



## Wind energy: supplying 80 per cent of EU electricity demand?

**Across Europe**, considerable amounts of renewable energy could be generated from wind power, according to a new report, with offshore farms potentially meeting 78 per cent of the EU's electricity demand by 2030. This would significantly help the EU meet renewable energy targets.

**The EU is committed** to reducing overall emissions of greenhouse gases (GHGs) to at least 20 per cent below 1990 levels by 2020<sup>1</sup>. Further targets call for renewable energy to make up 20 per cent of energy consumed by 2020. These will set Europe on the road to becoming a low carbon society and help increase energy security.

Wind power is a renewable, clean and proven source of energy. In 2006, renewable energy from all sources contributed 14.5 per cent of gross electricity consumption in the EU-27<sup>2</sup> and by the end of 2008, wind energy met 4.2<sup>3</sup> per cent of the EU's demand for electricity. However, further capacity is needed to meet renewable energy targets.

The report assessed local onshore and offshore wind resources across Europe (EU-27 countries plus Norway, Switzerland and Turkey) to estimate the maximum amount of wind power that could be generated in 2020 and 2030, given progressive development in wind turbine technology.

There is enormous potential for wind power: By 2020, total wind energy on land and sea could generate about 20 times the projected demand for energy. The realistic potential is likely to be less than this estimate for various environmental, social and economic reasons. For example: protection of sensitive conservation areas; public objections to offshore wind farms visible from the coast; and other uses of the sea, such as shipping routes, may take precedence in some locations. The report estimates that:

- By 2030, the economic potential of electricity from only offshore wind farms (3400 terawatts/hour (TWh)) could be sufficient to meet around 78 per cent of the projected electricity demand in Europe
- By 2020, the economic potential of offshore power is estimated to be 2600 TWh, which is about 60-70 per cent of projected demand.
- The UK and Norway offer the greatest areas for offshore development

To realise this potential, electricity grids across Europe must be upgraded and extended if high levels of wind power are to be integrated into the system. To ensure supply and demand is evenly matched, extra capacity for balancing the system would also be needed. The report recommends that a coordinated European approach is essential for developing the legislation, planning and support instruments needed to deploy wind energy. Offshore wind development should also be integrated with all planning policies for the sea.

As a comparison, according to the European Wind Energy Association (EWEA)<sup>4</sup>, the following targets for offshore wind production would be realistic and achievable:

- 40 GW (148 TWh) target - or 3.6-4.3 per cent of EU's electricity demand (with onshore wind providing 14.3-16.9 per cent of demand) by 2020.
- 150 GW (563 TWh) target - or 12.8-16.7 per cent of EU's electricity demand (with onshore wind providing 26.2-34.3 per cent of demand) by 2030.

1. See: [http://ec.europa.eu/environment/climat/climate\\_action.htm](http://ec.europa.eu/environment/climat/climate_action.htm)

2. See: [http://themes.eea.europa.eu/IMS/IMS/Specs/ISpecification20041007132211/IAssessment1196270748290/view\\_content](http://themes.eea.europa.eu/IMS/IMS/Specs/ISpecification20041007132211/IAssessment1196270748290/view_content)

3. See: [www.ewea.org/fileadmin/ewea\\_documents/documents/publications/factsheets/EWEA\\_FS\\_Statistics.pdf](http://www.ewea.org/fileadmin/ewea_documents/documents/publications/factsheets/EWEA_FS_Statistics.pdf)

4. Download from: [www.ewea.org/fileadmin/ewea\\_documents/documents/publications/reports/Offshore\\_Report\\_2009.pdf](http://www.ewea.org/fileadmin/ewea_documents/documents/publications/reports/Offshore_Report_2009.pdf)

**Source:** European Environmental Agency (EEA) Technical report No 6/2009. (2009). Europe's onshore and offshore wind energy potential. An assessment of environmental and economic constraints. This report can be accessed at: <http://www.eea.europa.eu/publications/europes-onshore-and-offshore-wind-energy-potential>

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