Energy published the Draft Law of Ukraine "On Amendment to Certain Laws of Ukraine on the Introduction of a Register of Issuance, Use and Termination of the Guarantee of Origin of Electrical Energy Produced from Renewable Energy Sources".[21]

The purpose of the law is to create an effective mechanism for the issuance, use, and termination of the guarantee of origin of electrical energy produced from renewable energy sources, which meets the goal of "Energy Security", determined by clause 9.1 of the Program of Activities of the Cabinet of Ministers of Ukraine, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 471 dated 12.06.2020.

[21] https://www.mev.gov.ua/rehulyatornyy-akt/povidomlennya-pro-oprylyudnennya-proyektu-zakonu-ukrayiny-pro-vnesennya-zmin-do-2

The draft law envisages

- determination of the transmission system operator the NPC Ukrenergo as the entity authorized to issue guarantees of origin of electric energy produced from renewable energy sources;
- establishing a legal framework for the creation and operation of a register of guarantees of the origin of electric energy produced from renewable energy sources.

The Draft Law of Ukraine "On Amendments t Certain Laws of Ukraine on the Improvement of Conditions for Supporting the Production of Electricity from Alternative Sources by Consumer Generating Units"

The draft law has been developed by the Ministry of Energy and is being prepared for approval by the CMU and registration in the Verkhovna Rada of Ukraine to ensure the sustainable development of generating capacities of consumers who intend to install generating facilities that produce electricity from alternative energy sources, including private households, energy cooperatives, and non-household consumers, on market conditions under the "net billing" model.

Amendments to the Law of Ukraine "On Electricity Market" regarding the expansion of the use of service agreements for the provision of the service of ensuring the stability of electricity prices *(Virtual PPA)*

The current version of Article 71 of the Law of Ukraine "On Electricity Market" envisages the opportunity to conclude a Virtual PPA exclusively between RES producers that do not use other support mechanisms and electricity consumers.

In order to expand the opportunities for the use of the Virtual PPA mechanism, it is advisable to amend the Law of Ukraine "On Electricity Market" to allow RES producers to enter into Virtual PPAs with electricity suppliers and traders.

Amendments to the NEURC's regulations to ensure the exercise of RES producers' right to withdraw and return to the balancing group of the Guaranteed Buyer.

In order to implement the provisions of the Law of Ukraine No. 2479 dated 29.07.2022 and the provisions of Article 71 of the Law of Ukraine "On Electricity Market", which allow RES electricity producers that sell electricity at a feed-in tariff or auction price to sell electricity in the day-ahead market and/or the intraday market, and/or the bilateral contracts market and the balancing market, the NEURC shall develop and approve a procedure for exercising this right of RES producers by suspending the agreement concluded with the SE Guaranteed Buyer, withdrawing and returning to the balancing group of the Guaranteed Buyer.

The relevant amendments shall be made to:

- Market Rules approved by the NEURC's Resolution No. 307 dated March 14, 2018;
- the Procedure for the purchase by the guaranteed buyer of electricity generated from alternative energy sources and the standard form of the power purchase agreement at the feed-in tariff approved by the NEURC's Resolution No. 641 dated 26.04.2019.

Formula for compensating the imbalance of the Guaranteed Buyer.

On September 8, 2022, in accordance with the judgment of the Supreme Court of Ukraine in case No. 640/4069/21, the provisions of the NEURC's Resolution No. 46 dated January 15, 2021 *(regarding the new version of clause 9.3 of Chapter 9 of the Procedure for the Purchase of Electrical Energy Generated from Alternative Energy Sources by the Guaranteed Buyer)* were invalidated.

In view of this, in order to eliminate regulatory gaps, the NEURC should develop and adopt amendments to the Procedure for the Purchase of Electrical Energy Generated from Alternative Energy Sources by the Guaranteed Buyer, approved by the NEURC's Resolution No. 641 dated 26.04.2019.

The relevant regulatory act shall be adopted taking into account the conclusions of the Supreme Court of Ukraine regarding the application of the relevant provisions of the Law of Ukraine "On Electricity Market", in particular:

- RES producers shall not be liable for the trading activities of the Guaranteed Buyer and shall not be obliged to reimburse a share of the cost of settlement of the imbalance of electrical energy of the Guaranteed Buyer;
- RES Producers' liability to the Guaranteed Buyer shall be within the limits of the actual costs incurred of the balancing group of the Guaranteed Buyer related to the settlement of electricity imbalances incurred by the Guaranteed Buyer as a result of deviations of the actual hourly volumes of output of electricity from the hourly schedules of electricity output after their balancing

3.2.3. OTHER MEASURES TO ENSURE THE SUSTAINABLE DEVELOPMENT OF WIND ENERGY

The Draft Law of Ukraine "On Amendment to Certain Laws of Ukraine on Prevention of Abuse in Wholesale Energy Markets" No. 5322 dated 01.04.2021

The Draft Law No. 5322 aims to implement EU Regulation No. 1227/2011 dated October 25, 2011 on the integrity and transparency of the wholesale energy market *(REMIT)*.

The provisions of the Draft Law, in particular, envisage a list of violations *(abuses)* that may be committed by wholesale energy markets participants, as well as the NEURC's powers to investigate the relevant violations and the liability measures that may be applied to violators.

On September 20, 2022, the draft Law of Ukraine No. 5322 was adopted by the Verkhovna Rada of Ukraine as a basis with a reduction in the period of preparation for the second reading.

As of January 18, 2023, the draft law has not been adopted and is being prepared for the second reading.

The European Commission is expected to provide its conclusion on the compliance of the content of the Draft Law No. 5322 with the provisions of the EU energy legislation.

The Draft Law of Ukraine "On Stat Environmental Control" No. 3091 dated February 19, 2020

In order to implement the provisions of the EU-Ukraine Treaty on strengthening the function of state environmental control, the Draft Law of Ukraine No. 3091 envisages reforming the system of state environmental control, including its expansion, improving the planning procedure, ensuring transparency, efficien , and legality.

After being adopted as a basis on July 15, 2021, the draft law is being prepared for the second reading in the Verkhovna Rada of Ukraine.

The Draft Law of Ukraine "On Amendments t the Law of Ukraine "On Environmental Impact Assessment" regarding the improvement of the environmental impact assessment procedure" No. 5766 dated 14.07.2021

The Draft Law of Ukraine No. 5766 envisages improvement of the environmental impact assessment procedure, in particular, by introducing rules for electronic document management, determining the grounds for a refusal to issue an EIA conclusion and the right of the applicant to reapply after the grounds for refusal have been eliminated, etc.

On December 01, 2021, the Committee on Environmental Policy and Nature Management recommended that the Verkhovna Rada of Ukraine adopt the Draft Law of Ukraine No. 5766 as a basis

VI UWEA'S ACTIVITY

4.1. MAIN TASKS AND ACTIVITIES

Russia's unprovoked and unjustified war against Ukraine has affected the UWEA's activities. We have adapted our ways of working, expanded our activities as different challenges caused by the war emerged. Since the first days of russia's invasion of Ukraine, the UWEA Secretariat has focused its efforts on informing the global wind energy community and its foreign partners about russian aggression in Ukraine protecting and promoting Ukraine's interests in the international arena.

In 2022, the UWEA's activity focused on ensuring the functioning of the RES sector in wartime. Unfortunately, just like last year, settlements with RES producers were on the agenda; new debts to the RES producers were accumulated in 2022 in addition to the previous year's debts. The war brought new challenges to the RES industry and respectively new tasks and directions for the association's activity, including issues related to the RES facilities' functioning in the temporarily occupied territories of Ukraine, reservation of conscripts working at RES electricity facilities, collection of information on losses and damages to wind power plants caused by the armed aggression of the russian federation. Thus, the UWEA Secretariat informed regularly on damages and losses that occurred in the wind power sector to the Ministry of Energy of Ukraine.

