FACTSHEETS

By the end of 2007, the EU-27 had more than 56 GW of installed wind power capacity, including 1 GW offshore.

- €11 billion of investments
- Electricity production of 119 TWh, including 4TWh offshore
- Met 3.7% of total European electricity demand
- Provided power equivalent to the needs of 30 million average households
- Avoided 91 million tonnes of CO₂, equivalent to taking 46 million cars off the road (21% of the EU car fleet) and equal to 26% of the EU-15’s Kyoto obligation

During 2007, over 8.5 GW of wind power was installed, including 0.2 GW offshore, which represents more net additional capacity than any other power generating technology.
GROWTH AND MARKET DEVELOPMENT

- With a compound annual growth rate of over 20% in MW installed between 2000 and 2007, wind energy is now a mainstream power source in Europe’s generation mix. Wind power represented 30% of all power capacity installed in the EU in that period.

- Overall, the European wind market is expected to grow at a rate of over 9 GW annually through 2010, which translates into annual investments pushing of €11 billion.

- Europe remains the leading market for wind energy and new installations represented 43% of the global total. European companies supplied 66% of the world’s turbines in 2007.

- According to EWEA’s reference scenario, the EU-27 could see 80 GW of installed capacity in 2010; 180 GW by 2020; and 300 GW by 2030.

- The Global Wind Energy Council (GWEC) predicts the global market for wind turbines will grow by over 155% from 94 GW in 2007 to reach 240 GW of total installed capacity by 2012.

- Depending on the increase in electricity demand, wind power could cover 11.5 to 12.7% of global electricity demand in 2020, according to GWEC, and as much as 20.2 to 24.9% in 2030.
EU OBJECTIVE FOR 2020

- The EU has set a binding target of 20% of its energy supply to come from wind and other renewable resources by 2020.

- To meet this target, more than one-third of European electricity demand will need to come from renewables.

- Wind power is expected to deliver 12 to 14% of the total EU electricity demand in 2020.

The EU needs to increase by an average of 9.5 GW per year between 2008 and 2020 to supply 12-14% of EU's electricity. In 2007, wind energy capacity in the EU increased by 8.5 GW.
WIND INDUSTRY TARGET FOR THE EU-27 IN 2020

- **180 GW** installed capacity, including 35 GW offshore
- Annual installations of 16.8 GW, including 6.8 GW offshore
- Electricity production of 477 TWh, including 133 TWh offshore
- Meeting between 11.6% and 14.3% of total EU electrical demand
- Providing power equivalent to the needs of 107 million average EU households
BENEFITS OF REACHING THE WIND INDUSTRY’S TARGET IN THE EU-27 IN 2020

- Avoiding 328 Mt of CO$_2$, equivalent to taking 165 million cars off the road (76% of the EU 2004 car fleet).
- Annual avoided fuel cost of €20.5 billion (assuming fuel prices equivalent to $90 a barrel of oil).
- Annual avoided CO$_2$ costs of €8.2 billion (€25/t CO$_2$).
- Annual investments in wind power capacity of €16.9 billion.
- Total life-time avoided fuel costs of wind power capacity installed in 2011-2020 of €277 billion.
- Total life-time avoided CO$_2$ cost of wind power capacity installed in 2011-2020 of €114 billion.
TECHNOLOGY AND RESEARCH

- Three-bladed, upwind, variable-speed, pitch-regulated turbines currently dominate the industry.

- Although the onshore wind energy sector has made great improvements, the industry requires more R&D money to fully explore wind conditions, turbine technology, wind energy integration and offshore deployment.

- To comply with the decision made at the Barcelona European Council, the R&D effort of the sector should be at least of 3% of annual turnover.

- Based on a 3% investment, the R&D effort should be an average of €430 million per year. As two-thirds of this budget should be invested by the private sector and one-third by the public sector, the average public annual support should then be €143 million per year. If 50% of this support is provided by national (Member State) programmes, and 50% from EC programmes, the average effort both for EC and national programmes should be €72 million per year. The EC’s efforts are now lagging but there are signs that its support will rise to approximately €40 million next year.
COSTS AND INVESTMENTS

- Capital costs of onshore wind projects are dominated by turbine price. An average turbine installed in Europe costs about €1.23 million/MW, including all additional fees for foundations, electrical installation and consultancy (2006 prices).

- Conventional electricity production costs are usually determined by fuel, CO₂ emissions, operation and maintenance (O&M), and capital. Implementing wind power avoids the full fuel and CO₂ costs, as well as a considerable share of a conventional power plant’s O&M costs.

- There are still many small privately owned wind projects but there is a shift towards bigger, utility-owned projects. This brings new money to the industry and decreases dependence on banks for initial funding.

- Cumulative investments in wind energy over the three decades from 2000 to 2030 will total €390 billion. According to EWEA’s reference scenario, approximately €340 billion will be invested in wind energy in the EU-27 between 2008 and 2030.
OFFSHORE

- Five countries worldwide – all of them in the EU – had operational offshore wind farms by the end of 2007: Denmark, Sweden, the UK, the Netherlands and Ireland.
- Germany, France and Belgium also have huge potential and started building their first offshore wind farms in 2008.
- There are 1,080 Megawatts (MW) of installed capacity offshore – providing 4 Terawatt hours (TWh) of electricity, enough power for the equivalent of one million average EU households.
- Special vessels and techniques for erecting turbines have been developed. In addition, individual turbine size is significantly larger, and turbines of 5 MW and greater are being aimed at the offshore market.
- EWEA’s reference scenario for offshore development suggests there could be 3.5 GW of offshore wind in the EU in 2010, 35 GW in 2020 and 120 GW in 2030.
GRID INTEGRATION

- The large-scale integration of wind power requires a substantial increase in transmission capacity.

- In addition to the construction of new lines, adequate and fair procedures need to be developed to provide grid access to wind power, even where grid capacity is limited.

- A transnational offshore grid would provide access to the huge offshore resource. It would also improve the cross-border power exchange between countries and alleviate congestion on existing interconnectors.