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THE OFFSHORE TREND - STRUCTURAL CHANGES IN THE WIND POWER SECTOR

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Overview

The wind power sector is highly affected by the recent offshore trend in many countries. In Denmark, for example, eight offshore wind parks with a total capacity of about 430 MW were operational in 2005. Another 400 MW are planned. In the UK, the plans are even more ambitious with 1'500 MW consented in a first phase (round 1) and 7'500 MW foreseen in a second phase (round 2).

Offshore wind power turbines benefit from higher and steadier wind speeds and less air turbulence. There are also much less restrictions with regard to "land" use, visual impacts and noise emissions than onshore. However, offshore wind turbines impose higher costs (erection, foundation, maintenance, grid connection etc.), have to stand much more extreme weather conditions and have to operate highly reliable because site access is difficult.

The offshore trend is likely to change established structures in the wind power sector. In our paper, we analyze how firms like wind power developers, independent power producers and electric utilities might be affected by the offshore trend. We particularly ask whether offshore wind power (and possibly the future use of wind power) is going to be dominated by large utility or energy supply companies.

Methods

We start with a review of the innovation characteristics of offshore wind power in comparison to onshore technology in order to identify resources (and competences), which are likely to be crucial for economic success in this field. On this basis we can draw first conclusions which types of firms are well equipped for the offshore business.

As a second step we compare the onshore and offshore situation with regard to active firms in general and the ownership structures of wind power farms in particular. This analysis will be carried out for different countries. We also look at concentration processes over few years time and at the origin (branches) of the firms in the wind power sector.

In a third step, we complement the quantitative data with results from interviews with wind power professionals in private firms, associations and research institutes.

Selected results

In the offshore wind power sector there are much less actors active than in the onshore business and almost no small companies, which used to dominate the onshore sector. Ownership structures of wind parks are generally dominated by large companies, but this effect is even stronger in the case of offshore wind parks. A major reason for these developments is the high amount of investments needed for offshore wind parks together with a significant increase in risks.

With regard to the branches of firms active in the wind power sector, we found that electric utilities play a dominant role in the offshore business, cf. Figure. For Denmark this means a significant change in comparison with onshore wind power, which tended to be dominated by small private players (cooperatives). For the UK, however, the situation onshore vs. offshore is almost comparable with electric utilities owning 74% of the generating capacity, or 80% respectively. Here, oil and gas companies also play some role in the wind power business.

Conclusions

The offshore trend has a potential to significantly change the established organizational structures in the wind power sector. Large firms as well as electric utilities tend to play a much more important role in future and the heterogeneity of actors, which was particularly striking in countries like Denmark or Germany, is likely decrease. This development is not only of strategic importance for the firms and the associations in the sector. It may also have consequences with regard to political influence and lobbying, which is highly relevant in a field that is still characterized by strong need for public financial support.

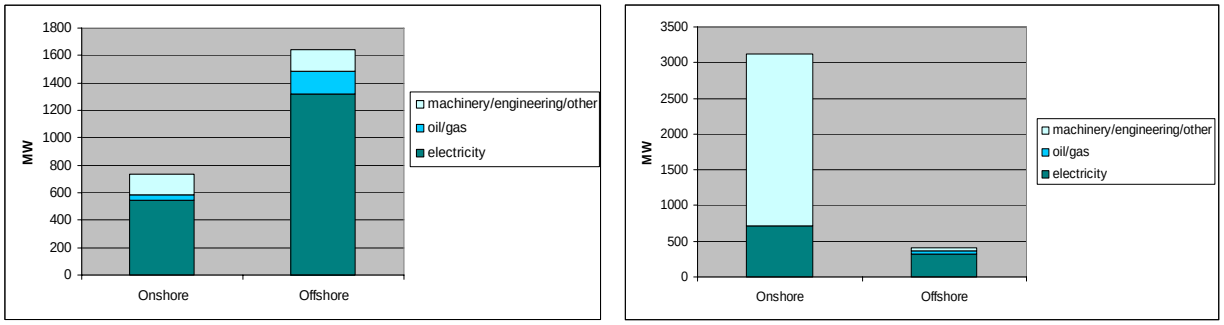

Fig. 1: Generating capacity and origin of owners of planned and realized on- and offshore wind parks in Denmark (left) and the UK (right).