A Comparative Analysis of the Deployment of Offshore Wind in the United Kingdom, Germany and Korea

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Offshore wind power is considerably emerging as crucial renewable energy resources for offering both substantial economic benefits and significant reductions in CO2. The aim of this essay is to compare and contrast each country's technology and development trend of offshore wind. This draws out how this case analysis provide the insight on policy formulation for Korea to grow the offshore wind power deployment and technology directions for future research.

Offshore Wind Power

- Compared to its onshore counterpart, offshore wind power is more complex and costly to install and maintain but also has several key advantages.
- One of the key advantages of offshore wind power is that the wind turbines may have the ability to demonstrate higher capacity factors than onshore counterparts as a result of the higher mean power coefficient.
- Another major benefit of offshore is the point that winds are generally stronger, more uniform and more stable at sea, leading to higher production per unit installed, thus the availability of large continuous areas, suitable for major projects.
- Installing wind turbines sufficiently far from the shore can eliminate the issues of visual impact and noise emissions.
- Offshore wind turbines are less obstructive than turbines on land, which reduces the fatigue loads on turbine and allows the turbines to harvest the energy more effectively.

Attractiveness to Offshore Wind in the UK and Germany

- The UK and Germany among European countries is clearly the leading country in its deployment with the acceleration on the offshore wind technology with years of experience, skills and dedication to the development.
- These countries have played in a major role in the offshore wind developments for not only regulatory and support systems but also capabilities of industry and enterprise.
- Ernst and Young (accessing tax climate, current installed base, project size and resource quality) and KPMG (accessing the financial attractiveness of the individual countries by surveying industry participants) produced reports ranking countries in terms of financial attractiveness to offshore wind.

Rank	Ernst & Young	KPMG	T. Prassler & J. Schaechtele
Attractive	United Kingdom	United Kingdom	United Kingdom (Irish Sea)
	Germany	Germany	United Kingdom (North Sea)
	Belgium	Belgium	Belgium
	Denmark	Netherland	Germany (North Sea)
	France	Spain	France (Channel)
	Sweden	Ireland	Denmark
	Netherlands	Denmark	France (Atlantic)
	Ireland	France	Germany (Baltic Sea)
Less attractive		Sweden	United Kingdom (Round III)

Table 1. EU Country Attractiveness to Offshore Wind

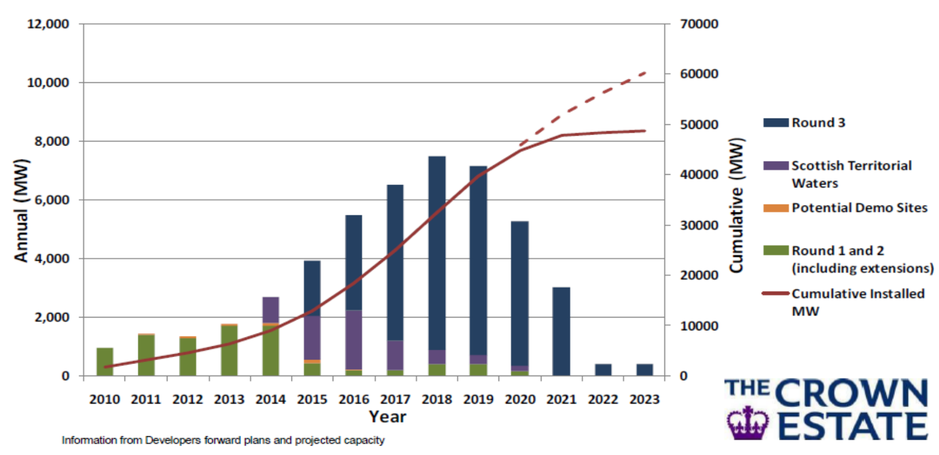

Figure 1. The Scale Offshore Wind Power Capacity By Year

A Systematic Perspective on Learning in Offshore Wind Power

- This paper considers an investigation of not only economic, legal and technological factors but also the social roots of discrepancy (e.g. public response and attitudes toward the wind offshore wind development) from systematic perspectives.
- A systematic perspective on technology learning in offshore wind energy generalizes policy guidelines to support energy technology innovation. This originates principally in the comparative analysis of the case studies of policy success and failures contained .
- Therefore, this approach provides the necessary context and insight for policy makers how to stimulate technological learning of offshore wind energy more efficiently and effectively.

Perspectives on and Obstacles to the Deployment of Offshore Wind

- This paper critically identifies the context of barriers and obstacles in installing offshore wind energy limiting the deployment the technology.
- While the UK and Germany have fewer obstacles in installing offshore wind power due to the active policy support from government, Korea has many difficulties in deploying the offshore wind as result of regulatory procedure, economic support mechanisms and R&D investments.

Conclusion

- FIT mechanism with RPO and legally enforceable payment mechanism is more suited for the Korean conditions for the deployment of offshore wind power.
- The UK has put into place a "one stop shop" procedure to ease the procedural difficulties for project developers. Single wind clearances will go a long way to speed up growth of offshore wind energy sector in Korea.

EWEA. (2009) The Economics of Wind Energy, Brussels: European Wind Energy Association.
Higgins, P. & Foley, A. (2014) The Evolution of Offshore Wind Power in the United Kingdom, Renewable and Sustainable Energy Review, 37, pp. 599-612.