USELF
Ukraine Sustainable Energy Lending Facility

ASSISTANCE TO NCISRES (ex NERC): REGULATORY SUPPORT PROGRAMME

Regulatory framework for E-RES support in Ukraine

AF – MERCADOS EMI
Innovation by Experience

European Bank
for Reconstruction and Development

Kiev, February, 9th 2012

Innovation by experience

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Index

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.

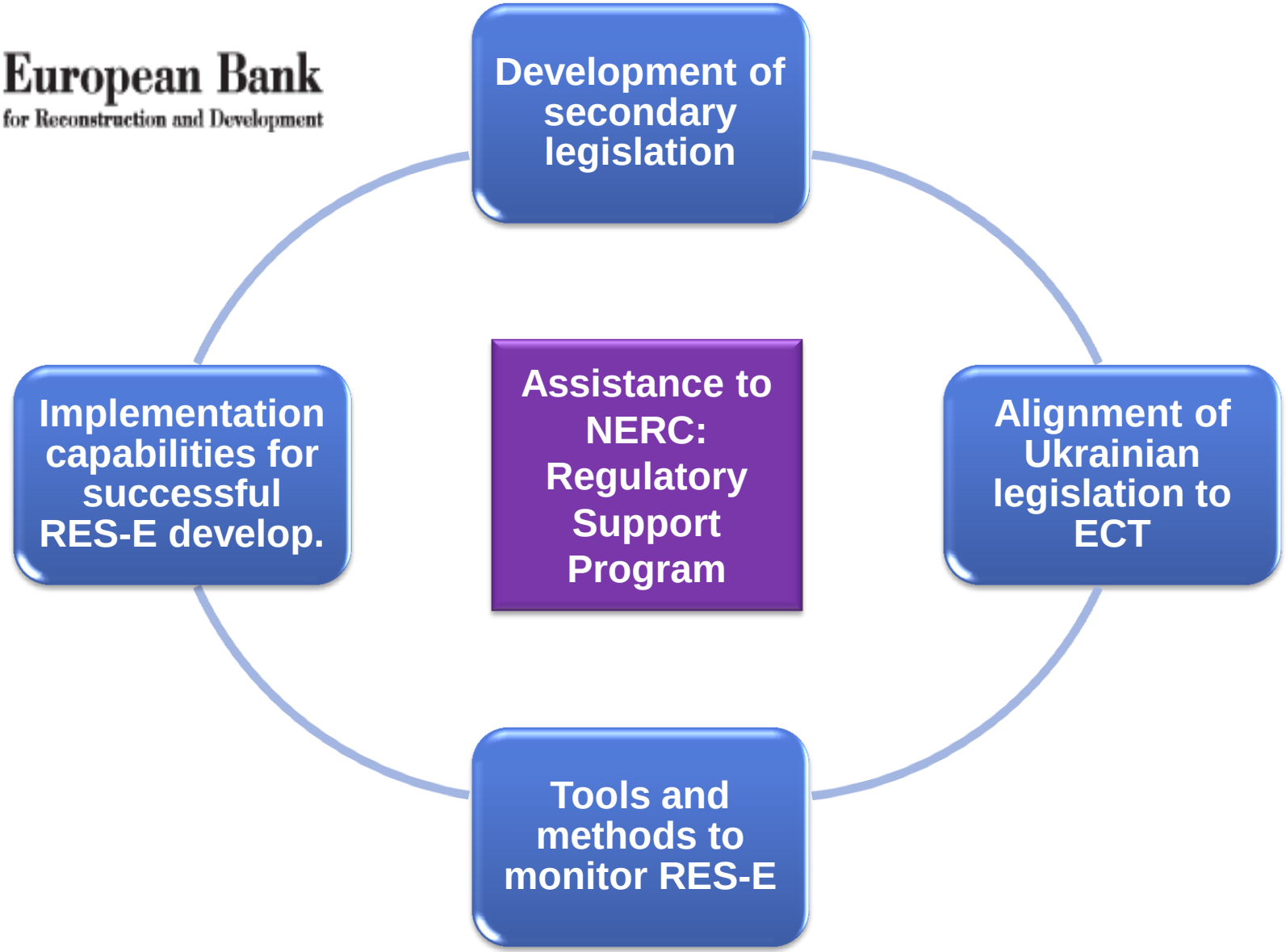
Assistance to NERC: Regulatory Support Program

- 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

Index

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 end consumers or Oblenergos
- **RES plants** should receive full payment in monetary form for electricity sold with no offsets applied;
- **Local Share Content, for plants commissioned:**
  - from 2013: not less than 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.

