

Orvika Rosnes

RENEWABLE SUPPORT POLICIES AND FLEXIBILITY OF POWER MARKET

Email. orvika.rosnes@econ.no

Choice of a support scheme to promote renewable energy sources in electricity production has been in the focus of political discussion recently. EU has a target of increasing the share of renewable energy in electricity production to 21% by 2010. How to achieve the ambitious target is, however, left to the individual countries, as is the choice of preferred renewable energy source. There is a variety of different support schemes used in different countries.

The different support schemes – tradable green certificates, investment subsidies, feed-in tariffs to name a few – have different impact both on investments in renewables and, once invested, on production level. The focus of studies analysing support to renewables has mainly been investment efficiency of support policies, i.e. how to bring about investments in renewables.

Yet, issues pertaining to the short term operational efficiency – day to day or even hourly production efficiency – have been neglected. Once the investment is carried out and the new capacity is brought online, it needs to interact with the rest of the market. How the interaction in the market evolves depends both on the characteristics of renewables, on the flexibility of the existing power system and on the subsidy design. A flexible system (e.g., hydropower-dominated) can easily accommodate variable production from wind power, while an inflexible system (e.g., predominantly thermal), where there are costs related to adjusting production in the existing power plants, faces higher costs.

This paper analyses how the short-term operational efficiency and emissions from a power system depend on different support schemes to wind power and on the flexibility of the power system. This is analysed in a framework of a numerical power market model, calibrated to Danish data, where start-up costs and other constraints of thermal power plants are taken into account.

The main conclusions are, firstly, that the total costs of a support scheme depend on the flexibility of the existing system and, secondly, the costs of emission reduction may be increased by choosing ‘wrong’ support scheme to renewables. However, the effect of flexibility is much more significant than that of support scheme.