The issue related to the 2-year extension of the due date for constructing and commissioning wind power plants for the sale of electricity at the feed-in tariff was another challenge faced by the industry. The construction works on these wind project sites began at the end of 2021 and were halted because of the hostilities. Since April 2022, the UWEA has repeatedly called on the Government and parliamentarians of Ukraine to adopt a relevant law to solve the problem. The UWEA and other RES industry associations have addressed the relevant committees of the Verkhovna Rada, international organizations, and financia institutions on the matter; the issue was widely covered by the Ukrainian media.

2022 was marked by the deepening of UWEA's cooperation with other RES industry energy associations. Four associations – the UWEA, the EUEA, the UARE and the ASEU – have joined their forces to protect the interests of the industry. In particular, the RES associations appealed to the President of Ukraine, the Prime Minister of Ukraine, the Chairman of the Verkhovna Rada of Ukraine, the Committee on Energy, Housing and Utilities Services of the Verkhovna Rada of Ukraine, the Ministry of Energy of Ukraine, the NEURC, SE Guaranteed Buyer, NPC Ukrenergo, and the Energy Community Secretariat, 23 letters in total.

On July 4, 2022, in Brussels, and online, the Ukrainian and European solar and wind associations presented a joint statement to EU Energy Commissioner Kadri Simson and Minister of Energy of Ukraine, German Galushchenko. At the event, the European and Ukrainian solar and wind associations published a joint statement calling on the leaders from Ukraine and the EU to embrace renewables and renewable hydrogen in Ukraine's post-war reconstruction by setting a target of at least 50% of renewables in electricity production by 2030, through a combination of roofto and ground-mounted solar, as well as onshore and offshore wind. The appeal was also supported by the Women's Energy Club in Ukraine.

The appeals made by the UWEA in the first months of the war are particularly noteworthy. In early March 2022, the Association called on its international partners and members to stop their activities in russia and withdraw from the russian market. First of all, it concerned manufacturers of wind energy equipment. The UWEA also appealed to the global wind energy community to promote a complete ban and embargo of russian oil and natural gas.

In April 2022, the UWEA called on the President of Ukraine "to identify wind energy as a priority sector of the economy and provide for large-scale wind energy deployment in Ukraine's Post-War Recovery Plan."

In 2022 the UWEA continued its work aimed at improving the legislative framework for the national renewable energy sector. The UWEA representatives actively participated in the work of the working group established at the NPC Ukrenergo to discuss and provide proposals for the amendments to NEURC Resolution No. 641 and the Market Rules. These amendments, in particular, were aimed at addressing issues related to improving and refining the formula for calculating imbalances, RES producers' withdrawal from / resuming participation in the balancing group of SE Guaranteed Buyer in line with the provisions of Law of Ukraine No. 2479-IX dated July 29, 2022 "On the Peculiarities of Regulating Relations in the Natural Gas Market and in the Field of Heat Supply During Martial Law and the Subsequent Restoration of Their Functioning".

The work of the UWEA Legal Committee was very effective in 2022. Its comments and proposals of which contributed to improving the legislation in the wind energy sector and solving urgent problems in the sector. The UWEA submitted its proposals to Ukraine's Post-War Recovery Plan, the National Renewable Energy Action Plan for the period up to 2030, draft laws, etc

In 2022, the UWEA continued its activities aimed at promoting offshore wind and green hydrogen technologies in Ukraine. On October 26, 2022, in the city of Izmir, Turkey, Wind Energy Associations from Turkey, Ukraine, Bulgaria and Georgia initiated the creation of the Black Sea Offshore Wind Energy Federation *(BASOFWED).* "The Parties shall encourage and support the cooperation in the field of offshor wind power development in the Black Sea Region based on mutual benefit according to the provisions of the present Protocol and the national legislation of each Party," the BASOFWED Initiation Protocol states.

The UWEA members participated in national wind energy events and represented the Ukrainian wind energy sector in Poland, Italy, Germany, Turkey, and Spain. During the year, the UWEA representatives spoke at 12 international events and provided information support to conferences held by PWEA, TWEA, WWEA, WindEurope, RenewablesUK, Invest in Network.

WindEurope, together with the PWEA, the UWEA, RenewableUK and other national wind energy associations launched a charity initiative to raise funds among WindEurope member companies to support Ukrainians. Medical equipment was donated to several Ukrainian medical institutions located in different regions of Ukraine within this initiative. The WWEA and the Global 100% Renewable Energy Platform launched the campaign "Renewables4Ukraine" to raise funds for donating renewable energy equipment for emergency humanitarian aid in Ukraine, in particular, small and stand-alone solar systems, including batteries, power banks, etc.

THE UWEA SECRETARIAT EXPRESSES ITS SINCERE GRATITUTE TO ALL UWEA MEMBERS AND PARTNERS FOR THEIR SUPPORT, FRUITFUL WORK AND PRFESIIONALISM

In 2022 the UWEA continued its educational activity. In the autumn of 2022, the UWEA donated books on renewable energy sources and energy efficienc to the National Library of Ukraine for Children. On December 15, the UWEA Board Member Galyna Shmidt spoke about Ukraine's wind pioneers at the international webinar "The Modern History of Wind Energy. Keeping Records".

Over the year the Association's Secretariat kept holding the UWEA webinar series on pressing industry issues, as well as informing its member companies about current events in the national and global wind energy sector. In total, 46 issues of the UWEA Weekly News were published in 2022.

The wind energy investors' views and positions were publicly expressed by the UWEA representatives in many interviews and articles on relevant topics, which were published in foreign and Ukrainian media including EnergyPost EU, BalticWind.EU, Rzeczpospolita, GreenEnergy New, Interfax Ukraine, Energoreforma, RBC Ukraine, Ukrainska Pravda, Censor.NET, Obozrevatel, Glavkom, Elektrovesti, Razumkov Center, ICTV, Kyiv TV Channel etc. On March 31 the Chairman of the UWEA Board spoke at a press conference of Polish Business and Local Authorities in Warsaw in support of the development of onshore wind energy in Poland.

5 new companies joined the UWEA in 2022: Siemens Energy, Extreme Works, Hustad & Granaas, Proventus Renewables Ltd and KENK. A number of Memorandums on Cooperation and Partnership were signed by the Head of the UWEA Board last year.

4.2. UWEA'S APPEALS

WIND POWER SECTOR SHOULD BECOME ONE OF THE PRIORITIES FOR THE UKRAINE'S ECONOMY

On April, 28, 2022, the UWEA called on the President of Ukraine Volodymyr Zelensky to identify the wind power as a priority for Ukraine's economy recovery and ensure a large-scale deployment of wind energy in the Ukraine's Recovery Plan.

Recognizing Ukraine as an integral part of Europe's energy policy, the UWEA considers wind energy to be the key to the harmonious integration of the Ukrainian energy system into the European energy system. Ukraine should not lag behind Europe. In response to global energy market disruption caused by russia's invasion of Ukraine, the European Commission developed REPowerEU plan aiming at phasing out its dependence on russian fossil fuels by 2030 through accelerating deployment of wind, solar and hydro technologies.

The UWEA convinced: *"The Ukrainian wind power sector will continue to supply the clean electricity to the population, fill the budget of Ukraine and attract new investors to our country, promote the development of national manufacture, renovate the country's power infrastructure and follow the principles of transparency in doing business."*

http://uwea.com.ua/en/news/entry/uvea-obratilas-k-prezidentu-ukrainy/

APPEAL TO THE PRESIDENT OF UKRAINE REGARDING THE THREAT OF BANKRUPTCY OF THE RES SECTOR

The artificial restrictions on settlements with RES producers, introduced in March 2022, has brought the national Renewable Energy sector almost to default. In their joint letter addressed to the President of Ukraine, Prime Minister of Ukraine and Minister of Energy of Ukraine on August 11, 2022, the UWEA and other RES industry associations outlined the financial crises on the RES market and focused on key areas in which illegal decisions were made at the state level.

