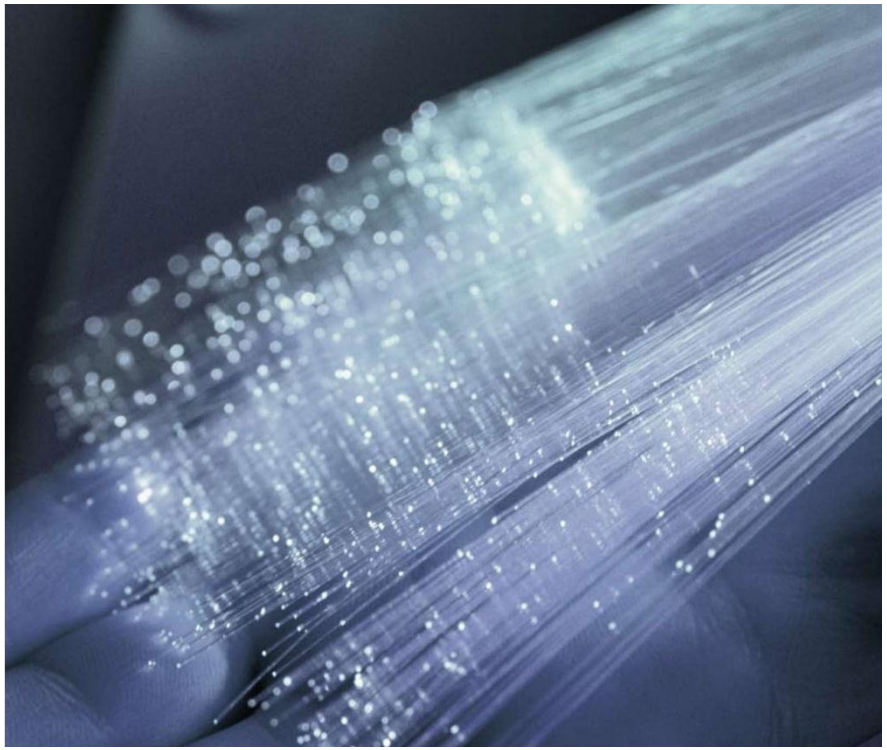

Assistance to NERC: Regulatory Support Program

Regulatory framework for E-RES support in Ukraine

Kiev, December 1st

AF-MERCADOS
ENERGY MARKETS INTERNATIONAL
Finding new paths for energy markets

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EBRD – Renewable Energy Projects in Ukraine

European Bank for Reconstruction and Development

Ukraine Sustainable Energy Lending Facility

- Investment facility of up to €50 million for fostering RE projects in Ukraine.
- Provides debt finance as well as development support to eligible RE projects.

