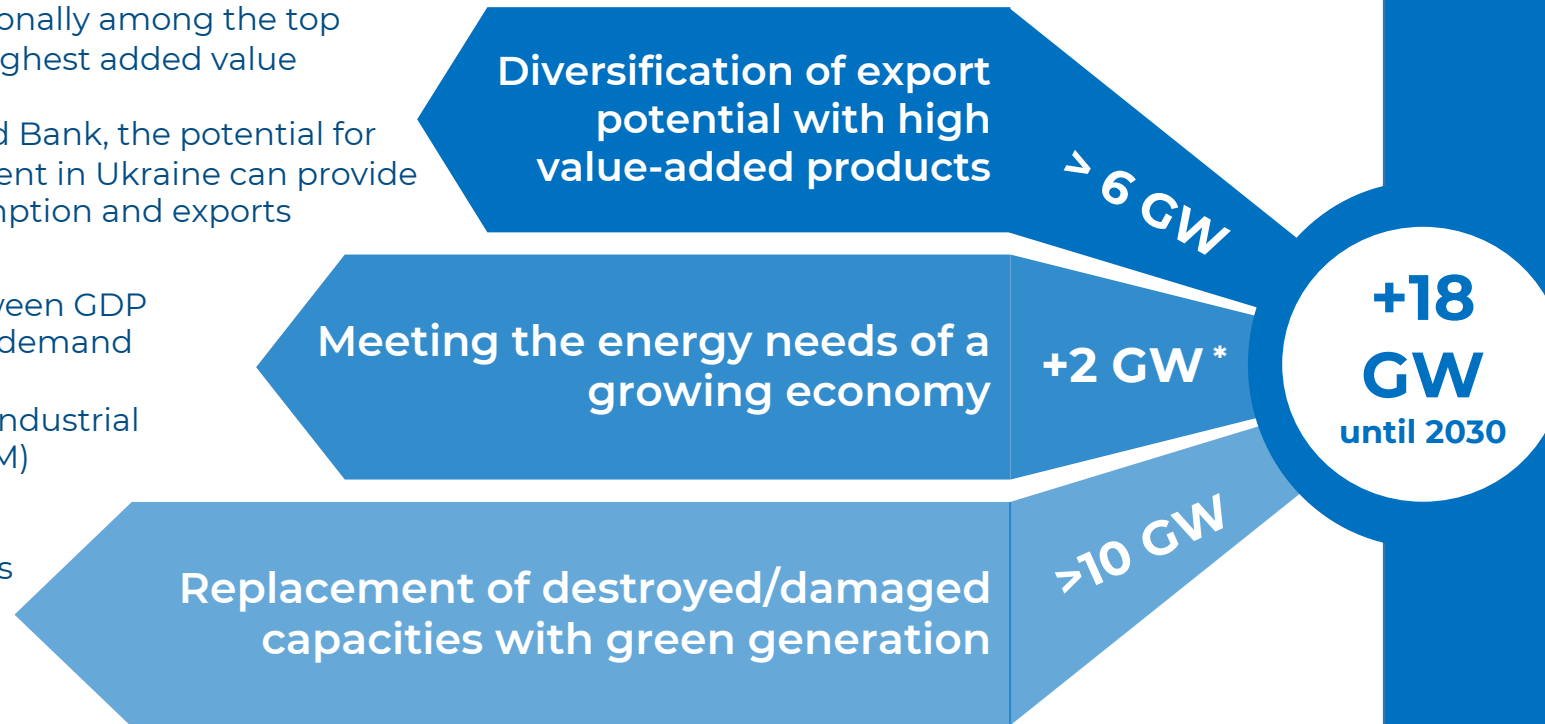


An aerial photograph showing a large-scale wind power development in a coastal region of Ukraine. The image features a series of white wind turbines distributed across a patchwork of green and yellow agricultural fields. The land is bordered by a deep blue body of water on the left. The perspective is from a high angle, looking down and slightly across the landscape towards the horizon under a clear sky.