"Ukraine may lose about 8 GW of RES power plant capacity due to the bankruptcy of the industry. It will definitely lead to the deterioration of Ukraine's energy security and the loss of its own energy independence. In addition, it will define the framework of further cooperation with international donors in the process of rebuilding of Ukraine. Also, this, in turn, will lead to a reduction in the amount of electricity available for export, which is extremely necessary for the entire energy export system, which provided about UAH 1 billion in July 2022 of profit for the state operator Ukrenergo, as well as to meet the needs of the population and industry," RES industry associations warned.

They called on the President of Ukraine and heads of the relevant state institutions to ensure the continuity of the legally provided guarantees for RES investors, to recommend to the state authorities refraining from any retrospective changes to the current laws, as well as to promote the elimination of the artificial obstacles for activities and settlements with the RES producers.

The associations emphasized that the RES sector did not need any additional financial support or subventions from the state, but strived to receive those funds for the supplied electricity, which were specified by current agreements and current laws of Ukraine.

http://uwea.com.ua/en/news/entry/zvernennya-do-prezidenta-ukrani-schodo-zagrozi-bankrutstva-sektoru-vde/

UWEA'S CALL FOR ITS INTERNATIONAL PARTNERS TO DECLARE COMPLETE BAN AND EMBARGO ON RUSSIA'S OIL AND NATURAL GAS IMPORTS

In the first days of the war unleashed by the russian aggressor, the UWEA appealed to its international partners to facilitate a complete embargo on Russian natural gas and oil.

Andriy Konechenkov, Chairman of the UWEA Board: *"For 13 consequent days already, the russian aggressor has been shelling peaceful Ukrainian cities, towns and villages with cruise missiles and bombs, killing women and children, and destroying everything in its path. We should stop the supply of natural gas and oil to Europe, supplies that bring blood money to putin's regime to have more lethal weapons. Renewable energies mean peace and freedom; they bring prosperity and healthy environment to all nations!"*

http://uwea.com.ua/en/news/entry/uvea-prizyvaet-svoih-mezhdunarodnyh-partnerov-sposobstvovat-polnomu-embargo/

4.3. DESIGNING UKRAINE'S POST-WAR ENERGY SYSTEM

The UWEA representatives joined the Working Group on Energy Security under the National Council for the Reconstruction of Ukraine from the Consequences of War, and actively participated in the drafting Ukraine's Recovery Plan. They provided their visions of the post-war reconstruction of the country focusing on a massive scaling-up and speeding-up of renewable energy in power generation, introducing hydrogen technologies and implementing guarantees of origin in Ukraine.

The Chairman of the UWEA Board and other UWEA Board members spoke at national and international events devoted to the future design of the Ukraine's post-war energy system.

The UWEA Secretariat also contributed to the analytical study "Decarbonization of the Ukrainian Energy *(Economy)*: Impact of Russian Aggression, Ambitious Goals and Potential Opportunities for Ukraine in the Post-War Period" conducted by the Razumkov Center with the assistance of the Hanns Seidel Foundation in Ukraine.

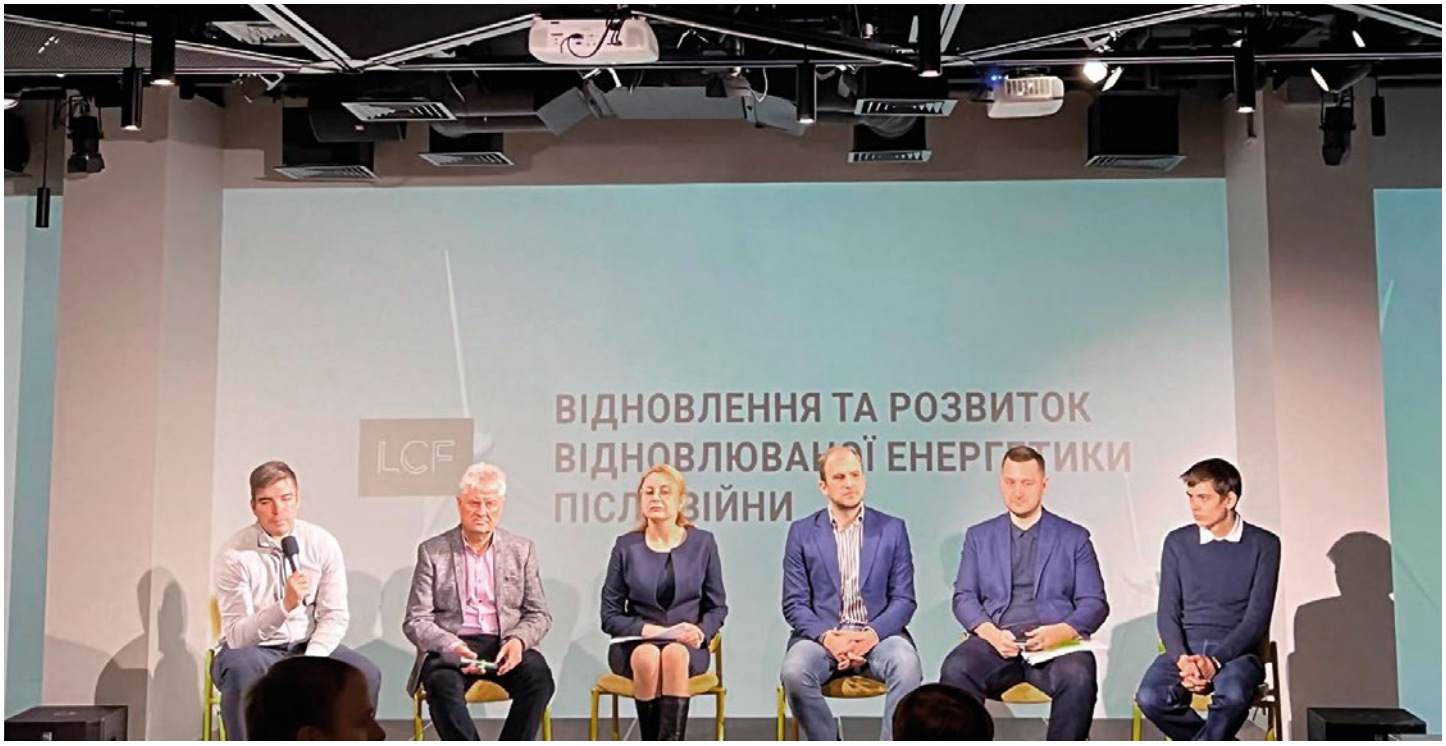
https://razumkov.org.ua/en/articles/ukraines-renewable-energy-sector-before-during-and-after the-war

DISCUSSION "RECOVERY AND DEVELOPMENT OF THE RENEWABLE ENERGY SECTOR AFTER THE WAR"

2015-2019 RES industry development proved that renewables could be an investment magnet, while the current requirements of the EU climate policy and global trends in sustainable development only confirm the leading role of renewable generation in worldwide economic growth. Therefore, the development of "green" energy should become a cornerstone of Ukraine's economy post-was recovery and strengthening its energy security.

The expert discussion "Recovery and Development of the Renewable Energy Sector after the War" conducted on 15 November 2022, gathered together People's Deputies of Ukraine, representatives of state bodies and RES industry.