Index

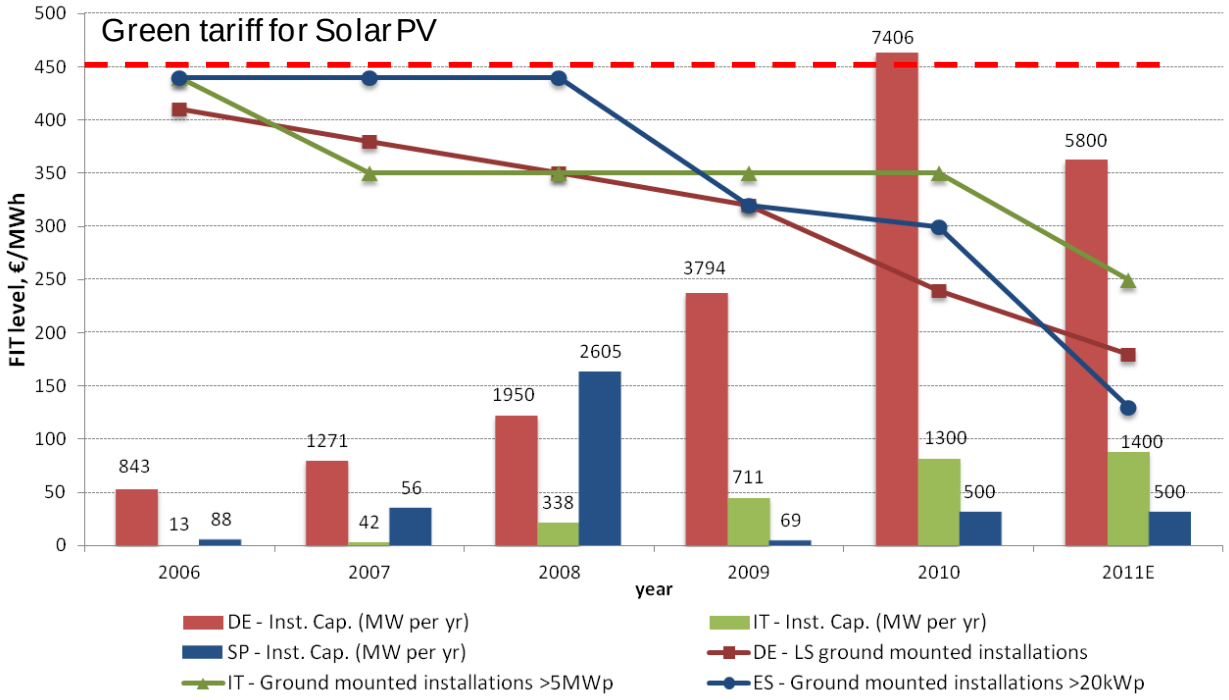
Definition of the green tariff for Solar Energy

- According to the Electricity Law, the value of green tariff for electricity generated from solar is defined based on a combination of installed capacity and location.
- These coefficients do not consider the existence of economies of scale.

Solar PV	Green tariff coefficients	Green tariff (kop/kWh)	Green tariff (€/MWh)
Surface solar power plants	4,8	505,09	45,9
Solar PP roof tops of houses, buildings and structures (>100 kWpeak)	4,6	484,05	44,0
Solar PP roof tops of houses, buildings and structures (<= 100 kWpeak) or front-side of houses, buildings and structures regardless their installed capacity	4,4	463,00	42,1

Definition of the green tariff for Solar Energy

- FIT for Solar PV have been steadily decreasing over the past years.
- The decrease in the tariff has been encompassed by a reduction in generation costs which maintained the investment levels.
- Currently, IT and DE are also discussing the possibility of introducing caps, while ES has suspended the FIT system.



