„The investment and development potential of offshore wind projects in the Black Sea”

Gheorghe Visan – george.visan@transelectrica.ro
The National Power Grid Company
Energy Markets Division

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Position proposal on Offshore Development

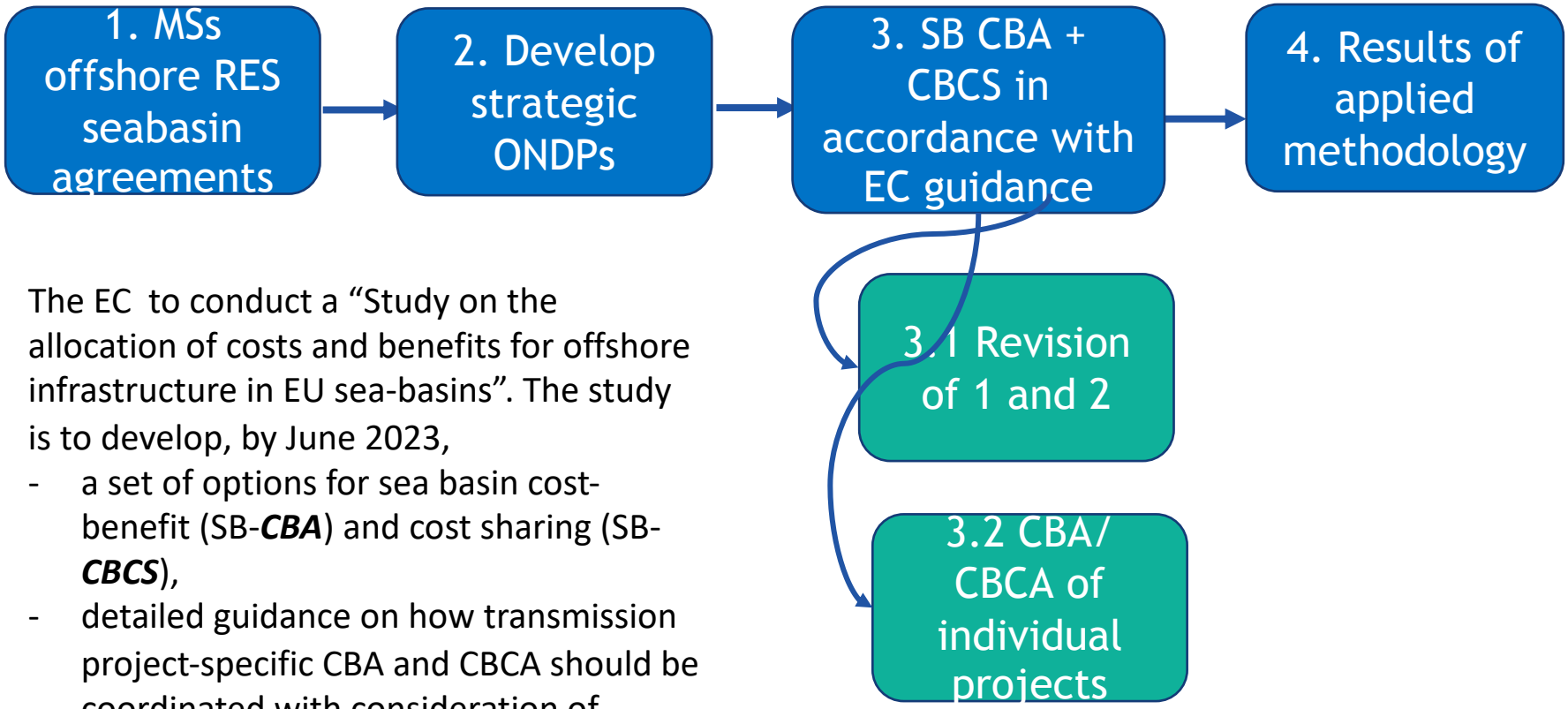
Planning and development

- Electricity generated by offshore wind power plants and other offshore resources must be connected to onshore transmission grids that will carry the energy further to consumption centers
- Thus, today's transmission grids must be extended with offshore grid infrastructures to which offshore generators can be connected. Offshore and onshore systems need coordinated development.
  - A holistic perspective is essential

• The synergies generated by the coordinated development of infrastructure in general (not only offshore) are confirmed in each 10-year Development Plan.

An important general condition for the development of the offshore grid is the interoperability of offshore HVDC systems from different suppliers - that is, technology suppliers must ensure that they can provide compatible modular systems.

TEN-E: Relevant provisions



The EC to conduct a "Study on the allocation of costs and benefits for offshore infrastructure in EU sea-basins". The study is to develop, by June 2023,

- a set of options for sea basin cost-benefit (SB-***CBA***) and cost sharing (SB-***CBCS***),
- detailed guidance on how transmission project-specific CBA and CBCA should be coordinated with consideration of financing, market and political arrangements of offshore generation sites connected to them.

The study will cover both offshore radial and multi-purpose projects.