Participants discussed the current status of national renewable energy sector, existing opportunities and barriers to renewable energy development, shared their views on short-, medium- and long-term measures aimed at implementing renewable energy projects after the war



Discussion was opened by **Vladyslav Maksakov,** renewable energy expert in the Ministry of Energy of Ukraine, who presented the ministerial vision for further development of the RES industry: *"Market-based mechanisms will be at the core of the future development of the national RES sector."*

Co-chairman of the Inter-Factional Deputy Association "Clean Energy – Healthy Environment", MP, **Oleksiy Goncharenko:** *"If we have already confirmed as an EU candidate country. If we have already decided that this is our way to go with the free world and be a part of Europe, "green" energy is the priority, and this is the future. Ukraine should be one of the leaders in this process, especially since we need it even more than others."*

Kyrylo Kostyrya, Legal Director, UDP Renewables: *"From a long-term perspective, we see opportunities for exporting RES electricity to the European Union. Our green elelctricty could help decarbonise EU economy and reduce its dependence on energy resources of the aggressor state. But we don't have enough ability to do so: we lack the ability to enter into long-term export contracts and have no access to interconnectors (for a period of 10-15 years). Another barriers include mandatory PSO that has been imposed on electricity exporters and a lack of Guarantees of Origin mechanism in Ukraine".*

Ihor Retivov, Senior Manager of Regulatory Affairs, DTEK Renewables: *"We should have a state policy – a strategy or another strategic document. It should be accepted and implemented by all, from the government agencies and bodies to energy companies."*

Andriy Konechenkov, Chairman of the UWEA Board: *"We should not just renovate the Ukraine's energy system of the past. We should, as EC advises us, build it back better than before, with two main goals in mind: Ukraine's energy independence and decarbonisation. To deliver these goals we have to make a deep analysis of the entire energy system which will be based on renewable energy generating technologies."*

http://uwea.com.ua/en/news/entry/vdnovlennya-ta-rozvitok-vdnovlyuvano-energetiki-pslya-vjni/

4.4. INTERNATIONAL ACTIVITY

EUROPEAN COMMISSION AND RES ASSOCIATIONS UNITE FOR A RECONSTRUCTION OF UKRAINE WITH RENEWABLES AT ITS CORE

At a hybrid event jointly hosted by WindEurope, SolarPower Europe, the Ukrainian Wind Energy Association and the Solar Energy Association of Ukraine, EU Commissioner for Energy Kadri Simson reinforced the EU's determination to support Ukraine – both throughout the ongoing war and in the following period of reconstruction.

In the online presence of German Galushchenko, Ukrainian Minister of Energy, EU and industry representatives committed to supporting Ukraine in rebuilding a strong and sovereign country, independent on russian fossil fuel imports.

The European and Ukrainian Wind and Solar Associations published a joint statement calling on the leaders from Ukraine and the EU to embrace renewables and renewable hydrogen in Ukraine's post-war reconstruction by setting a target of at least 50% of renewables in electricity production by 2030, through a combination of rooftop and ground-mounted solar, as well as onshore and offshore wind

Focussing on a renewable reconstruction of Ukraine, initial signatories of the statement, WindEurope, and the Ukrainian Wind Energy Association, SolarPower Europe and the Solar Energy Association of Ukraine, the Women's Energy Club of Ukraine, standed in solidarity with the people of Ukraine and condemed Russia's unprovoked act of aggression.

Andriy Konechenkov, Chairman of the UWEA Board: *"Living through the 8 years of russian hybrid war has taught me two things. The first is that Ukraine will never be safe until we have energy independence, and the second is that energy security can never come from fossil fuels. Ukraine's post-war recovery should be based on renewable energy. 50% share of renewables in electricity generation by 2030 is realistic and feasible target for my country."*

Malgosia Bartosik, WindEurope Deputy CEO: *"Renewables should be at the core of rebuilding a climate neutral, prosperous and energy independent Ukraine. Had we all invested earlier and more decisively in renewable energy, we would not find ourselves dependent on unreliable fossil fuel importers today. Wind was already powering Ukrainian homes and companies before the war. The European wind industry stands ready to support the Ukrainian post-war recovery and strengthen its energy security with affordable and scalable technology, while creating new jobs, supporting local communities and revitalising the Ukrainian economy."*

http://uwea.com.ua/en/news/entry/vropejska-komsya-ta-profln-asoca -z-vde-obdnalis-dlya-zabezpechennya-vdbudo/

WORKSHOP "WIND POWER – THE PATH TO UKRAINE'S ENERGY INDEPENDENCE AND PEACE" AT THE WINDEUROPE ANNUAL EVENT 2022

The largest wind conference and exhibition in Europe WindEurope Annual Event 2022 was held in Bilbao, Spain on April 5 – 7, 2022. His Majesty the King of Spain opened the Conference with the President of the Basque Government, Ministers from around Europe and top official from the EU Commission. Over 8,000 people were taking part with 330 companies from across the wind value chain exhibiting. The focus was energy security. Europe wants more wind energy more quickly than before to help wean itself off Russian gas. The event also presented the latest wind energy technology developments, including recycling.

Giles Dickson, WindEurope CEO: *"WindEurope 2022 in Bilbao comes at a decisive moment for Europe. Russia's invasion of Ukraine has upended the energy system. Europe is pursuing a new energy policy: less dependence on imported fossil fuels; and an accelerated transition to renewables."*

A special workshop "Wind Power – the Path to Ukraine's Energy Independence and Peace" was conducted by the Ukrainian WindEnergy Association on the first day of the Conference. Andriy Konechenkov presented the status of wind energy in Ukraine as of the end of 2021 and analysed the impact of the war on

the national wind market, while Galina Shmidt, UWEA Board Member, focused on the entire power system of Ukraine. Kateryna Knysh, Head of the UWEA's Analytical Department, who participated online, provided a forecast of wind power development after the war, focusing on the prospects for offshore wind p wer.

Andriy Konechenkov, Chairman of the UWEA Board, opened the workshop *"Today is the 41 day of war against my country. Ukraine is the focus of attention of the whole world. Ukrainians defend European values: freedom and independence."*

Peter A. Gish, Founder of Ukraine Power Resources shared his experience in working in Ukraine, while Olexander Podprugin, Operating Director at Elementum Energy, highlighted challenges facing his company in generating wind and solar electricity in the close approximate to the hostilities. Peter Czopek, Director at the Polish Wind Energy Association, presented the joint Ukrainian-Polish employment platform Work4Wind.

Olexander Podprugin: *"Before the aggressor's invasion, our company was actively constructing the second phase of the Dnistrovska wind farm in the Odesa region with a capacity of 60 MW. Now we have no idea when we will resume our work. Nevertheless, the main focus of our company is still clear – to ensure the safe work of our employees who are at the power plants and to defend our facilities."*

Peter A. Gish: *"We work in Ukraine since 2017. Since 2020, we have begun to cooperate with Elementum Energy on the construction of a wind farm in Odesa region. Throughout this time, I was struck by the openness of Ukrainian society, the willingness of locals to cooperate and help in the construction of "green" projects. Today, Ukrainians assert their right to energy independence and the ability to move on with renewable energy. I'm pretty sure that we will resume our work in this beautiful country as soon as possible."*

Galina Shmidt: *"russia is acting as a nuclear terrorist that threatens the whole world with a nuclear catastrophe. Russia despicably occupied the Zaporizhzhia nuclear power plant, the largest NPP in Europe. As you know, no nuclear power plant is designed for war. So, if a site is purposefully or accidentally shelled the building, which houses the nuclear reactor is hit, not only Ukraine but russia and Europe will suffer as well."*

Peter Czopek: *"Since 24 February, 2022, more then 2.5 million of people fled from Ukraine to Poland to fin the security and help. We decided to help them to fin jobs and, in turn, to show them that they are needed here and that they can start a new life here. So, together with our colleagues from Ukraine we create a project "Work4Wind", the main purpose of which is to connect people from Ukraine with wind companies which need new workers, new employees."*

Kateryna Knysh: *"Thanks to this war and unfortunately for russia, Ukraine has become even more open to foreign investments. One of the promising areas for this is offshore wind energy, which will not only increase Ukraine's energy security, but also open the way for Europe to stable and significant imports of renewable hydrogen."*

https://www.youtube.com/watch?v=rK1lPpkOLdw&list=PLC0tcjzzQlRnUQ9_HbX7nflglRtcOHHNx&index=
http://uwea.com.ua/en/news/entry/uvea-provela-seminar-na-ezhegodnom-meropriyatii-windeurope-v-ispanii/

WWEA INTERNATIONAL CONFERENCE "COLLABORATING FOR A RENEWABLE PRESENT AND FUTURE IN PEACE"

Delegates from almost 30 countries participated in this year World Wind Energy Conference "Collaborating for a Renewable Present and Future in Peace" conducted by the WWEA in cooperation with ANEV in Rimini, Italy.