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.

We proposed to replace current degression for a technology-specific system.

Until such system is defined we recommend suspending the current mechanism.

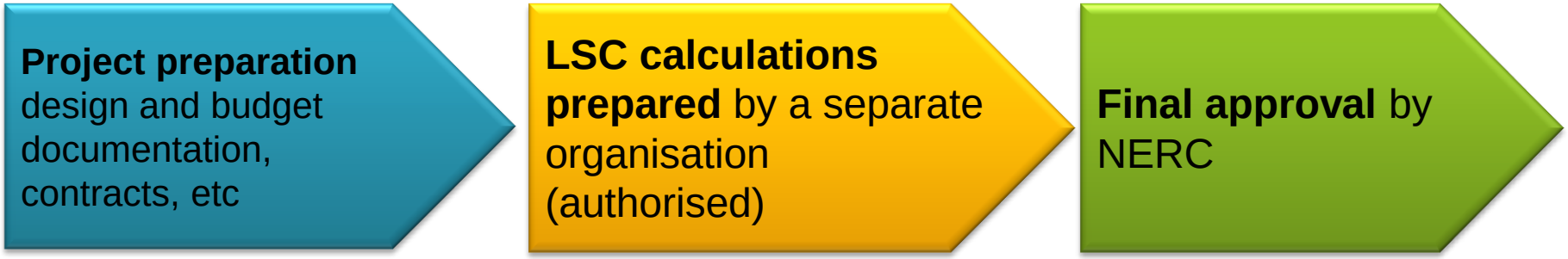
Currently this proposal is under NERC's evaluation.

Index

Local Share Content requirement

- According to the Electricity Law, all E-RES facilities should have a minimum share of local content:
  - For commissioned in 2013 – 30%.
  - For commissioned in 2014 – 50%.
- This LSC 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.
  - LSC has to be demonstrated by using certificates of origin for local components (no methodology on how to implement this).

Local Share Content requirement



- A preliminary approval will be available to provide confidence 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 the Green Tariff.
- "Way-out" procedure: if a non-compliance decision is taken by NERC, then the generator can apply for a "green" tariff proportionally adjusted to its deviation level.
- After approving the Green Tariff, NERC has the possibility of an audit of licensees.

Now NERC is preparing the final version of the LSC methodology for approval.

Index

Current 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.

Current E-RES connection

Current procedures on connection in Ukraine

Resolution 126 by CMU on (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 (Template Contracts)

- 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.

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 CMU.

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"):
  - State-of-the-art regulation 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.

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 Operators 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 Solar PV projects.
  - Green tariff up-lift to recover the connection charge.
  - Network upgrading costs born by NO.
  - Regulatory approval of connection of Solar PV by NO depends on the cost for upgrading divided by expected annual MWhs of supplied RES-E not surpassing a fixed upper limit (rationing procedure).
- Status quo solution: all costs paid by NO
  - Regulatory approval of Solar PV connection by NO depends on the cost of upgrading divided by expected annual MWhs of supplied RES-E not surpassing a fixed upper limit (rationing procedure).

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

Index

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."

Law of Ukraine on Electricity :

