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WIND POWER IN THE DANISH LIBERALISED POWER MARKET – POLICY MEASURES AND INVESTOR INCENTIVES

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Overview

The Danish Electricity Reform implied a liberalisation of the Danish electricity market from January 2003. In the paper we will investigate how the Danish electricity reform has transformed the regulation of wind power from the past-reform regime characterised by huge subsidies and cost-of-service regulation into a liberalised market regime. The aims of the paper are: First, to investigate how policy measures directed towards wind power have been redesigned in order to meet the challenge of market liberalisation. Second, to analyse the development in wind power before and after the market liberalisation. Third, to assess the influence of the electricity reform on the subsidies given to wind power producers and the incentives to invest in new wind power capacity.

Method

We apply economic analysis based on data collection from the power market. Data on policy measures, investments in new wind power capacity, market prices on electricity and costs of production are collected. For different categories of wind turbines we analyse the effect of the policy measures on the price paid to the wind power producers. Moreover, we estimate the subsidies given to the wind power producers by comparing the feed-in producer price to the spot market power price on the Nordpool market. Finally, we analyse the incentive to invest in new wind power capacity by comparing the cost of production to producer price.

Results

The policy measures applied in the Danish Electricity Reform are directed to three categories of wind power:

1. On shore pre-reform wind power (feed-in tariff in a transition period)
2. On shore post-reform wind power (adaption to market price and repowering schemes)
3. Off shore wind power (tender procedure).

In general the price paid to wind power producers has decreased since the implementation of the electricity reform. In 2000 a wind power producer received c€7.9 per kWh on average compared to c€6.6 per kWh in 2004. Over the same period the average Nordpool price has increased from c€1.3 to around c€2.7, which implies that the margin paid to wind power producers has decreased even more over the period.

Conclusion

We find that pre-reform feed-in tariffs have been maintained after the reform. However, time and production limits now restrict the period of subsidisation and ensure a future adaption to market price level. Presently subsidies to wind power are in range €0.23-0.26 billion per year equivalent to c€0.6-0.7 per kWh. As most subsidies are given to pre-reform wind power, incentives to invest in new wind power on-shore are weak. Private investments in new wind power capacity have declined radically after the electricity reform, whereas off shore wind power development benefits from tendering procedures including feed-in tariffs.