The Conference gave special consideration on how a renewable energy future could help to ensure peace. Delegates discussed all aspects of mainstreaming and growing wind and renewable utilisation. Cooperation with local community, in particular in the form of community energy and energy communities was another important topic at the conference.

Conference speakers underlined that *"the emergency of the climate crisis as well as the energy and security crisis have all been mainly driven by fossil and nuclear fuels and that the only feasible response to*

tackle these crises is the immediate rollover to 100% renewable energy globally".

Galyna Shmidt, UWEA Board Member, Vice-President WWEA: *"Ukraine needs an urgent plan for energy independence and urgent international help to execute it. Widescale development of renewables, and wind power in particular should be part of the plan. Ukraine should aim for at least 40% of our electricity to come from renewables by 2030."*

http://uwea.com.ua/en/news/entry/spvpracya-zaradi-mirnogo-vdnovlyuvanogo-sogodennya-ta-majbutnogo/

UKRAINIAN-POLISH ROUND TABLE

On June 13-15, 2022, representatives of the UWEA Secretariat and some Member Companies participated in the Polish Wind Energy Association Conference, the largest wind event in Poland and Central and Eastern Europe in 2022. The conference organized by the Polish Wind Energy Association and supported by the Ministry of Climate and Environment of Poland brought together more than 1,500 delegates. The UWEA was the main international partner of the PWEA 2022 conference.

The conference was dedicated to renewable energy sources and energy market development in terms of implementation and operation of RES technologies in Poland.

Giles Dickson, CEO of WindEurope: *"Poland has to urgently remove the 10H-distance rule*[22] *which is currently excluding 98% of Polish territory from any wind energy development. The Government must facilitate the permitting of new onshore wind farms. There are many lessons to learn from other countries."*

Ruslana Lyzhychko, the first Ukrainian Eurovision Song Contest winner, ambassador for 100% Renewable energy, called on European governments to urgently switch to 100% clean energy sources*: "Putin has weaponised energy supplies. Today, clean energy is not only about the environment, but also about the security. We should choose clean energy and energy independence!"*

Ukrainian-Polish Round Table hosted by the UWEA in cooperation with the PWEA was one of the important events of the conference. Bringing together Ukrainian and Polish RES companies, the UWEA discussed the perspectives of possible joint Ukrainian-Polish green projects in Ukraine, pros and cons of electricity export form Ukraine to Poland, and the role of international financial institutions in creating favourable business climate in Ukraine.

Speakers from Ukraine included Wärtsilä Energy, KNESS, MCL Group, Greenville and Dentons, while Polish experts were represented by such companies and organisations as ONZ and Orlen, the Polytechnic of Lublin, the Jagiellonian University, the Forum Energii and the Polish Energy Exchange.

[22] In 2016, the government introduced the so-called "10H rule", which forbids the construction of wind farms where there are buildings within a distance of ten times the height of the turbine. That effectively ba red wind investments on most of Poland's territory.

Kateryna Knysh, Head of the UWEA Analytical department, who presented the prospects for post-war recovery of Ukraine's power sector based on RES deployment, and Monika Morawiecka, Senior Advisor at the Regulatory Assistance Project, who focused on ensuring the necessary flexibility of the power system through electricity trading, moderated the Round table talks.

Round table was opened by Mykyta Vyshnevskyi, Market Operations Director at the NPC Ukrenergo and Global Ambassador of 100% Renewable Energy Ruslana.

Commenting the existing export potential of IPS of Ukraine, Director at the NPC Ukrenergo **Mykyta Vyshnevskyi** noted: *"In order to unleash Ukraine's full export potential, it is necessary to ensure transparent commercial exchange with the EU countries in line with the European rules, which, in particular, stipulate for the non-discriminatory access for all market players to interconnectors. Strict adherence to the green course is one of the priorities for Ukrenergo as a transmission system operator of Ukraine."*

Grzegorz Zielinski, Director, Head of Energy Europe, EBRD Poland, reaffirme the EBRD's intention to finance not only Ukraine's post-war energy recovery but also future green projects in Ukraine.

"Ukraine's post-war recovery has to comply with the REPowerEU Plan and wind power should play a key role in this," underlined **Malgosia Bartosik,** Deputy CEO of WindEurope.

The UWEA expresses its gratitude to the Polish Wind Energy Association for its support and hopes for effective and mutually beneficial cooperation between the Polish and the Ukrainian wind energy companies in the nearest future!

http://uwea.com.ua/en/news/entry/uvea-provela-ukrano-polskij-kruglij-stl-v-ramkah-polsko-vtroenergetichno-ko/

THE 14TH BALTIC BUSINESS FORUM IN SWINOJUSTIE, POLAND

The 14th Baltic Business Forum hold on May 23-25 in Świnoujście, Poland, aimed at supporting Ukraine's European aspirations and promoting economic cooperation between the countries. Baltic Business Forum acquired honorary patronage of the Ukrainian Embassy in Poland. The Polish-Ukrainian chamber of Commerce and Industry and the Ukrainian League of Industrialists and Entrepreneurs were among the Forum's co-organizers. "Power to Rebuild Ukraine" was the main topic of Forum's discussions.

Andriy Konechenkov, Chairman of the UWEA Board, spoke at the panel discussion devoted to the Polish-Ukrainian cooperation in the energy sector "From Nord Stream to Energy Independence. Challenges for Poland, Ukraine and the European Union."

Andriy Konechenkov: *"All modern wars in the world involve a struggle for energy resources, for fossil fuels. The country's security strategies should be based on the use of clean and renewable energy sources, as well as on creating alternatives to natural gas through the production of green hydrogen and the use of bioenergy technologies. Involvement of Ukrainian and Polish businesses in joint energy projects will not only contribute to the development of RES in these countries, but also to the substitution of russian natural gas in the EU due to increased supplies of green electricity from Ukraine to Poland."*

http://uwea.com.ua/en/news/entry/uvea-na-14-baltijskom-biznes-forume-v-polskom-svinoujske/

UWEA AT THE WORLD'S LARGEST WIND ENERGY INDUSTRY EXHIBITION WINDENERGY HAMBURG 2022

Nowadays, in times of economic and energy crises, it is more than ever clear that the development of renewable sources is the only way to reach energy security and fight against rapid climate change. "It's time to put the climate issue first" was a motto of WindEnergy Hamburg 2022 exhibition and conference. The event program included various forums that encouraged participants to discuss and share knowledge.