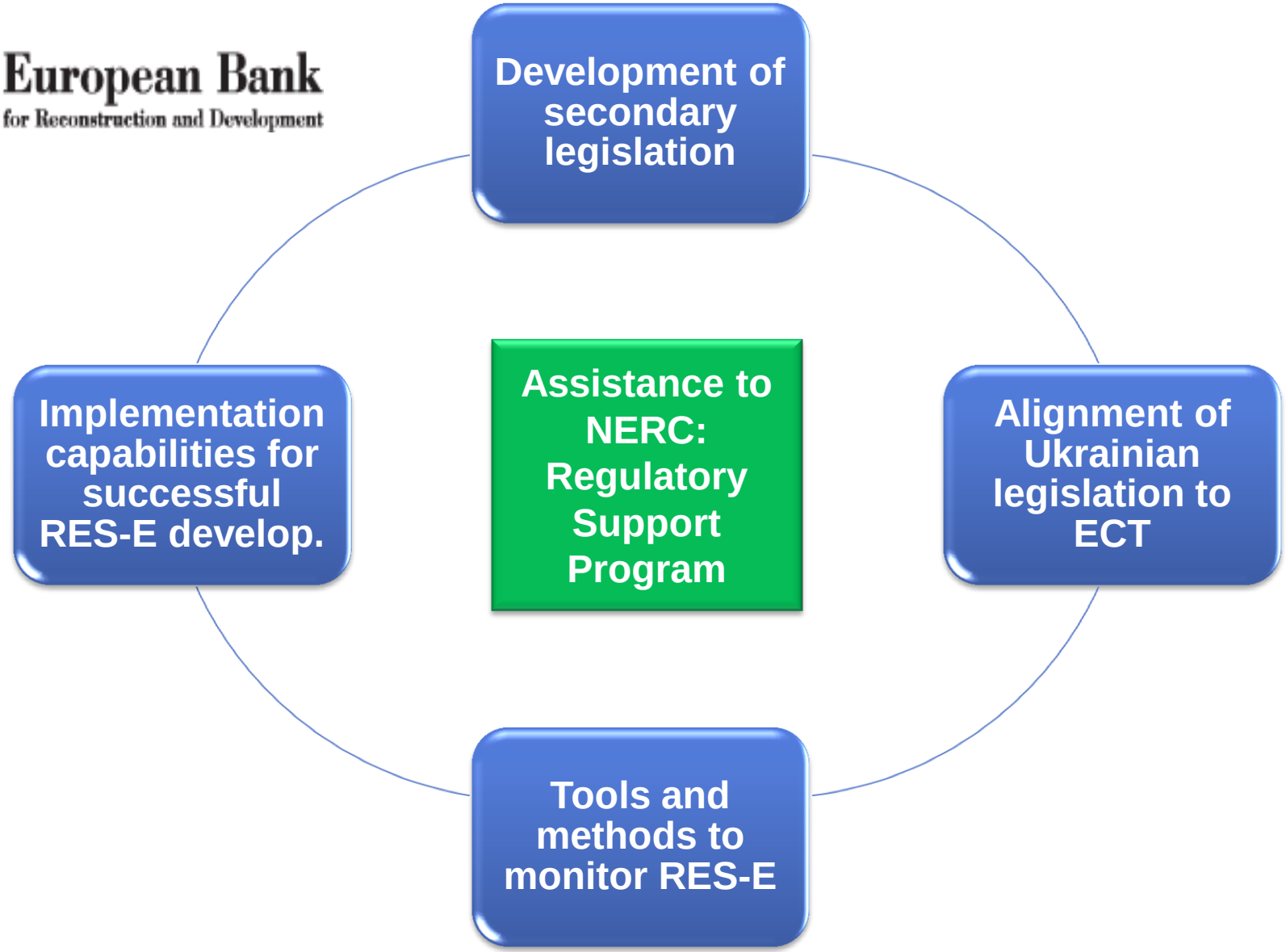
Assistance to NERC: Regulatory Support Program

- Provides support to further development of regulatory framework through direct assistance to the National Energy Regulatory Commission of Ukraine.

Effective RES deployment in Ukraine

Regulatory Support Project - Scope of Work

European Bank for Reconstruction and Development



Ongoing activities on the following tasks

Task I	• Full implementation of the green tariff and methodology
Task II	• Long-term implementation of green tariffs in Ukraine
Task III	• Connection of E-RES to the Network
Task IV	• E-RES operation in the competitive Electricity Market
Task V	• Review of existing mechanism for tendering hydro concessions
Task VI	• Accreditation, certification, verification and audit
Task VII	• Study tours

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Regulatory framework for E-RES promotion

- **On September 2008, the Parliament amended effective legislation (in particular, the Electricity Law) and introduced green tariff for electricity produced from RES.**

- **On April 2009, the Parliament adopted another amendment to the Electricity Law which has the following major provisions:**

Green tariff is technology-wise (different Green Coefficients)

- **Green tariff** is in effect till 2030
- **Green tariff** is intended to mitigate currency risk: UAH/EUR adjusted;
- **Green Coefficient** will be reduced by 10%, 20% and 30% for RES plants commissioned or modernized after 2014, 2019 and 2024, respectively.
- **The wholesale electricity supplier** is obliged to purchase (at green tariff) the RES electricity not sold to consumers or Oblenergos
- **RES plants** should receive full payment in monetary form for electricity sold with no offsets applied;
- **Special conditions are applied for investors:**
  - from 2012: 30% of materials, equipment, capital assets, works and services from Ukrainian origin
  - from 2014: not less than 50% of the overall project cost
- **Grid owners** may not refuse the plants to access such grid;
- **Grid owners** or operators will bear the cost of grid connection of RES plants with respective compensation received from the NERC when approving their respective tariffs.

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Definition of the green tariff for Wind Energy

- According to the Electricity Law, the value of green tariff for electricity generated from wind is defined based on the amount of installed capacity of a power generation facility.
- Considering the definition provided by this law, the power generation facility is a wind farm, which can consist of one or more wind power generators.
- It may not lead to the installation of state-of-the-art wind power generators as far as small / inefficient units will still receive an attractive tariff based only by adding up the sufficient number of wind turbines.