Ukraine's Wind Power Development Strategy until 2030

Wind power should be key for rebuilding Ukraine's energy sector

- The energy industry, including renewable energy sources (RES), is traditionally among the top 5 industries with the highest added value
- According to the World Bank, the potential for wind power development in Ukraine can provide both domestic consumption and exports
- Direct correlation between GDP growth and electricity demand
- RES will contribute to industrial competitiveness (CBAM)
- Following global trends
- Strengthening energy security
- Promoting innovation



"Energy determines a country's ability to compete in the global economic space. Investments in energy technologies contribute to the development of industry and support sustainable GDP growth."

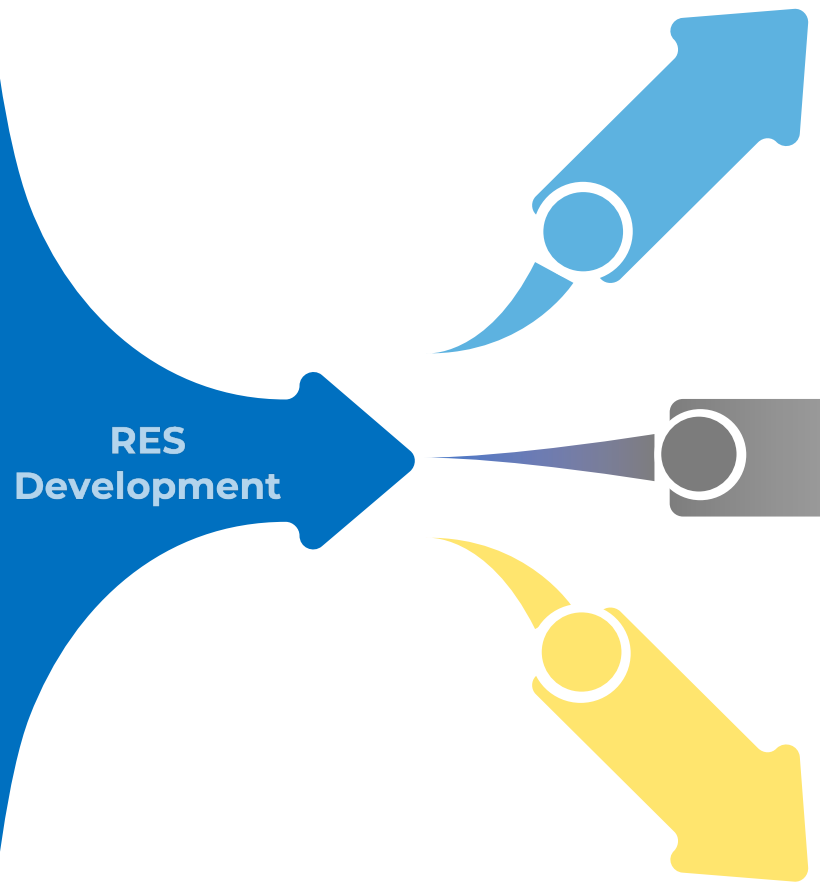
World Intellectual
Property Organization
(WIPO)

* by 2030, assuming annual growth of GDP and electricity consumption by 5% compared to 2022

A new direction for Ukraine

- Identify **priority industries**, remove **existing barriers**
- Promote the development of new **high value-added enterprises, renewable energy enterprises**

RES
Development



```
graph LR; A[RES Development] --> B[New wind projects through related sectors of the economy (construction, logistics, engineering, mechanical engineering) will have a positive impact on GDP growth and budget revenues]; A --> C[Significant increase in state budget revenues after the investment is recouped]; A --> D[The production and use of green energy will help to strengthen Ukraine's competitiveness in the global market and develop new sectors of the economy];
```

New wind projects through related sectors of the economy (**construction, logistics, engineering, mechanical engineering**) will have a **positive impact on GDP growth and budget revenues**

Significant increase in state budget revenues after the investment is recouped

The production and use of green energy will help to **strengthen Ukraine's competitiveness in the global market** and develop new sectors of the economy

RES development is impossible without foreign investment

Even the worst-case
scenario envisages
attracting investments of
about
EUR 8.5 billion

The real need for
investment is
EUR 26 billion

There are several scenarios for RES market development in Ukraine until 2030.