- **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

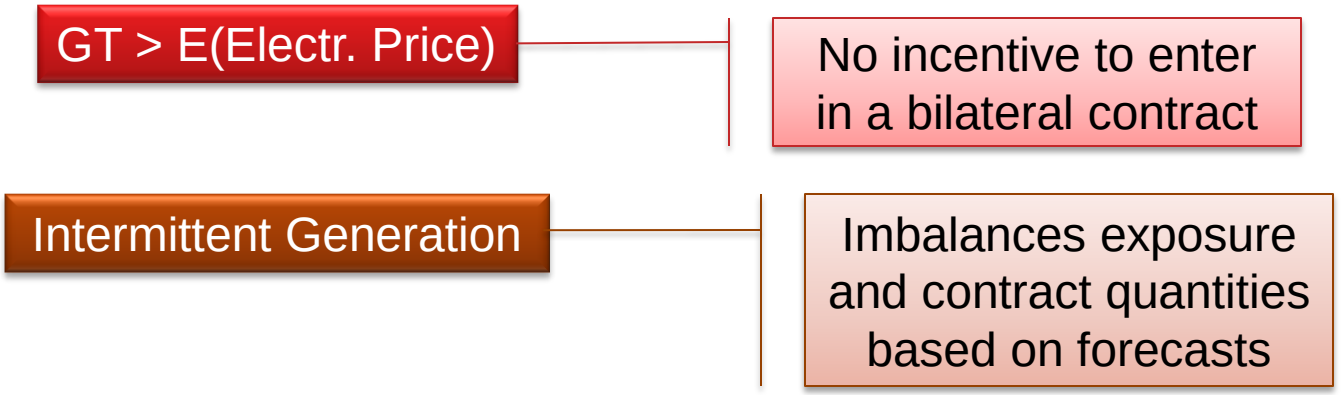
- GoO is an electronic document which guarantees that the energy has been produced from RE sources (Electricity labelling).
  - 1 GO corresponds to 1 MWh of electricity generated.
- Initially is only for labeling but on the following stages this document will enable E-RES producers to get the Green Tariff.
- 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.

It is expected that on the Market Operator will be involved in the GO system as an Issuing Body.

Index

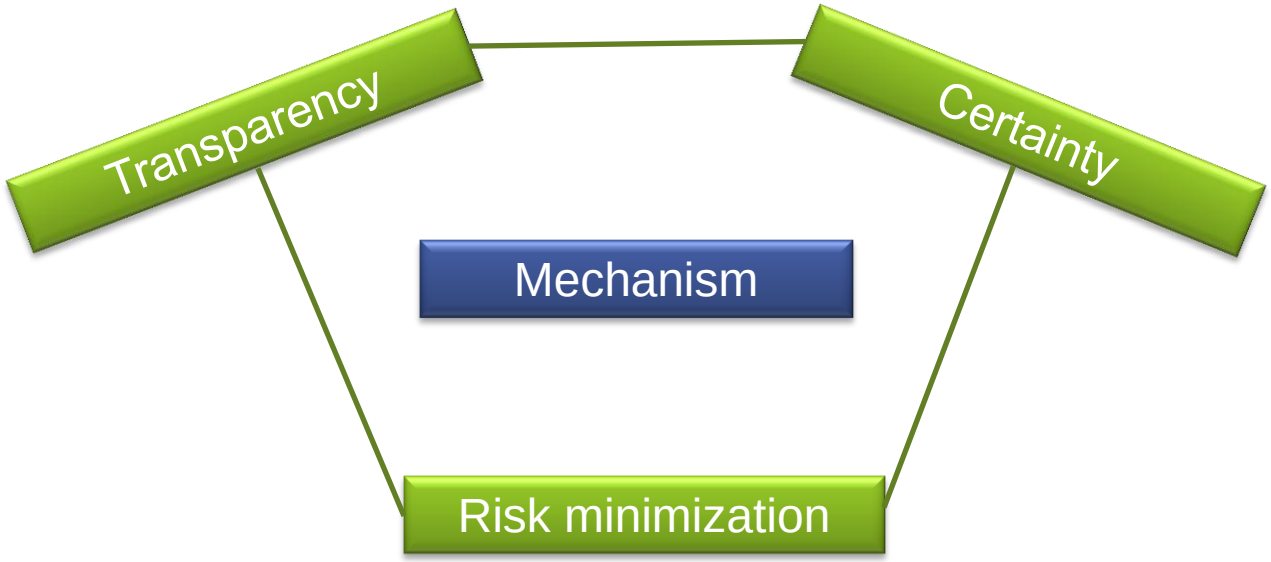
Operation in BCBM

- 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



Index

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 and DP Energorynok.

Thank You