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The Offshore Wind Investment Framework – An International Assessment

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Overview

In Germany, a reconsideration of the support framework for offshore wind energy is important in order to avoid similar experience like in the PV sector by means of generously delivering support costs to push (global) technological development. At present, in the North Sea neighboring countries different support measures are implemented to trigger the implementation of offshore wind farms. Furthermore, there exist also different national strategies in terms of grid connection and market integration. E.g. various cost allocation approaches are considered for grid connection in radial and Hub-based solutions in the different countries.

Methods

Starting with a literature review on framework conditions on offshore wind development, quantitative case study analyses of most recent offshore developments in DE, DK and UK are conducted. In addition, sensitivity assessments of several important economic parameters are presented. The results achieved are validated by expert interviews in order to guarantee robustness of assumptions and interpretation of results.

Results

In terms of offshore wind support, Germany applies a Feed-in-Tariff (FIT) in different forms (option of front-loading, time extension for deep water or far offshore plants) at default level of 150EUR/MWh for 12 years. On contrary to many other countries, in Germany there are many other parameters settings preventing risk for offshore wind generators, e.g. (i) they don't have any risk in case of curtailment procedures due to grid bottlenecks – support is continued as originally planned in times of curtailment, (ii) support is paid when only foundation and transformer platform is built but no turbines nor grid connection, (iii) 90% of full support is granted at full capacity in order to set incentives for investors to invest even if grid connection (TSO responsibility) is not ready yet, (iv) some others.

In remaining European countries there exist different support systems like quotas (UK, NO, SE), FITs (FR) or tenders (DK, NL, FR). In terms of weighted average absolute level of support Germany is among the highest; UK has the highest one. NO and SE are among the lowest and there is no support in IE. In almost all countries there are no remuneration mechanisms foreseen in case of grid bottleneck (curtailment), except in DE and SE.

In terms of grid connection, there are also different approaches favored in the different countries: whereas those countries with offshore wind farms planned along the coast site intend to implement radial connections (e.g. FR, DK, SE, NO), other countries like DE, NL UK are expected to implement Hub-based solutions in terms of offshore grid connection. In general, Hub-based approaches result in lower specific cost of grid connection.

At present, the quantification of the different results is still work under progress. Therefore, it is referred to the full paper to be prepared in the near future where empirical results will be presented.

Conclusions

In terms of offshore wind support framework, it can be concluded that tendering scheme are most efficient since they allow determining the quantity, the offshore area and thus also the total system costs. Moreover, tenders enable for cost-efficient but sufficient support. Fixed FITs like in Germany are generously supporting offshore wind generators diminishing many risk components for them.