With minor improvements

- It is possible to implement wind projects with a total capacity of about **6 GW**

A fundamental change in approach

Simplifying the development procedure and facilitating investment in the short term (until 2030) will help:

- additionally implement projects with a total capacity of **+10 GW**
- create a **portfolio of projects for implementation in the 2030s** with a total capacity of **>20 GW**

Prerequisites:

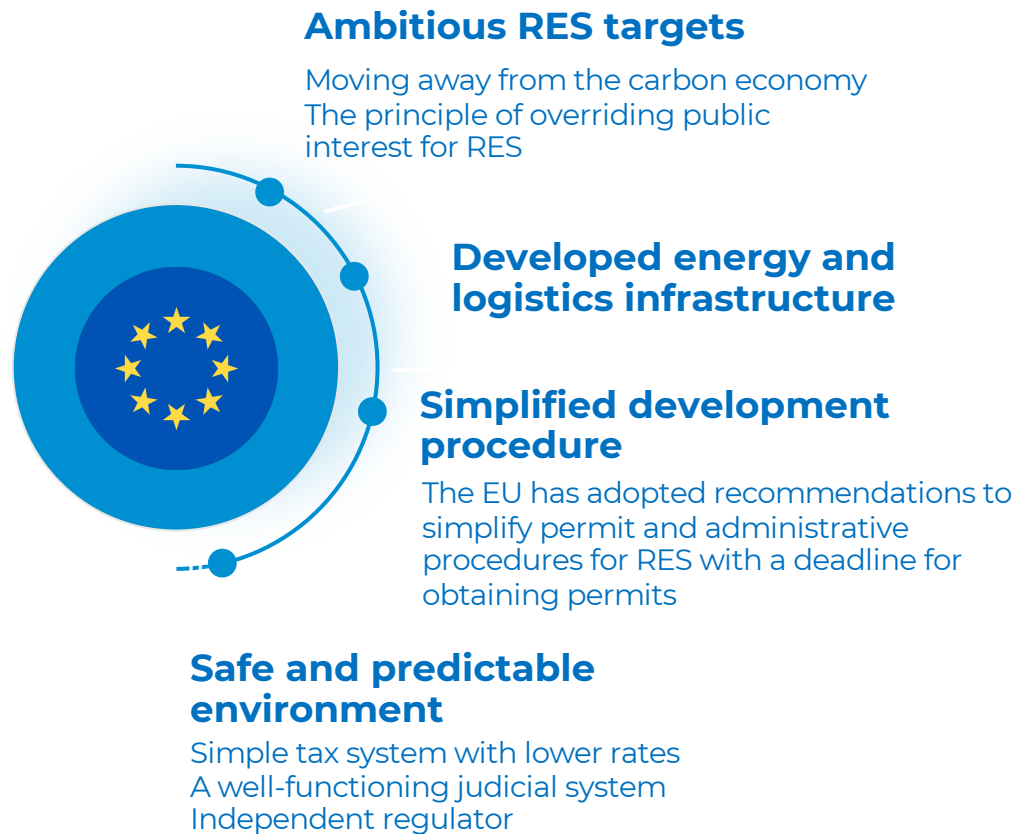
- Extension of existing permits
- Attracting investments
- Implementation of all projects that were initiated before the russian invasion.

Prerequisites:

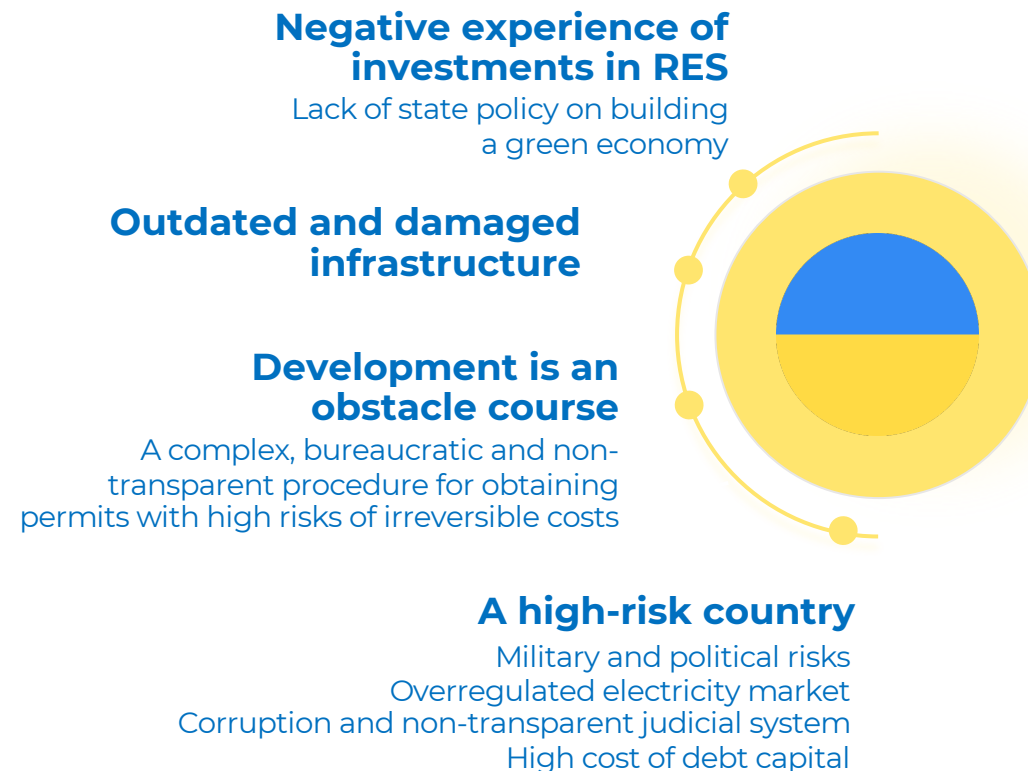
- Emphasising RES in the restoration and planning of generating capacities
- Growth of industrial consumption
- Network development
- Interstate crossings development



Why should investors choose Ukraine?



VS



To become more attractive to investors, Ukraine has to **outperform the neighbouring EU member countries in RES market conditions**

How to attract investors?

- **Remove the barriers**
- **Secure the investments**
- **Provide preferences to key industries, including renewable energy**

We have prepared practical proposals to accelerate the development of the wind industry, which include actions of the following timing:

 Short-term

 Medium-term

Comprehensive state energy policy

Prioritization of RES deployment



Optimization of infrastructure utilization

- Road and transport
 - Energy sector



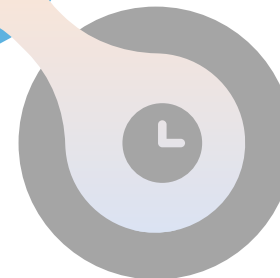
Predictability and preferences for RES

- Tax preferences
- Removal of currency restrictions
- Guarantees of origin



Simplification of permit procedures

- Permits
- Land
- Environmental studies
- Construction standards





Implementation of comprehensive state policy to support RES

Implementation of comprehensive state policy for RES development

Why?

- **Conflict of interest between the relevant ministry and investors** (due to a significant state share in thermal, nuclear generation, and related sectors)
- **The lack of a coherent RES development policy** adversely affects the international competitiveness of other industries, such as metallurgy and **machinery**.
- Lack of an effective RES lobby in related sectors (construction, land, financing)

What?

- ⌚ Ensuring the adoption of the document containing the **single national program on RES and the energy sector development** with a clear definition of goals and scope, involving the RES sector representatives in the development process
- ⌚ Ensuring the **implementation of the provisions of this document by all** central executive power bodies, TSOs, DSOs, state-owned energy companies (Energoatom, Centrenergo, Ukrhydroenergo), local administrations and other **market participants**
- ↻ Establishing the **Ministry of Green Transformation of Ukraine** (to ensure large-scale RES deployment, replacement of traditional capacities and attraction of investments)
- ⌚ **Liberalizing the electricity market** and avoiding cross-subsidy (predictability and stability of all segments of the electricity market are crucial for financing new projects under market conditions)
- ↻ Developing state programs of **professional and technical education of the workforce for wind energy sector**



Danish Energy Agency

The Danish Energy and Climate Agency under the Ministry of Climate, Energy and Utilities is essential to develop RES in Denmark. It is responsible for developing energy strategies, regulation, financial support, and incentives for the development of renewable energy technologies.

