

POLAND – AN OVERLOOKED OFFSHORE RESOURCE

WORDS: MAGDALENA DZIEGIELEWSKA, RESEARCH ANALYST, FROST AND SULLIVAN

The first offshore wind park globally was installed in Denmark in 1991. Since then the offshore wind energy market has been developing slowly. Currently, the majority of the installations in Europe are located in Denmark and the UK, countries that possess rich wind resources. There is no doubt that offshore installations offer higher productivity when compared with terrestrial turbines mainly due to higher wind speeds and more stable wind speeds. On average, wind speeds in the sea exceed 9-10m/s, which are significantly higher than average wind speeds of 6m/s on land.



Offshore wind energy development in Europe

Since 1991, the offshore wind power market has been developing moderately to reach slightly above 2,000 MW by the end of 2009, representing close to 3 per cent of total wind energy projects installed in Europe. The European Wind Energy Association (EWEA) expects this to grow to over 21,000 MW by 2016. The drivers that will be responsible for this high growth are mainly related to government support and setting new goals for renewable energy contribution to final energy production. In 2009, Directive 2009/28/WE was established, setting a new target of sourcing 20 per cent of total energy production in the EU from renewable energy, with individual targets for every member nation.

The two most recently-installed offshore wind parks in 2009 bring the investment

in offshore wind energy forward and increases its contribution to renewable energy production. Dong Energy's Horns Rev 2 wind farm located in the west coast of Jutland in the North Sea, as well as Robin Rigg owned by E.ON in Solway Firth are equipped with Vestas turbines and use the monopile foundation technology. This solution is suitable for water depths of between 3m and 20m. For instalments located in territories with depths exceeding 20 metres tripod foundations are commonly used.

Upcoming offshore wind energy development in Central and Eastern Europe (CEE)

Wind energy capacity in the CEE countries has been developing gradually in recent years with Poland having the strongest position in terms of installed capacity (1,005 MW), followed by

Hungary (201 MW). Due to high productivity of offshore wind farms and the necessity to fulfil EU obligations on renewable energy share in energy production, CEE countries that have coastlines are beginning to think about opportunities in exploring offshore wind energy potential. However, none of them has built an offshore wind farm yet.

Estonia's plans to locate offshore parks in the Baltic Sea, look promising though. The country has a fully-consented offshore project in Hiiumaa with a capacity of 1,000 MW. 4energia, a wind farm developer, has plans to install 200 turbines of 3-6 MW capacity until 2018.

Other CEE countries are not so advanced in their plans for offshore wind development. Countries that are located close to the Mediterranean Sea have plans at a nascent stage. In Croatia, Blue H Technologies, a floating wind

turbine and project developer from the Netherlands, is planning to establish two wind parks near Bilice and Dubrovnik. Bilice offshore wind farm with a total capacity of 448 MW will start operating in 2015 and the one located near Dubrovnik coastline with a capacity 392 MW will start the operation in 2016. The company plans to expand its activity to Albania with a potential project of 539 MW near Durres.

Offshore wind energy in Poland

Although possessing good wind potential, Poland hasn't been able so far to turn its wind industry into a rapidly expanding industry as some of its neighbours. The total installed capacity in June 2010 reached 1,005 MW, all located onshore. According to the European Wind Energy Association (EWEA), to fulfil EU obligations Poland will have to install 10,000-12,000 MW to reach 15 per cent target of renewable energy generation by 2020. This will be very difficult to achieve without developing the offshore wind power market. Currently, there are 12 projects in early stage of development. Polish Energy Group (PGE), the biggest energy utility in Poland, is interested in developing offshore wind farms with total capacity of 1 GW in three possible locations. However, the developer has to overcome several challenges, the most important of which are undeveloped grid

infrastructure and non-existent law for offshore wind projects.

Besides grid issues and a lack of legislation, several other aspects are holding the offshore wind market development back. One of them is that offshore platforms are established as artificial islands that according to the Polish law can exist only for five years, although the investment process takes approximately seven to eight years, whereas the wind farm operates for at least 20-25 years.

However, the most important restraint is the lack of grid connectivity. PSE Operator, the owner of 200 kV and 400 kV transmission lines, is not planning to develop infrastructure in areas, where offshore wind parks can be installed.

To ensure development of the offshore wind energy market the Polish Marine Network Consortium was established to understand the challenges facing the sector and assist in solving them. One way to do so is to develop the Polish Baltic Track in order to establish high voltage, transmission submarine network. This will assist in connecting offshore wind parks power transformers with main grid to allow future connections of wind parks.

Additionally, Nature 2000 area extends along the Baltic Sea, which includes a conservation territory, where permitted

economic activities include those that do not damage existing habitat and species. Nature 2000 includes The Birds Directive, which establishes Areas of Special Protection and Habitat Directive for the protection of seals. This means that no offshore wind energy projects should be located within 12 miles of the coast.

Conclusions

The EU offshore wind energy market has seen moderate growth until now. The unquestionable leaders are the UK and Denmark. On the offshore wind energy map none of the CEE nations are visible yet. However, plans for offshore wind farms are being drawn up in countries such as Croatia, Estonia, and Poland. Poland seems to be the least advanced with its plans for offshore wind development. Unfortunately, without changes to the current legislation there is no possibility of any offshore wind farm to be built in the next five-seven years. An optimistic scenario of the Polish Marine Network Consortium assumes necessary legislative changes and grid development will take place to allow for establishment of first offshore wind parks in Polish territory during the next 10 years. ■

PES would like to thank Frost and Sullivan. For more information, please visit: www.frost.com