EU push for ocean energy set to fall short

Nina Chestney and Martin Roberts, Reuters

Europe's wave and tidal power technology is likely to disappoint EU expectations for 2020 and take over a decade to contribute to energy supply in a significant way, even though it is chalking up rapid growth and drawing in big industrial investors.

The nascent industry has attracted a flurry of investor activity over the past year, securing an estimated few hundred million euros from companies such as Siemens and Vattenfall.

It is making fast progress from prototype devices toward full-scale sea trials and promises to be more reliable than many types of renewable power that depend on the weather.

But those numbers are far less than European Union expectations for 8.5 billion euros ($11.3 billion) of investment and generation capacity of 3.6 gigawatts installed by 2020.

The technology, like other renewables, needs government financing help to reach commercial scale and then subsidies after that as it grows to more cost efficient.

Its timing as a latecomer behind more established renewables such as solar and wind is unfortunate. Government financing is hard to come by while the euro zone faces a sovereign debt crisis and governments are cutting spending, including on renewable energy.

Furthermore, its development costs are still far higher than for other renewables, including offshore wind power.

"Any talk of gigawatts by 2020 is optimistic. We are more on course for hundreds of megawatts," said Charlie Blair, technology acceleration manager for marine at the Carbon Trust.

FUNDS

Siemens, which increased its stake in UK developer Marine Current Turbines last month, sees double-digit annual growth rates for marine current renewables to 2020 from virtually zero now and expects it ultimately to meet 3 to 4 percent of global energy demand.

"The big industrial players getting involved is what is needed to move this sector forward. Utilities are looking at these kind of projects, which will be on a similar scale to wind energy or conventional power plants," said Frank Wright, renewables manager at UK consultancy Douglas Westwood.

Most experts expect the first large-scale commercial projects of 1 MW or more to

emerge by 2016 or 2017 and ocean energy to start contributing to the EU power mix between 2025 and 2030.

A big tidal device probably has a 1 MW capacity, but the next challenge is to get to five-to-10 MW arrays and then move to hundreds of megawatts by 2020 or beyond.

"We still need to prove a 10 MW array can function on a commercial basis and pay for itself by selling electricity," Blair said.

Not only are there technical challenges in installing multiple devices and in developing the grid infrastructure and control systems, but developers also must reduce the huge costs of arrays.

Current estimates for the levelised cost, or the constant price per unit of energy for an investment to break even, are 0.38-0.48 pounds/KWh for wave energy and 0.29-0.33 pounds/KWh for tidal, compared with 0.09-0.10 pounds/KWh for nuclear and offshore wind, according to the UK's Carbon Trust.

Funding constraints threaten to impede the push towards commercial deployment. Although government funding is available for research, there is less available for large-scale demonstration projects.

Renewable UK estimates that at least 120 million pounds ($190.4 million) is needed for the UK industry alone to reach full-scale deployment.

The UK and Scottish governments have pledged funding of 38 million pounds. Scotland added to that last week by launching a 103 million pound fund for renewables from money set aside from a fossil fuel levy, and some of that money will be used to develop tidal and wave projects.

According to RenewableUK, every pound of public funding in the UK has unlocked 6 pounds of private investment, but more is needed.

"There is no reason why the sector cannot deploy in excess of 1 gigawatt by 2020, but it is vital that we reduce costs to maintain investor interest," said David Krohn, wave and tidal development manager at the UK renewables association.

Figures on government financing for wave and tidal projects in Spain and Portugal, where the sector also has major potential, were not available.

Cash-strapped Portugal would need to drum up 4 billion to 6 billion euros of investment, public and private, to reach its potential to generate 3 GW by 2020, according to industry estimates.

Spain, which aims to install 100 MW of ocean energy by 2020, has temporarily halted subsidies on new renewable plants for budgetary reasons.

GRID

There is also a concern that the EU power grid will not be able to keep up with the added capacity as more projects near full-scale sea trials and supply electricity to the grid.

Grid-connected capacity from wave and tidal in the UK, though still modest at 5.6 MW, has risen 90 percent since March last year. RenewableUK expects this to rise to 11 MW this year with the connection of at least seven new devices.

Some utilities depend on significant investment in expansion of grid capacity before they will increase their marine plans. Vattenfall has said it plans to buy a UK wave power device later this year on the expectation that an interconnector is laid between the Shetland islands and the Scottish mainland.

"Offshore wave projects need to be connected to the grid onshore and then transported," said Alina Bakhareva, research manager of renewable energy at Frost and Sullivan.

"Unless you have government subsidies for building super grids or high-voltage grids, it is not feasible for (marine) developers to take this additional cost on their balance sheets."

($1 = 0.7540 euros)

($1 = 0.6304 British pounds)

(editing by Jane Baird)

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