Draft Law 8028 among other issues proposes amendments to the Article 17-1 of the Electricity Law by associating the green tariff with the single wind turbine within the farm. The complete Draft Law 8028 has been vetoed by the President on November 8 2011. Nevertheless, it is expected this provision to be introduced further, probably by a separate Draft Law.

Reductions of the green tariff

- According to current legislation, degression for plants commissioned, (or significantly upgraded) after 2014, 2019 and 2024, is expected to be 10%, 20% and 30% respectively for all technologies.
- Tariff degression is a concept widely employed across the EU to translate to the society a share of the benefits achieved through cost reductions (via technological improvements).
- In this sense, tariff degressions must be estimated on technology specific basis taking into account the level of maturity of each technology.
- If tariff degression is not technology specific, then the current system faces the risk of seriously hampering the development of mature technologies (wind inclusive) based on the application of a “too severe” tariff reduction coefficient.

The Consultant proposed to replace the current green tariff reduction path for a technology-specific degression system. Until such technology-specific green tariff reduction coefficients are defined the Consultant recommends suspending current reduction mechanism. Currently this proposal is under NERC’s evaluation.

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Local Share Content requirement

- According to the Electricity Law, all E-RES facilities should have a minimum share of local content:
  - For commissioned in 2012, the obligation is 15% of local component.
  - For commissioned in 2013 – 30%.
  - For commissioned in 2014 – 50%.
- This share is mandatory to obtain the Green Tariff.
- New amendment to the Electricity Law recently approved by the Parliament:
  - The LSC requirement is applied only for those facilities, which started the construction after January 2012.
  - The concept of when the construction has been started is very vague and has to be clarified still.
  - Before entering in force it has to be approved by the President.

Local Share Content requirement

- The published version of the methodology foresees step-by-step process for LSC definition:

- Preliminary approval will provide confidence to the investor in two issues:
  - Way to calculate the LSC is correct.
  - If while construction the preliminary agreed process is followed, then the investor can be sure he will be granted with the Green Tariff.
- After approving the Green Tariff, NERC has the possibility of an audit of licensees.

The document has been submitted by the NERC for comments on September 15. Now NERC is prepare the final version for approval.

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State-of-art - E-RES connection

Access to the grid:

- According to Article 24 of the Electricity Law, electricity suppliers shall provide free access to power generators.

Allocation of connection cost:

- The existent legislation calls for connection to be “free of charge” for investor.
- NOs have to include the expenses associated with new E-RES connection in their investment plans to be finally approved by NERC.

Main barriers on grid connection:

- Restrictive implementation of network tariff methodologies, which does not allow network companies to recover investments for E-RES connection.
- The net operator fears that additional RES capacity can cause instability of the network.
- Lack of clear E-RES connection procedures describing precise steps, responsibilities and timeframes in the connection process.

State-of-art - E-RES connection

Current procedures on connection in Ukraine

Resolution 126 by CMU on E-RES Generation Facilities Connection to the Electricity Networks.

•Legal framework for the connection procedure of E-RES smaller than 10 MW.

•NERC is recommended to approve the Oblenergo's investment plan including the connection costs and network reinforcement for new E-RES facilities.

Resolution 838 by NERC on the Approval of Template Contracts for E-RES facilities.

•Template for Connection agreement.

•Network operator has to connect E-RES generator to the grid after fulfilling the Technical Conditions and signing the contract to sell electricity.

Order 570 by the Ministry of Fuel and Energy on Rules for WPPs' Grid Connection.

•Mechanism for connecting wind farms with installed capacity below 100 MW.

•For Crimea and Mykolaiv oblast (advisable for other regions)

The legal framework is still far from being completed. In the meanwhile E-RES developers are allowed to construct connection assets by themselves. However, they are obliged to transfer these assets to the network company and the compensation mechanism has yet to be developed by the Cabinet of Ministry of Ukraine.

E-RES Connection – Technical requirements

- Connection rules ("Requirements for wind and solar PV power plants with a power output greater than 150 kW regarding connection to external power networks"):
  - Based on successful international experience fitted to match Ukrainian needs.
  - Close cooperation between NERC, Consultants, NAER, DSOs and Ukrenergo.
  - Technical issues related to intermittent power generation from these sources (wind and solar PV):
    - Possibilities for regulation of frequency/active capacity;
    - Possibilities for regulation of reactive capacity/voltage;
    - Requirements to the signal's quality, etc.

