

Impacts on electricity markets Western Europe

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The expected climate changes in the 21st century are likely to have a small impact on electricity prices and production for the energy markets of Western Europe. This has been estimated by modelling three climatic effects:

- **changes in demand for electricity due to changes in the need for heating and cooling,**
- **changes in supply of hydropower due to changes in precipitation and temperature, and**
- **changes in thermal power supply due to warmer cooling water and therefore lower plant efficiency.**

According to the model results each of these three partial effects changes the average electricity producer price by less than 2%, while the net effect is an increase in the average producer price of only 1%. Similarly, the partial effects on total electricity production are small, and the net effect is a decrease of 4%.

The greatest effects of climate change are found for those Nordic countries with a large market share for reservoir hydro. In these countries total annual production increases by 8%, reflecting an expected increase in inflow of water. A substantial part of the increase in Nordic

production is exported; climate change doubles net exports of electricity from the Nordic countries, while the optimal reservoir capacity is radically reduced.

Source: Golombek, R., Kittelsen, S.A.C. and I. Haddeland, 2012. Climate change: impacts on electricity markets in Western Europe. *Climatic Change* 113: 357–370.

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