Speaking at the opening of WindEnergy Hamburg, the Minister of Economy, Vice Chancellor of Germany Robert Habeck noted that the development of

wind energy and the spread of renewable energy in general had become more urgently needed and more important than ever. *"The accelerated energy transition is the key to a safe and sustainable energy supply not only in Germany, but also in the whole of Euro,"* said **Robert Habek** and once again emphasized the importance of wind energy technologies, both onshore and offshore

An exhibition and conference of the hydrogen energy sector "H_2EXPO & CONFERENCE" was also held, as part of Wind Energy Hamburg 2022.

The Ukrainian wind energy industry was worthily represented at WindEnergy Hamburg 2022 by 22 UWEA member companies. The UWEA booth attracted a lot of visitors. "We will win(d)!" – the main message Ukrainian companies communicated to the fair's participants and visitors.

UWEA representatives also spoke at several events held as part of the WindEnergy Hamburg 2022 program. Thus, Galyna Shmidt, UWEA Board member spoke at Renewables4Ukraine event hosted by the WWEA and Global 100% RE.

"All countries are paying currently a high price and need to accelerate the pathway towards 100% renewable energy", noted **Stefan Gsänger,** Secretary General of the WWEA.

Speakers from Ukraine, Turkey and the Netherlands presented different angels of the current energy crises and what the response should be. Ambassador for 100% Renewable energy Ruslana called for renewable actions. All the speakers underlined that relief and post-war reconstruction of Ukraine should be based on renewables with wind energy at its core.

Galyna Shmidt: *"Ukraine's power sector recovery should be based on renewables. Energy security for Ukraine means our resistance to global threats and challenges and the confidence of Ukrainians in their future. All this can be achieved by the transition to renewable energy sources and other green energy technologies like renewable hydrogen."*

In her presentation at GWEC Working Lunch "Accelerating renewables to achieve energy security and climate action" **Galyna Shmidt** emphasized: *"With transition to renewable energy, energy itself will cease to be an instrument of political or military influence of one country on another. Ukraine needs EU help to recover our economy, rapidly electrify our energy system, produce renewable hydrogen and deploy offshore wind. This will require true technological and industrial partnership between Ukraine and the EU. For sure, huge investments are required to deliver all these targets. At the same time investing in Ukraine, in our*

wind power sector means investing not only in Ukrainian energy security but in European energy security as well. Wind energy means Peace and Democracy!"

Joyce Lee, Head of Policy and Projects, GWEC, presented "A Five-Point Plan to Accelerate Renewables and Achieve Energy Security and Climate Action" drafted by GWEC to outline tangible steps for global policymakers to take within the next 12 months to address the energy and climate crises over the next 3 years; crises which have worsened in the last 12 months, exacerbated by the russia's invasion of Ukraine.

http://uwea.com.ua/en/news/entry/uvea-vzyala-uchast-u-najblshj-u-svt-galuzevj-vistavc-vtroenergetiki-windene/

4.5. UWEA WEBINAR 2022

The UWEA webinar series on both theoretical and practical aspects of national wind power development launched in 2021, was restarted in late January 2022.

AWARENESS OF SAFETY REGULATION AND IMPLEMENTATION OF SAFETY CULTURE IN WIND POWER INDUSTRY AS A KEY FACTOR FOR SUCCESSFUL OPERATION OF WPPS

The first webinar of the 2022 series devoted to practical safety trainings in wind power sector was jointly organised by the UWEA and BOTC Training, leading GWO training centre in the Baltic and Nordic region.

During the webinar high level experts from BOTC Training – Mr. Mihails Kuzmičs, and Mr. Kaspars Kalniņš – presented the international experience of practical safety training of wind power sector employees in accordance with the Global Wind Organization standards, adoption of the best global practices and analysed key risks and methods of their control when working in wind industry.

Mihails Kuzmičs: *"Promotion and forge of a safety culture through systematic and practical training is the purpose of our today's presentation. Practical training is a key issue."*

http://uwea.com.ua/en/news/entry/startovala-seriya-vebinarov-uvea-2022-goda/

THE UWEA BROUGHT TOGETHER ELECTRICITY MARKET PLAYERS TO DISCUSS PROBLEMATIC ASPECTS OF IMBALANCES COMPENSATION IN WARTIME

On June, 22, 2022, on the Global REnew Day, the UWEA in cooperation with the law firm Asters, NPC Ukrenergo and SE Guaranteed Buyer held a webinar "Problematic aspects of compensation of imbalances by RES producers during the martial law".

In his introductory speech **Yaroslav Petrov,** a partner at Asters, highlighted the main idea of the webinar: *"A significant number of the RES producers does not understand why they have received big bills for imbalances in some months of 2022, given the huge number of curtailments of green generation during exactly these periods. As the RES producers keep receiving extremely low payments for the delivered electricity along with such big bills for imbalances, they have to consider different options of protecting their rights and preventing their bankruptcy."*

Oleksandr Symomenko, Head of the Department of Special Obligations and Market Support of the NPC Ukrenergo, and Maksym Dyrenko, Head of the Department of Trade Operations in the Electricity Market of the SE Guaranteed Buyer spoke at the webinar to highlight the problematic issues and discuss possible solutions.

Oleksandr Symomenko noted that the key reason for the big bills for imbalances was a failure to provide the SE Guaranteed Buyer with full data on curtailments of green electricity in the terms provided by the NEURC's Resolution No 641 dated April 26, 2019: *"The reason for the failure to submit the data on curtailments at the proper time to SE Guaranteed Buyer is the delay in signing the relevant acts to settle the imbalances and execute other payments."*

Maksym Dyrenko added: *"In general, three main factors have created this problem: i) legislative, namely inadequacy of the regulation and this year increase of RES producer's liability for imbalances from 50% to 100%; ii) technical, that associates with forecasting issues and the increase of the average monthly deviation among members of the balancing group from 5% in 2021 to about 40% in 2022, which, in turn, is closely linked to active hostilities and the inability of some generators to clearly assess the status of operation of their power plants; and iii) current decrease in demand in various market segments."*

It should be noted that both speakers encouraged the webinar participants to actively participate in the relevant working groups on amendments to the legislation.

http://uwea.com.ua/en/news/entry/uvea-zbrala-predstavnikv-rinku-elektrichno-energ-dlya-togo-schob-obgovoriti/

RECORDING DAMAGES TO RENEWABLE ENERGY FACILITIES CAUSED BY THE RUSSIA'S AGGRESSION AND THEIR COMPENSATION

Since the first days of the war, russia has resorted to energy terror aimed at physically damaging Ukraine's energy system. Russia's aggression and temporary occupation of part of Ukraine's southern territories deprived the country of a significant share of green generation. Due to the lack of access to many wind energy facilities, it is currently impossible to accurately reflect the level of damage and losses. That is why the issue of recording the damage to wind energy facilities caused by the russia's aggression against Ukraine has become particularly relevant.

FIXATION AND COMPENSATION OF DAMAGES TO RES FACILITIES CAUSED BY THE WAR

On May 6, 2022, the UWEA hosted the webinar on fixing and compensating for damage to RES facilities caused by the war. During the webinar, the representatives of Asters, Dentons and Sayenko Kharenko explained the peculiarities of the Ukrainian legislation regulating the issue of damages.