This Organization has contributed to transforming Denmark into a leader in wind energy.

The Agency has created a supportive environment for the development of offshore and onshore wind projects. Denmark has become an exporter of wind technology and equipment.

Implementation of the principle of overriding public interest

Why?

- The development process is based on the need to prove the non-damaging nature of RES
- **Extremely complicated and lengthy permit procedures**
- “Pseudo” environmental and non-governmental organizations that block projects by speculating on the project environmental and social feasibility
- **Low public awareness of the benefits of wind power generation**

What?



Implementing the **principle of overriding public interest** in Ukraine, which calls, in particular, for

- Simplifying permit procedures
- Prohibiting interim measures against RES projects
- Introducing a presumption of feasibility and absence of environmental damage and admissibility of state aid for RES projects, etc.



Reviewing and defining the **conditions for the admissibility of state aid** to business entities in renewable generation (CfD, temporary tax exemption, etc.)



In Germany, this **principle is already being used in court cases**. The most significant is a recent court ruling in a case in Mecklenburg-Vorpommern.



The Czech Republic has **introduced the principle of assessing RES projects > 1 MW** as being of public interest, equating them to other objects of public interest (i.e., those that usually **do not require changes to the zoning plans**)

Developing a program to promote the production of wind energy equipment in Ukraine

Why?

- **The global market for wind turbine production** in 2022 **amounted to USD 118.70 billion**. This market is expected to grow by at least 4.2% by 2028
- Ukraine **imports more than 90% of wind turbines**
- **Unused engineering potential of Ukraine** (manufacturing, intellectual)
- Opportunity to **become a part of the European wind power supply chain**

What?



Providing turbine manufacturers with **state guarantees for manufacturing** a certain volume of turbines (1-2 GW), sufficient to accommodate manufacture in Ukraine



Analysing the production capabilities and availability of resources in Ukraine for the manufacture of various wind turbine components



Exemption of wind turbine manufacturers from taxation for a period sufficient to recoup investments (based on industrial parks)



Priority **allocation of land plots** for production facilities



The program of **restoration and development of port infrastructure** should take into account the logistics needs for **potential export of equipment**



Turkey has managed to increase the **share of local production of wind turbines to 72%**, and the government intends to attract more investment to the sector. Moreover, the **country exports 80% of its production**. Turkey is home to **five of the world's largest companies** in the manufacture of wind turbines and related components, **creating 10,000 jobs**



Ukraine already has experience in local manufacture of some wind turbine components



Predictability and preferences for RES

Reducing risks in attracting foreign capital

Why?

- A very limited number of financial institutions and investors have sufficient risk appetite to invest in Ukraine given the military and political situation (state and supranational institutions)
- Currency restrictions limit investors' interests in both existing and new external financing

What?



Establishment of a **state insurance fund** to secure financing for projects



Removing the NBU's currency restrictions on the purchase of foreign currency and cross-border currency payments to non-residents for the purpose of servicing loan obligations and paying dividends



Croatia managed to increase investment inflows tenfold after the conflict, in particular, due to

- the adoption of the **Investment Promotion Act** with specific **tax incentives** related to the size and type of activity
- regulatory and judicial reforms aimed at **reducing the cost of doing business**
- allocating **funding from regional development banks towards infrastructure projects** (transportation, energy)



Necessary conditions for the implementation of projects on the open market

Why?

- The absence of a guaranteed tariff for electricity produced and the overregulation of the electricity market make the **return on investment unpredictable**
- Green energy producers **cannot rely on environmental friendliness as their main competitive advantage**
- **Long-term price certainty** is still crucial for attracting investment or financing

What?