E-RES Connection – Technical requirements

- Connection rules ("Requirements for wind and solar PV power plants with a power output greater than 150 kW regarding connection to external power networks"):
  - Introduction of such requirements leads to more stable and secure operation of intermittent generation within the power system.
  - It will allow:
    - reducing the expenses associated to the operation and control of the system with a significant share of renewable generation;
    - making it technically possible to absorb larger amount of intermittent renewable generation (incl. wind).

The final version of the regulation has been submitted in October. NERC is looking forward to initiate the consultation and approval process with other involved stakeholders, CMU, Ministry of Finance, etc

E-RES Connection – Cost allocation

- One of the main issues is to establish a transparent methodology to be used by Network Owners to calculate total connection cost.
- Definition of the way to recover the cost of connection is a very challenging issue. Several approaches has been proposed for further evaluation of the Working Group (that consists of NERC, Ukrenergo, DSOs).
- Preferred solution:
  - ’Deep connection charge’ imposed on E-RES projects, with network upgrading costs charged according to estimated long-term share of network capacity use.
  - Associated with the green tariff up-lift calculated by E-RES technology.
  - Ownership transferred to NO after construction.

E-RES Connection – Cost allocation

- Second best solution:
  - ’Shallow connection charge’ for wind farm projects.
  - Network upgrading costs born by NO.
  - Regulatory approval of connection of wind farm by NO depends on the cost for upgrading divided by expected annual MWhs of supplied RE-energy not surpassing a fixed upper limit (rationing procedure).
- Status quo solution: all costs paid by NO
  - Regulatory approval of connection of wind farm by NO depends on the cost of upgrading divided by expected annual MWhs of supplied RE-energy not surpassing a fixed upper limit (rationing procedure).

Currently the Consultant is finalizing the proposal. It will be submitted to the Working Group in the mid of December for further discussions.

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Guarantees of Origin System and Electronic Registry

Directive 2009/28/EC on RES –

Clause 52 of Preamble:

"Guarantees of origin issued for the purpose of this Directive have the sole function of proving to a final customer that a given share or quantity of energy was produced from renewable sources."

Electricity Law of Ukraine:

- **Article 15.1:** *RES-E should be guaranteed as such in accordance with objective, transparent and non-discriminatory criteria.*
- **Article 15.2:** *GOs are issued in response to a request from a RES-E producer.*

Guarantees of Origin System and Electronic Registry

- GoO is an electronic document which guarantees that the energy has been produced from RE sources (Electricity labelling).
  - 1 GO corresponds to 1 MWh of electricity generated.
- This document will enable E-RES producers to get the Green Tariff.
- Participation in the registry will be mandatory.
- The registry will operate similarly to a web-banking system, i.e.:
  - E-RES Generators obtain an (electronic) account for each E-RES plant.
  - This account is credited when GoOs are issued and debited when GoOs that are used and/or cancelled.
  - The producer shall request the issuance of GoO.

The Consultant has submitted the final version of the proposal for introduction of GoO system in July 2011. Currently NERC is developing the secondary legislation to deal with this issue.