Andriy Konechenkov, Chairman of the UWEA Board: *"This is a very important webinar for the entire RES market, as it must use all the opportunities available for obtaining compensation, despite the variety of procedures and their duration. So, today we brought together experts from three law firms, members of the UWEA, who will explain the compensation-related procedures and recommend how to go through this process as quickly and efficiently as possible,*

In her presentation *"Types of damages stipulated by the Ukrainian law, which can be claimed for compensation. Algorithm of actions for real estate and environmental crimes",* **Anzhelika Livitska,** Head of the practice of construction, environmental protection and sustainable development at Asters, drew attention to the following novelty in Ukrainian legislation: *"Businesses can seek compensation not only for direct losses, but also for lost profits, and this is completely new to our legislation. In order to avoid accusations of contamination of the lands where the facility is located, you need to notify the Ministry of Environmental Protection about the contamination (pollution) received as a result of hostilities. I emphasize that Ukrainian law provides for the presumption of guilt of land users."*

Maksym Sysoyev, Partner of law firm Dentons: *"Ukrainian legislation contains a number of resolutions that regulate the procedure for determining the damages caused to RES facilities during the war. At the same time, today we expect the adoption of methods for determining and assessing damages to such facilities."*

In turn, **Oleksiy Koltok,** litigation counsellor at Sayenko Kharenko, focused on the possibilities and precedents of applying to the European Court of Human Rights for recovery of damages: *"Unfortunately, currently there are no effective mechanisms in Ukraine to protect victims of russian military aggression. Therefore, the ECHR is the international judicial body that can consider an application from both individuals and legal entities and award fair satisfaction."*

http://uwea.com.ua/en/news/entry/vebinar-uvea-fiksaciya-i- ozmeschenie-ubytkov-nanesennyh-obektam-vde-v-rezu/

PRACTICAL ASPECTS OF FIXING DAMAGES TO INFRASTRUCTURE FACILITIES CAUSED BY THE RUSSIA'S MILITARY AGGRESSION CONSIDERING THE PECULIARITIES OF RES FACILITIES

The second webinar on this issue was hold on November 9, 2022. Representatives of the UWEA member companies Bureau Veritas, Asters and CMS Cameron McKenna Nabarro Olswang expressed their expert opinions on the process of fixing and assessing losses.

In his presentation, Arsen Panasjuk, Industry and Construction Manager at Bureau Veritas, stressed the importance of observing the methodology for assessing damages to destroyed property of enterprises.

Maksym Liashok, Director of Esset Experts LLC, focused his speech on the methodology for assessing damages to destroyed property of enterprises.

Olga Shen, Partner at CMS Cameron McKenna Nabarro Olswang, highlighted the role of fixin damages caused by the war, in the context of subsequent claims, and draw the webinar participants' attention to its key importance in the context of filin claims: *"Damages should be recorded as soon as possible, documented properly... because when the case comes to the merits in court or arbitration, all circumstances will depend on the extent and quality of the evidences to support the damages."*

Serhiy Dusanovsky, Senior Associate at ASTERS, noted that, unfortunately, there had been no quick solutions to compensate for losses. According to the ECHR, it could take up to 7 years to consider cases for compensation for losses caused by the military aggression of the russian federation.

4.6. GROWING PARTNERSHIP

INITIATING THE BLACK SEA OFFSHORE WIND ENERGY FEDERATION

On October 26, 2022, in the city of Izmir, Turkey, Wind Energy Associations from Turkey, Ukraine, Bulgaria and Georgia – inked a Protocol on Initiating the Black Sea Offshore ind Energy Federation *(BASOFWED).*

According to World Bank estimates, the Black Sea region has a technical potential of 453 GW to ensure large-scale deployment of offshore wind energy technologies. Therefore, representatives of the four countries consider offshore wind energy to be one of the driving forces for "green" energy transition in the Black Sea region.

"The Parties shall encourage and support the cooperation in the field of offshore wind power development in the Black Sea Region on the basis of mutual benefit according to the provisions of the present Protocol and the national legislation of each Party," the BASOFWED Initiation Protocol states.

Andriy Konechenkov, Chairman of the UWEA Board: *"Wind energy – onshore and offshore – should become a key element in the post-war reconstruction of the Ukrainian energy system. It is not only the pathway to green energy. This is the pathway to decarbonization of our economy, democracy and peace."*

The officia signing ceremony was held as part of the Marentech Expo 2022, International Marine Energy Technologies Fair and Conference, which is the main regional event for offshore wind energ .

http://uwea.com.ua/en/news/entry/stvorena-chornomorska-ofshorna-vtroenergetichna-federacya/

MEMORANDUM OF COOPERATION BETWEEN THE UKRAINIAN WIND ENERGY ASSOCIATION AND THE LATVIAN WIND ENERGY ASSOCIATION

On December 1, 2022, a Memorandum of Cooperation between the Ukrainian Wind Energy Association and the Latvian Wind Energy Association *(Memorandum on Cooperation)* was signed in Riga, Latvia.

The signing ceremony took place within the business visit of the Ukrainian delegation to Latvia, which was organized by the Chambers of Commerce and Industry of Latvia and Ukraine and held under the slogan "Supporting Ukraine's integration into the single Western and European market, using Latvia as an entry point".

Chairman of the Supervisory Board of the Latvian Wind Energy Association **Gatis Galvins:** *"Cooperation between our countries will not only enable setting up new energy structures of our countries without russian gas, but will also provide an opportunity for knowledge and experience exchange on wind energy development".*

Associations will undertake joint activities to demonstrate the feasibility and benefits of wind technologies to a national and European audiences, with both partners providing their best assets from their main sphere of activities and networks, by:

- exchanging information about latest developments, main challenges and new opportunities in the wind energy field
- organising international events on wind energy to maximise public perception of wind such as conferences, workshops, exhibitions and other types of events;

- coordinating and exploring further possibilities of acquiring and undertaking joint projects and initiatives;
- hosting regular personal meetings, including members of wind associations.

Andriy Konechenkov, Chairman of the UWEA Board: *"The signing of the Memorandum of Cooperation between two wind energy associations is an important step on the way of our countries towards energy independence, decarbonization and peace."*

http://uwea.com.ua/en/news/entry/ukranska-vtroenergetichna-asocacya-pdpisala-memorandum-pro-spvpracyu-z-tema/

UWEA SIGNED A MEMORANDUM OF COOPERATION WITH NRG.SPACE

Memorandum of Cooperation signed by the Chairman of the UWEA Board Andriy Konechenkov and the founder of the NRG.space. offic space Oleksiy Badika on December 22, 2022, aims at ensuring the effective transformation of the energy system of Ukraine.

Cooperation between the UWEA and NRG.space residents will result in new development projects, contribute to professional growth of the energy and environmental industries specialists, ensure harmonization of Ukrainian energy legislation and strengthening of energy security of Ukraine.

Andriy Konechenkov: *"This cooperation opens up opportunities for the members of our association to integrate into the energy expert community while working and participating in NRG.space events. This is an opportunity for developing and implementing new projects and establishing partnerships that would not be possible without the joint work of specialists from different fields in one office spac*

Oleksii Badika founder and CEO of Atmosfera, co-founder and member of the ASEU Board, NRG. space resident: *"We want to create the basis for the transformation of Ukraine's energy system into a state-of-the-art, efficient technologically and economically stable one, capable of withstanding not only a war with an outdated aggressive neighbor but also competition with highly developed markets of other countries. We are sure that such a transformation is impossible without combining the expertise, energy, and resources of many market players, public associations, educational institutions, and the state, without creating a common goal and development strategy."*

http://uwea.com.ua/en/news/entry/ukranska-vtroenergetichna-asocacya-pdpisala-memorandum-pro-spvpracyu-z-t

4.7. WIND INDUSTRY SUPPORTING UKRAINE

THE WAR IN UKRAINE HAS BROADEN THE ASSOCIATION'S ACTIVITIES

Under the initiative Wind Industry Supporting Ukrainians, launched by WindEurope, the PWEA and the UWEA, RenewableUK and other wind energy national associations, the Ukrainian Charitable Organisation Ukrainian Foundation of Citizens *(Gromodyany Foundation)* supplied eight ATMOS C 161 Aspirator/DDS to fi e Ukrainian hospitals located in different regions of Ukraine in the summer of 2022. The aspirators were delivered to Kyiv Blood Transfusion Center, Kyiv Clinical Hospital for Railway Transport No. 2, Zaporizhzhia Regional Anti-Tumor Center, Kirovohrad Regional Clinical Hospital for War Veterans of the Kirovohrad Regional Council, and Mykolaiv Military Hospital.

