

Gronwald, Marc; Lippelt, Jana

Article

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RENEWABLE ENERGY AND NET ELECTRICITY IMPORTS

MARC GRONWALD AND
JANA LIPPELT*

In the beginning of this year the so-called North Sea Countries Offshore Grid Initiative gained attention in the media. Nine European countries (Ireland, Belgium, Britain, the Netherlands, Luxembourg, Sweden, Denmark, France and Germany) plan to build an offshore wind energy grid in the North Sea. The aim is a better linkage of existing wind energy plants and, thus, an improved usage of wind energy. The unreliability of wind energy availability is often criticised – in many cases the wind does not blow when energy demand peaks. One particular aspect of this new grid is that it provides a link to the Norwegian hydroelectric plants, which would serve as a ‘natural battery’. As many renewable energy projects are planned to be located in the North Sea – not only offshore wind energy, but also tidal and wave plants – this initiative becomes very important. In consequence, the general tenor in the media was quite positive. It should be noted, however, that the investment volume of this project is about 30 billion euros – the complexity of such a giant project should not be underestimated.

Against the background of this project, this article presents data on global electricity net imports. The upper panel of Figure 1 displays 2008 import figures. It is evident that countries such as the United States, Italy and Brazil have the largest net electricity imports. Amongst the net exporters of electricity countries such as Canada and France stand out, but also Germany was a net exporter of electricity in 2008. Many African countries, in contrast, neither import nor export electricity. The same applies to developed countries such as Japan and Australia. For