Operational Network Development Plan-ONDP have to be developed by ENTSO-E and the concerned TSOs

Allocation of roles and responsabilities

	Models
Network planning	**Onshore TSO**
Asset design and building	**Offshore TSO**
Ownership	**Competition light**
Maintainance	**Competitive**
Operate	**Competitive + ISO**

For onshore TSO Model

Improvement needed

A. Pace of development -> Permits acces across countries
B. Equity availability

Issues to be agreed upon:

- Financing
- Cost recovery
- Risks and liabilities

- **Standardization** in a given project portfolio is an essential factor in reducing costs.
- The following are examples of evolved standardization: Energy transmission capacity, such as:

    a. 700 MW (AC),

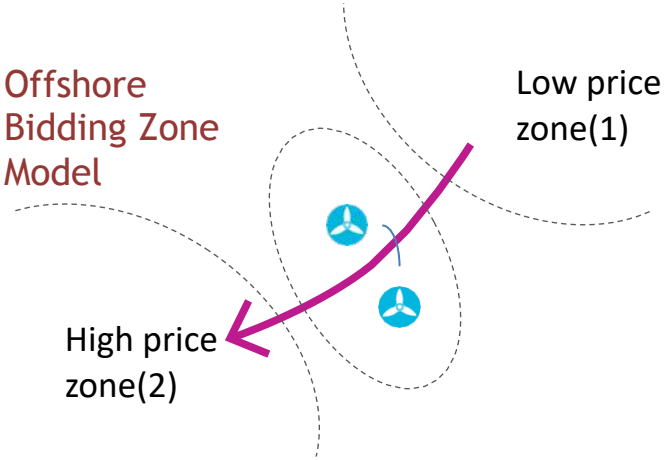
    b. 900 MW - 2.000 MW (DC).

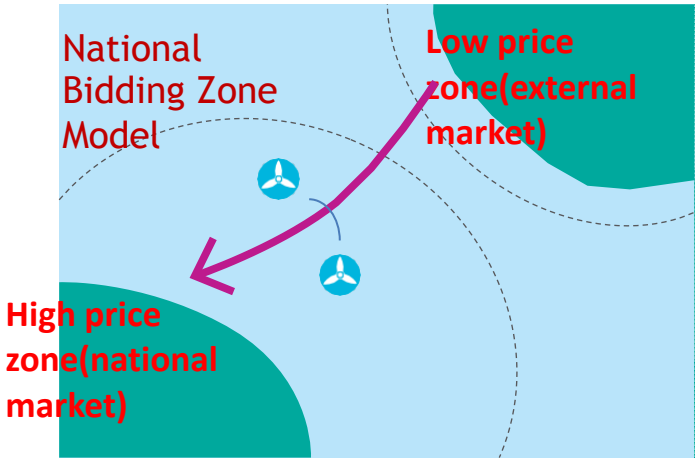
Connection voltages of offshore wind farms such as: grid voltages stabilized at 66 kV, AC shore connection stabilized at 220 kV, DC shore connection stabilized at 320 kV or 525 kV.

An efficient Market model

Safe operation of the power system

Alignment with political targets





The perspective of the safe operation of the power system

The Offshore Bidding Zone Model (OBZ)

Offshore grid constraints are fully considered in market design for all time periods.

Offshore imbalances and intraday transactions do not have a major impact on TSO costs / risk.

The imbalance settlement reflects the true balancing costs (balancing energy prices in the offshore bidding zone).

Sufficient cross-border capacity is always available to allow (self-)balancing.

The National Market Model

Offshore grid constraints are only partially considered in market design in all time periods.

Positive imbalances on the Day-ahead could trigger additional redispatch and counter-sale measures.

Additional congestion management costs imposed on TSOs.
There is some risk of using balancing energies if there are intraday trades just before the gates close.

Sufficient cross-border capacity is always available to allow (self-)balancing.

The perspective of political objectives

I. Market integration

Policy in place to ensure 70% of cross-border capacities for the spot market: the National Market concept comes with a political dilemma as it is not compatible with the 70% requirement. There is no such dilemma with the OBZ concept.

II. CO2 Credits Allocation in the case of hybrid projects - jointly operated by two states (for example Romania and Bulgaria)

III. Financial support for wind generation and the achievement of RES objectives.

The OBZ concept is attractive from the perspective of market efficiency and system operation, as it effectively reflects congestion and promotes competition, while the National Market concept gives wind generators unrestricted access to the National Market and higher overall market revenues.

In conclusion, projects in hybrid or non-hybrid OBZs have a higher potential to need state aid.

To keep in mind instead of conclusions

- TSOs will continue to play a central role for the coordinated development of grid infrastructure, both onshore and offshore.
- While offshore hybrid projects offer several combinations of roles' distribution for building and owning the infrastructure, the **TSO model is best suited** to ensure smooth coordination, lower financing costs and future-proof investments.
- While hybrid projects allow lower CAPEX for grid development, some wind power plants should still be compensated for insufficient profitability, either through public support or by redistributing congestion revenues, as suggested in the EC's Offshore Strategy.
- The decision to redistribute congestion revenue must carefully consider the implications for tariff payers, avoid one-size-fits-all solutions and reflect subsidiarity. If a support scheme is decided, the decision to use congestion revenue (ie indirect grid tariff paid by consumers) or state aid is required and will be taken at Member State level.