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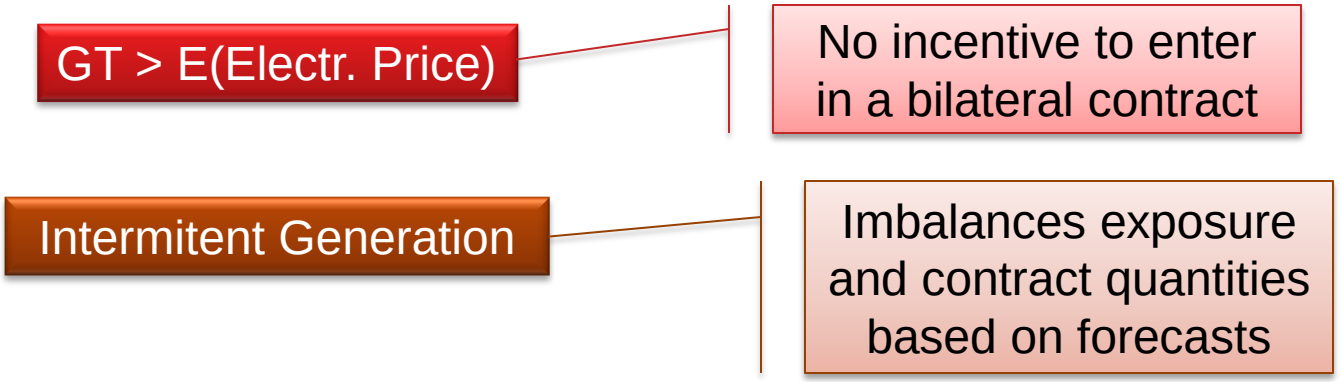
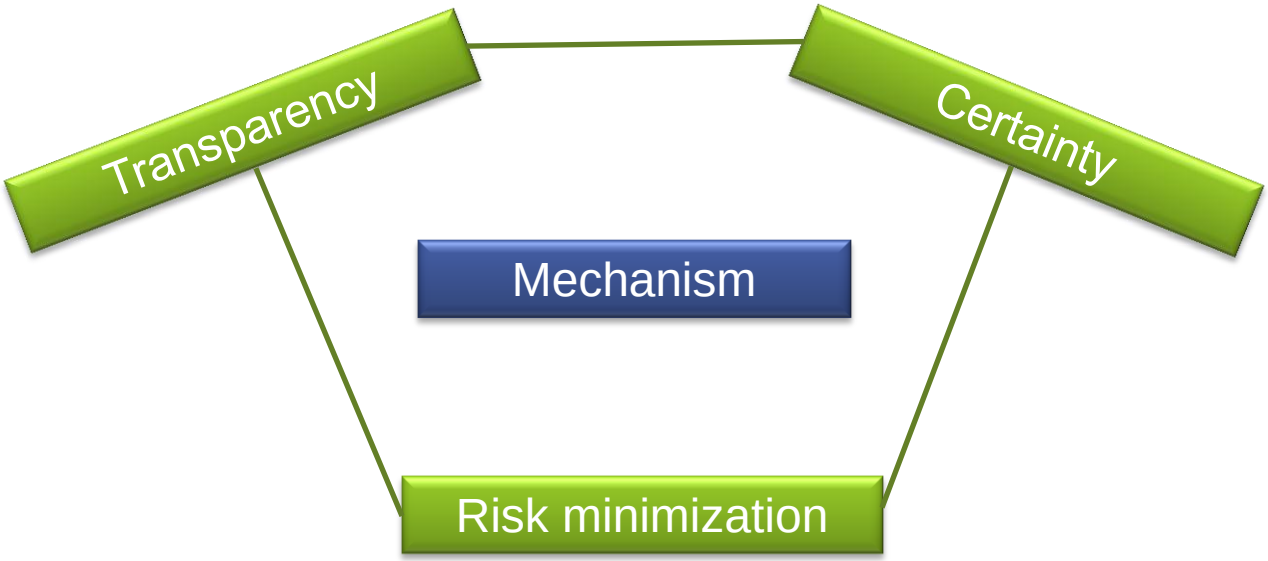
Operation in BCBM

- The future BCBM will represent a major change for the Ukrainian Wholesale Electricity Market (WEM):
  - Over-the-counter bilateral contracts;
  - Standardised bilateral contracts traded at a Power Exchange;
  - Balancing Market;
  - Ancillary service market.
- Market will be reformed following a phased transition
  - The Single Buyer will remain active during the transition process. Therefore it will not affect E-RES settlement.
- Direct sales introduces some challenges:



Operation in BCBM

- There are several options on the way of E-RES participation at the BCBM which have been proposed for discussion with NERC and stakeholders.
  - According to the amendments to the Electricity Law as from June 3 2011, the State guarantees the procurement of E-RES at the Green Tariff during the entire period of the Green Tariff's validity.
  - Thus the challenge is on designing the mechanism that will ensure:
    - E-RES producers to receive the money for the electricity sales at GT
    - Allocate this costs among the society



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Next steps

- Currently the project is on the mid stage of its' development.
- Next issues will be covered during the following months:
  - Viable mechanism for recovering the cost of connection for E-RES within the network tariff regulation framework in Ukraine will be finalized, discussed and agreed with the stakeholders.
  - The mechanism for selling renewable energy in competitive BCBM will be devised together with the NERC and DP Energorynok.
  - Suitable mechanism for managing imbalance costs to E-RES generators in future BCBM will be proposed.
  - Technical specifications for the Electronic Registry will be finalized and agreed with the NERC.

Thank You