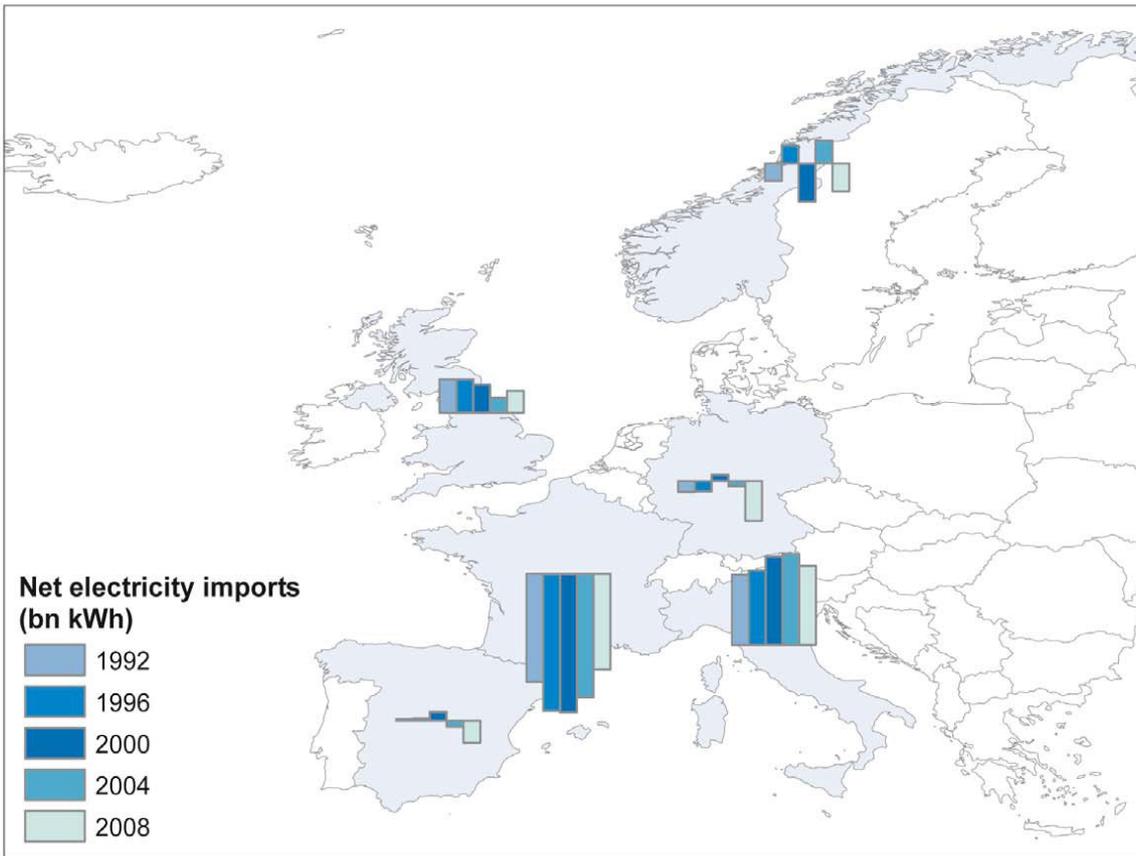
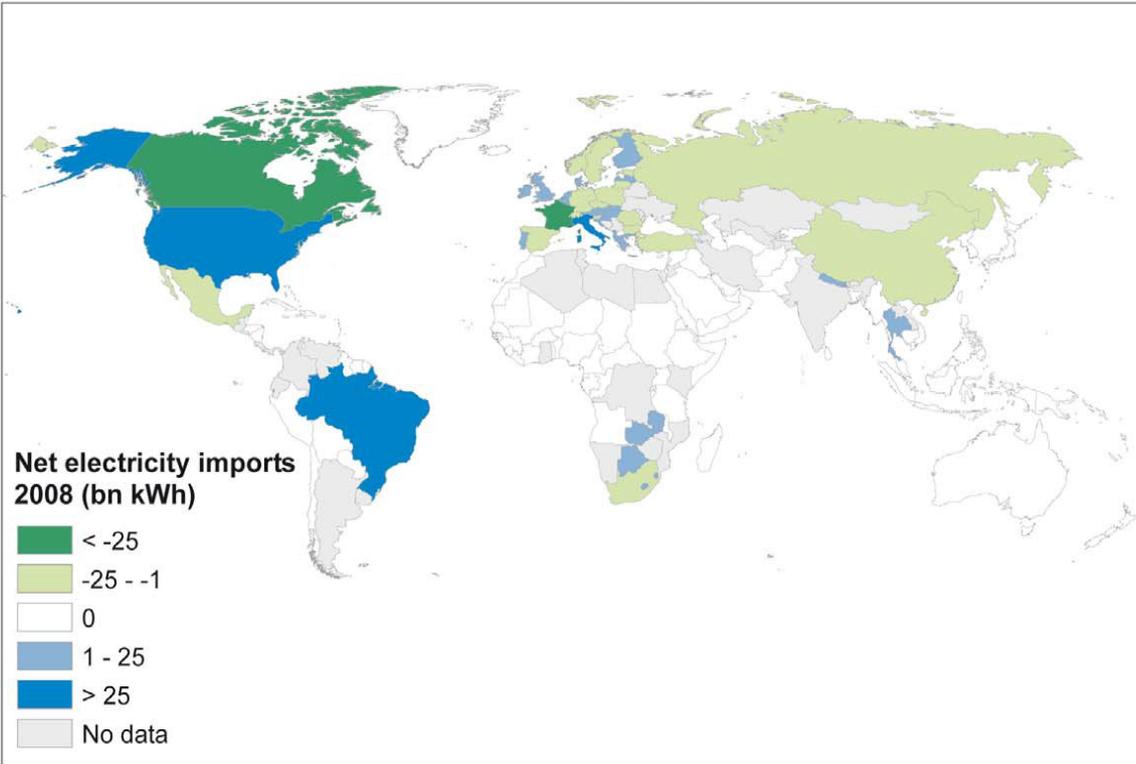
these two countries this can certainly be attributed to their geographical location.

Figure 1’s lower panel presents the development of net electricity imports for a selection of European countries since the early 1990s. It is apparent that Italy’s net imports remain essentially unchanged. Norway, in contrast, exhibits a very irregular net import pattern. This feature can be attributed to the large portion of hydroelectric power in Norway – the amount of electricity generated from this source depends on random factors such as annual rainfall. France exports considerably large amounts of electricity; in the last few years, however, a declining trend is apparent. The development of net electricity imports for Germany and Spain is striking. While for both countries the pattern is irregular and the exported or imported amounts are negligible throughout the 1990s and the early 2000s, in 2008 both countries exhibit considerably large electricity exports. A possible explanation for this is the recent expansion of renewable energy in these two countries. As electricity exchanges trade excess electricity at very low, sometimes even negative prices, however, the export of electricity can not be considered a profitable business.

In a nutshell, a certain dynamic is present in the European electricity market. The patterns of electricity imports and exports are subject of a considerable change. This as well as the challenges associated with increasing shares of renewable energy discussed above indicate that adjusting and further developing the European electricity grid is an important part of establishing the security of the energy supply in Europe.

* Ifo Institute for Economic Research.

Figure 1
NET ELECTRICITY IMPORTS



Notes: The lower panel displays net electricity imports for a choice of countries. Upward directed bars represent positive net imports, downward directed ones negative net imports and thus net exports. For all bars a standardized scale has been used.