



Looking beyond 2020 – what lies ahead?

We look at the European Wind Energy Association (EWEA)'s view of the future energy landscape beyond 2020.

Current targets set out for 2030 in Europe will see the wind energy sector and other renewable technologies transform the power sector and bring positive impacts to the European power system and the economy as we pivot towards the new normal of renewable energy becoming our main source of electricity. As targets set in Brussels call for renewables to make up at least 27% of energy consumed, Giles Dickson, Chief Executive Officer of the European Wind Energy Association invites policy makers to go beyond the bare minimum.

In their report 'Aiming High' published in February 2016, the EWEA examines the extra rewards of taking a more progressive view as a reminder to policy makers of the opportunity that wind energy presents. We provide a summary of the report here.

With 392 GW installed, wind energy can be the single largest source of power generation in the EU by 2030 ahead of coal and gas. Wind energy already plays a significant role in the European power sector. In 2014, the wind industry installed 11,791 MW in the EU – more than gas and coal combined. Today wind energy can meet 10.2% of Europe's electricity demand with a cumulative capacity of 128.8 GW at the end of 2014.

Additionally, over the past 15 years, wind energy experienced a remarkable growth in the EU. In 2000 wind met 2.4% of the EU's electricity demand thanks to 12.9 GW of installed capacity. By 2014, 128.8 GW of wind capacity had been installed, enough

to meet 10.2% of the EU's electricity demand. The scalability of wind energy has helped it emerge as a viable alternative to fossil fuels for power generation.

This growth, driven by stable and supportive policy frameworks for renewable energy, has placed the European wind industry not only as a global leader in its own sector, but also amongst all renewable energy technologies. Wind energy's share of renewable electricity generation has more than doubled in the previous decade achieving more than one quarter (27.4%) of all renewable generation in 2013. This trend is set to continue according to the European Commission, which expects wind energy to represent at least 43-45% of all renewable energy produced by 2030.

Wind power plants across Europe are operating on a similar scale as traditional thermal power generation, delivering clean, affordable and reliable electricity to

European citizens. This deployment has been underpinned by the development of an industrial base making Europe the global leader in wind energy.

The industry has taken strides in cutting technology costs and the finance community sees wind energy as an increasingly valuable asset. With the cost of wind power decreasing, new investors have also been attracted to the sector including global business and blue chip companies such as Google, IKEA and Apple. Keeping this momentum will be critical to the EU's standing as the global leader in renewables.

Thanks to its early-mover advantage, European industry has played a significant role in the development of wind in non-European markets. Over 48% of European wind energy companies work outside the EU creating opportunities for exporting goods and expertise.

Already in 2012, EU exports of wind-related

“Let me be very clear to our international partners: the EU will not sign just any deal. My priority, Europe's priority, is to adopt an ambitious, robust and binding global climate deal”

**Jean-Claude Juncker European Commission President
discussing COP21 in his State of the Union speech**



components generated a trade surplus of around €2.45 bn. This trade performance has been constant since 2008 with an exception of 2009 when the generalised global economic slowdown had a visible impact. 55% of exports went to five countries, one third to US and Canada.

In 2014, three out of the top five global wind turbine manufacturers were European companies (Siemens, Vestas and ENERCON). In addition, GE Renewable Energy has recently cemented its European business operations. European manufacturers are not only dominant in the EU but have also secured market shares abroad. In contrast, the activities of emerging Chinese competitors are concentrated in their home-market.

Europe should capitalise on its first-mover advantage in developing wind energy, the most cost-effective climate change mitigation technology.

A global climate deal in Paris in December 2015 is only the beginning of a long endeavour to address our climate change challenge as parties will start implementing their Intended Nationally Determined Contributions.

This will open new markets for renewables and other climate change mitigation technologies. To benefit over the long term from its competitive advantage, Europe will need to showcase a successful energy transition building on the large scale deployment of wind energy.

The 'Aiming High' report quantifies the impacts of the Central and High Scenarios laid out in EWEA's Wind Energy Scenarios for 2030. In the Central Scenario with the EU just meeting its 2030 climate and energy targets, wind energy will fall short of meeting one fourth of EU electricity demand.

More importantly, this approach would postpone much of the investments required for the EU to meet its long term greenhouse gas emissions reduction objective. In contrast, Aiming High and pursuing a more ambitious wind power deployment, will bring significant additional benefits in terms of greenhouse gas emissions savings, energy security and macroeconomic benefits.

In the High Scenario, 53.7% of electricity consumed in Europe will be sourced by renewable energy technologies, with wind accounting for 28.2% of total electricity demand. This scenario will help remove 111.6 Mt CO₂ by not postponing climate mitigation actions to the next generation.

This would be a net positive for the EU economy with an additional €13 bn GDP resulting from the increased deployment of wind and other renewables. The transformation of the energy mix will also lead to a net job creation in the European Union with 366,000 direct and indirect jobs in the wind industry alone.

Wind energy's potential to 2030 and beyond will largely depend on more ambition from policy makers. To this end, a robust governance system should be agreed to ensure Member States collectively deliver on the 2030 binding renewable energy target and are rewarded for additional ambition.

In parallel, the European Commission should make concrete legislative proposals towards a well-functioning energy market driving the transition away from a fossil fuel based economy. Finally, a structural reform of the EU Emissions Trading System should be completed to provide for a high and stable carbon price, dis-incentivising investments in carbon-intensive and inefficient power plants. ■

A copy of the full report can be found at www.ewea.org/fileadmin/files/library/publications/reports/EWEA-Aiming-High.pdf

Delivering on Innovation

Innovations in wind turbine designs are opening up new sites for wind power production. New turbine designs enabling operations in low wind sites have been introduced in the market. The development of modular blade designs has allowed for larger rotor diameters which otherwise would have presented logistical problems in transportation. These innovations have enabled development in sites that may have not been viable a few years ago.

Site optimisation is another research area which has helped increase production. Taking advantage of advances in communication and networking, modern wind turbines are able to share data with one-another. These digital wind farms optimise production leading to an improved performance of up to 20% in certain sites.

The offshore wind sector has also seen remarkable innovation. In moving further away from shore to harness a high and stable wind resource, developers and technology groups are examining floating offshore wind, which has the potential of opening up the Atlantic and Mediterranean seas. Trials for vertical axis turbines on floating foundations are underway in the South of France, which could see full deployment within the next decade.