- ⌚ Accelerating the **implementation of Guarantees of Origin of electricity generated from RES (GOs)**
- ↻ Ensuring recognition and **trading opportunities for Ukrainian GOs** on global trading platforms
- ⌚ Implementation of **CfD-based auctions** without the participation of the Guaranteed Buyer (to ensure financing of projects that do not have corporate PPAs)
- ⌚ **Exemption from income tax until the investment is returned**
- ⌚ **Liberalization of the electricity market** and avoidance of cross-subsidy
- ↻ Introduction of virtual cross-border PPAs



Selling Guarantees of Origin gives at least +5% to the income of green energy producers

There is a **growing interest in virtual cross-border PPAs** in the EU, with more corporations entering the market, even though prices are rising



In 2020-2021, federal tax incentives for wind power contributed to the growth of onshore wind capacity. Moreover, **in the years when tax incentives** (in particular, the tax credit) **were not available, the construction of new projects almost completely stopped**



Development and optimization of infrastructure utilization

Активаци
щоб актив
комп'ютер





Portugal allows the "hybridization" of two technologies at one connection point within the maximum licensed capacity. This makes possible to maximize energy production from RES without additional costs for investments in grid infrastructure



Spain allows access to the grid for power plants using different generation technologies only under the condition of updating the existing grid connection agreement

Maximize the use of existing energy infrastructure to connect new RES facilities

Why?

- The main issues with grid connection arise from the **seemingly insufficient grid capacity**, which requires lengthy negotiations between the project developer and the TSO/DSO on the possibility, timing, and cost of connecting RES power plants to the grid

What?

- ⌚ **Reforming approaches to the issuance of technical conditions for connection to power grids:**
 - obtaining technical conditions with **restrictions on time and season of generation**
 - possibility of **joint use of already issued and implemented technical conditions**
 - possibility of **virtual power plants creation**
 - exemption from the dependence of the term of the grid connection agreement on the validity of the technical conditions
- ⌚ The possibility of **obtaining technical conditions** not for the installed capacity, but **for the connected capacity**. Installed capacity may be higher than connected capacity
- ⌚ Use of **real**, rather than "worst-case" **operating modes** during the feasibility study for obtaining the technical conditions (introduction of quasi-dynamic modelling)
- ⌚ Enabling the **connection of RES facilities to the distribution devices of TPPs/CHPs that have been damaged** and whose restoration is impractical

Removing barriers and optimizing the cost of grid connection

Why?

- The upward trend in connection costs is a threat to the economic viability of many projects
- There is a problem of "dead" technical conditions, when developers sign a grid connection agreement and do not implement it for years

What?



Ensuring transparency of information on available grid capacity (allows developers to focus on locations with greater access to grid capacity and take into account the expected cost of grid connection when selecting a location for construction)



Possibility to **book technical conditions or technical solutions for a certain period of time under the financial guarantee** of the customer



Direct connection to consumers, exemption/differentiation of tariffs for distribution and dispatching



In **8 EU member countries** (including Poland), the producer pays only for the cost of the equipment required for physical connection to the grid. **Grid reconstruction costs are covered by DSOs**



Germany has a priority principle that **guarantees RES an advantage** when **connecting to the grid**. The **grid operator is obliged** to immediately optimize, **strengthen and expand its grid** to guarantee the transmission of electricity generated from RES. Developers have the right to expand the grid only if it is economically feasible



Romania allows RES to sell electricity to consumers connected via direct lines

Creation of a "wind corridor"

Why?

- **Logistics constraints** are one of the key challenges for the implementation of wind projects
- **Until the Black Sea is completely demined, wind turbine manufacturers will refuse to transport wind turbines by sea** due to high transportation risks – new delivery routes need to be built
- To utilize Ukraine's wind potential, it is necessary to **develop projects in the western, central, and northern regions, remote from port infrastructure**

What?



Introducing a nationwide **program for the restoration and repair of bridges and infrastructure, taking into account the size and weight of energy equipment**



Building **transport hubs at the border** for the transportation of components from the EU



Increasing the number of **border crossing points that can service large cargo** by reconstructing them and initiating synchronized actions by the neighbouring EU member countries



Simplification of the procedure for **obtaining permits for transportation of energy equipment through several regions** (currently, a regional approach is in place)



The Danish Heavy Load Grid & Finnish road network for very large abnormal road transports

A network of specialized **roads (road surfaces, bridges and other specific road structures)** that are classified as **suitable for transporting nonstandard cargo**

The police can issue a permit for approximately 90% of applications based on information available on the Danish Heavy Vehicle Road Network map