In July 2022, the Zhytomyr Military Hospital requested the Citizens Charitable Foundation to assist in providing charitable assistance, namely the supply of surgical medical equipment. Thanks to the generous financial contributions of both WindEurope member companies, in particular Energias Renovables y Desarrolo Alternativos, Baltic Power, Merkur Offshore

Ecopower, and many well-meaning individuals, the necessary surgical equipment was delivered to the Zhytomyr Military Hospital in October-November, 2022.

Malgosia Bartosik, Deputy CEO of WindEurope: *"The medical equipment we have recently donated to the Ukrainian hospitals helps save the lives of brave men and women who are fighting for their freedom and ours."*

OUTPATIENT CLINICS IN IRPIN RECEIVED TWO MOBILE SOLAR SYSTEMS

The WWEA and the Global 100% Renewable Energy Platform launched the campaign "Renewables4Ukraine" to raise funds for donating renewable energy equipment for emergency humanitarian aid in Ukraine, in particular, small and stand-alone solar systems, including batteries, power banks, etc. The WWEA-UWEA joint project aims at helping civilians with solving energy problems through the use of renewable energy sources.

Thus, on December 26, 2022 the World Wind Energy Association and the UWEA handed over two 3 kW mobile solar systems to Irpin City Center of Primary Health Care to allow medical entities in Irpin community, one of the most affected by the Russian aggression in Kyiv region, to use certain medical equipment also in times of power interruptions.

Stefan Gsänger, Secretary General of the WWEA: *"People all over the world express their concrete support for Ukraine. We received donations from individuals and also from companies, smaller amounts, larger amounts. In light of the humanitarian situation, we want to provide*

Ukrainian Wind Energy Association greatly appreciates help and assistance that the Wind Energy Community has provided and continues to provide to Ukrainians within these initiatives!

you with even more plants and above all, we want to make our modest contribution, so that Ukraine can be energy self-sufficien with help of renewable energy. We know that given the situation in your country, this is just like a drop in the ocean. Nevertheless, we hope that solar sets will proof practically useful and that the signal it sends will be received: you are not alone, we stand by your side."

"I am pleased that the World Wind Energy Association and the Ukrainian Wind Energy Association together with KNESS Energy company have chosen a town of Irpin for implementing a pilot project aimed at supporting local primary healthcare institutions in their transforming into energy independent ones. The situation in Ukraine and in the Irpin community, this winter in particular, will be the most difficul one in the entire history of the Ukraine's independence. But with such reliable partners it will be easier for us to survive the energy crisis," thanked **Oleksander Markushyn,** the mayor of Irpin.

Andriy Konechenkov, Chairman of the UWEA Board: *"The main goal of our project is to provide assistance to hospitals in the regions most affected by russia's invasion. Solar systems will provide them with electricity generated from the renewable energy sources, namely from solar energy. We have also invited an Ukrainian manufacturer of renewable energy equipment into the project. KNESS Energy has developed a very good mobile solar system that not only generates electricity from solar energy, but can also work as a power bank."*

http://uwea.com.ua/ua/news/entry/ambulator-rpenya-otrimali-dv-mobln-sonyachn-elektrostanc/

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ІРПІНСЬКОЇ МІСЬКОЇ РАДИ

ПОДЯКА

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Української вітроенергетичної асоціації

Андрію КОНЕЧЕНКОВУ

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соціальну відповідальність,
надання медичним закладам Ірпінської громади
альтернативних джерел живлення

Міський голова **Олександр МАРКУШИН**

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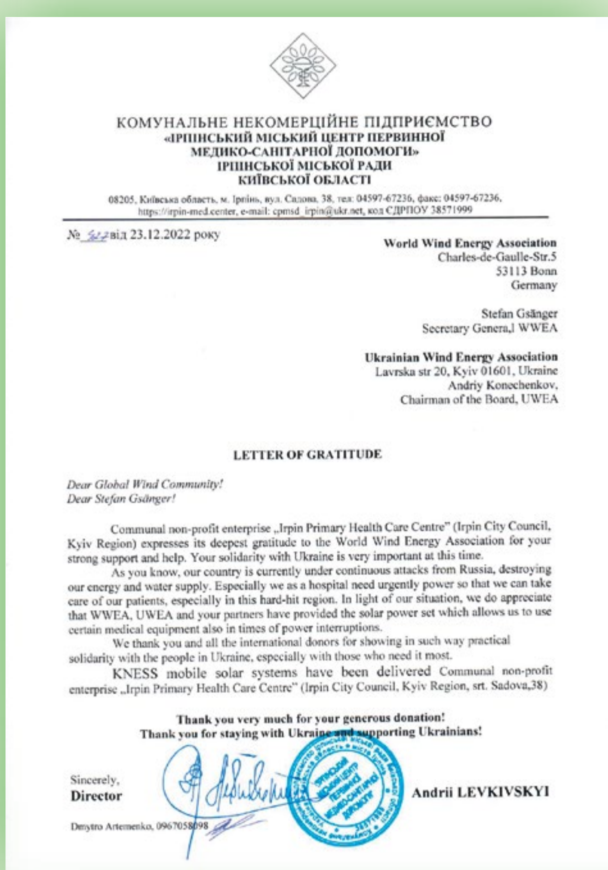

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**«ІРПІНСЬКИЙ МІСЬКИЙ ЦЕНТР ПЕРВИННОЇ
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https://irpin-med.center, e-mail: cpmsd_irpin@ukr.net, код СДРПОУ 38571999

№ ___ від 23.12.2022 року

World Wind Energy Association
Charles-de-Gaulle-Str.5
53113 Bonn
Germany

Stefan Gsänger
Secretary Genera,l WWEA

Ukrainian Wind Energy Association
Lavrska str 20, Kyiv 01601, Ukraine
Andriy Konechenkov,
Chairman of the Board, UWEA

LETTER OF GRATITUDE

Dear Global Wind Community!
Dear Stefan Gsänger!

Communal non-profit enterprise „Irpin Primary Health Care Centre" (Irpin City Council, Kyiv Region) expresses its deepest gratitude to the World Wind Energy Association for your strong support and help. Your solidarity with Ukraine is very important at this time.

As you know, our country is currently under continuous attacks from Russia, destroying our energy and water supply. Especially we as a hospital need urgently power so that we can take care of our patients, especially in this hard-hit region. In light of our situation, we do appreciate that WWEA, UWEA and your partners have provided the solar power set which allows us to use certain medical equipment also in times of power interruptions.

We thank you and all the international donors for showing in such way practical solidarity with the people in Ukraine, especially with those who need it most.

KNESS mobile solar systems have been delivered Communal non-profit enterprise „Irpin Primary Health Care Centre" (Irpin City Council, Kyiv Region, srt. Sadova,38)

Thank you very much for your generous donation!
Thank you for staying with Ukraine and supporting Ukrainians!

Sincerely,
Director **Andrii LEVKIVSKYI**

Dmytro Artemenko, 0967058098

ПОДЯКА

УКРАЇНСЬКА ВІТРОЕНЕРГЕТИЧНА АСОЦІАЦІЯ

Командування військової частини А1065 висловлює Вам щиру подяку за розуміння, співпрацю та допомогу, надану нашому медичному закладу, за Ваш особистий внесок в загальну справу підтримки Збройних Сил України, забезпечення національних інтересів і безпеки України, зміцнення незалежності та державного суверенітету нашої держави!

Миру, добра Вам та життєвої наснаги для нових успіхів!

З повагою,
Командир військової частини А1065
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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