

A SUPRA-NATIONAL TSO TO ACHIEVE OFFSHORE MESHED GRIDS INFRASTRUCTURE IN THE BALTIC SEA: A LEGAL-REGULATORY POINT OF VIEW

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Overview

Offshore wind power development (OWPD) is expected to play an important role in meeting the EU climate targets. Several studies have discussed the case of North Seas, but the Baltic Sea region has had less attention despite the large offshore wind development potential that is due to suitable weather conditions and relatively shallow waters. Offshore wind capacity in the Baltic Sea region is expected to increase however wind development remains slow.

To enable OWPD full potential, advanced offshore infrastructure such as meshed grids is needed. Offshore meshed grids refer to integrated offshore infrastructures where offshore wind power hubs are interconnected to several countries as opposed to radial connection which link the wind farm to one single country and market.

The main argument for offshore meshed grids is to increase the value of both the interconnector and the wind farm based on cost-cutting attributable to effort mutualisation and economies of scale. It is consistent with the objective to increase interconnection capacity, particularly in countries with rapid expansion of variable energy generation and creates enlarged opportunities to market participation. Provided the legal and regulatory frameworks are implemented, this would further facilitate the market uptake of offshore wind energy.

However, development of meshed architectures is hindered by the legal and regulatory barriers. Earlier research has identified the lack of cooperation and misalignments in national legal and regulatory frameworks as being the main risk factors that are critical to overcome to support future OWPD. Meshed infrastructure span over various jurisdictions with different regulatory regimes and institutional architectures for which maximising common benefits is often not the target.

In this study, it is assumed that a supra-national TSO would facilitate regional cooperation and coordinated investments in, and operation of, the network infrastructure in a context of offshore wind development.

Methods

In this study, a multi-disciplinary approach combining legal dogmatics and regulatory economics is used to identify the existing barriers to the applicability of a supra-national TSO in the Baltic Sea region.

Legal dogmatic method is used to analyse the existing legislation and its implications for the meshed grids as well as the functionality of a supra-national TSO.

We review and analyse the regulatory frameworks that are relevant in the development of integrated offshore wind connection and cross-border interconnection projects such as financing schemes and cost recovery methods.

At last, a legal comparative analysis is used to identify and evaluate bottlenecks that arise from national differences to the applicability of a supra-national TSO. While the EU electricity market law provides the evident starting point for a study with regional nature, the Baltic Sea context is discussed using examples on selected national legal regimes, namely Finland, Sweden and Germany.

Results

We highlight rooms for improvement within national laws and European institutions and suggest legal and regulatory recommendations that aim at tackling existing barriers to an efficient development of meshed grids infrastructure that combine the objectives of offshore wind integration and interconnection across countries. The research also seeks to provide recommendations *de lege ferenda*, for the future legislation. Eventually, the recommendations comply with the EU energy policy targets of sustainability, competition and reliability.

Conclusions

Meshed grids architectures are multi-purpose infrastructure that emphasizes a high degree of coordination to achieve long-term planning, investments and short-term operation activities across countries.

In current context, domestic interests backed by national law and regulatory frameworks can overcome the benefits of extended interconnection capacities and increased offshore wind development at the expense of common welfare.

Overcoming these barriers is expected to result in extended benefits in terms of acceleration of offshore wind development, lower project costs due to synergy gains and higher reliability in the exchange of decarbonized electricity.

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