 Accelerating project
implementation and simplifying
the permit procedure

Accelerating and optimizing the permit procedure for wind projects

-  **Extension of the validity of permits** for at least 5 years from the date of issuance (aviation, EIA, agricultural passports, technical conditions, geological and geodetic surveys, etc.)
-  Allowing RES facilities **to be built without the need for a DPT** (detailed plan of territory) and other urban planning documentation
-  **Simplification of the permit procedure for repowering projects**, if the characteristics of the facility increase by no more than 30% **(in the absence of changes in the connected capacity)**
-  **Enabling aviation approvals to be obtained** without reference to urban planning documentation
-  **Investments in additional high-tech infrastructure**, including additional radars or high-performance radars, or support for wind turbine-compatible radars
-  **Decommunization of building codes** (bringing design/construction standards and certification in line with EU rules)



The RED III Directive stipulates that in accelerated renewable energy development zones, **the time for obtaining permits for new renewable energy power plants should not exceed one year**

The European Council has agreed on a **maximum timeframe of six months for the permit process for repowering projects, including all relevant environmental assessments. If the modernization leads to an increase in power plant capacity of up to 15%, grid connection will be authorized within three months**



Romania adopted the Law on Urban Planning: **permits for the construction of RES facilities can be obtained without PUZ (zoning plan, an analogue of DPT)**

Land

What?

- ⌚ Removing restrictions on the location of RES facilities **on water fund lands and particularly valuable lands**
- ⌚ Obliging public sector entities to **establish easements for energy facilities**
- ⌚ Placement of RES generation facilities **on land of any intended purpose** (without changing the intended purpose)
- ⌚ Legislative establishment of the **minimum permitted rate of land tax** (3%) until the facility is put into operation
- ⌚ Granting local communities the right to **postpone the payment of land tax** to the first year after the commissioning of the RES facility with a simultaneous increase in the rate
- ⌚ Removing criminal liability for **preserving fertile soil within construction sites**
- ⌚ **Regulating the issue of compulsory expropriation of land for public needs**

Environmental impact assessment

What?

- ⌚ Removing the outright ban on the development of RES projects in protected areas
- ⌚ Differentiation of the EIA process for large and small plants (introduction of a simplified procedure for projects of up to 50 MW)
- ⌚ **Permission** to change the model of wind turbines without going through the EIA procedure again



For **projects with <20 wind turbines, a preliminary assessment is performed** to determine whether the project is likely to have a significant adverse environmental impact or not. **Based on this assessment, it is determined whether an extended EIA is required**

Early detection of “no-go” risks and identification of sites with the highest overall potential for the state and the developer

What?



Access to / creation / digitalization of archived registers and other information necessary for project development:

- archaeological and cultural heritage sites with their protected areas
- detailed plans of territories
- urban planning documentation of various levels
- information on the existing road infrastructure with the main parameters and repair/reconstruction plan
- existing environmental studies

Development of user-friendly **databases**, even with the introduction/increase of user fees



In Spain, there are two maps published by the government **for wind and solar energy**. They **divide the country's territory into five classes of environmental sensitivity** (maximum, very high, high, moderate, and low) depending on the type of project



The Czech Republic has defined areas where the **construction of wind** and solar power plants is "unsuitable", "rather unsuitable" and "**generally suitable**"



In Belgium, the best locations for RES projects are shown on the national capacity map



**Offshore wind power
opens Ukraine's new
energy capacity**



Offshore wind (OW) strategy to define a clear national role of OW technologies and set realistic short, medium and long-term goals and actions



Changes in Regulation:

- Special maritime spatial planning
- Conditions & procedure for acquiring the seabed use title
- Grid connection procedure for OW
- Procedure and scope for EIA and SEA of the potential OW sites
- Procedure for coordination of OW development, construction and operation activities with maritime and aviation regulatory authorities, military and border authorities
- Incentives for building a local supply chain for OW



Offshore wind measurement campaign

The relevant provisions of Ukrainian legislation to be amended:

Water code of Ukraine
Land Code of Ukraine
Grid Code
Electricity Market Rules
Laws on EIA, SEA etc

Marital spatial planning based on the provisions of the Directive 2014/89/EU

According to the World Bank, the estimated technical potential for fixed and floating offshore wind in Ukraine amounts to 250 GW



WIND ENERGY IS ENERGY OF FREEDOM AND INDEPENDENCE



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