

Hopes high for offshore turbines despite hurdles

Wind Power

The nation could be a good location for offshore power generation, writes *Ben McLannahan*

When Takeshi Ishihara was plying his trade at Shimizu Corp, he saw high winds as a menace.

As a civil engineer at the blue-chip construction company, his job was to ensure tall buildings could withstand the worst nature and the elements could throw at them.

Now, having left the private sector for academia more than a decade ago, he is aiming to harness those forces for good.

If all goes to plan by 2020, the Tokyo University professor will have overseen the creation of a huge offshore wind farm, producing up to 1GW of power from a flotilla of turbines, each 200 metres tall, off the coast of Fukushima prefecture.

“I used to think of wind as the enemy,” smiles Prof Ishihara. “Now, rather than resisting it, I want to use it.”

On paper, it seems Japan would be a good location for offshore wind energy. The country’s territorial waters rank sixth in the

world by size.

The nation has an efficient and adaptable power grid, especially in central areas of the archipelago, and a range of very good ports to assist in turbine construction.

Japanese companies – from steelmakers to shipbuilders – are already adept in supplying machinery and equipment. Yet until the nuclear accident last March, authorities had hummed and hawed about wind power.

Prof Ishihara had been a regular visitor at the Ministry of Economy, Trade and Industry (Meti) since 2002, updating bureaucrats on wind-speed data gathered in experiments off the coast of Chiba, an hour from Tokyo.

However, it took the country’s biggest earthquake, and the subsequent shutdown of almost all of its nuclear capacity, to force a commitment from Meti.

After that, things moved quickly. By July, Prof Ishihara had a new proposal. By December, he had approval from the government.

By March this year, an all-Japanese project group led by Marubeni Corp, the trading house, was up and running, making inroads into a Y12.5bn (\$150m) grant allocated from the government’s Y19tn budget for



Hopes for sustainable future: Professor Takeshi Ishihara

reconstructing tsunami-hit areas of Tohoku.

By 2015, according to the plan, the group will have installed one 2MW turbine and two 7MW turbines, each feeding into a sub-station about 16km from the coast.

Yet plenty of challenges remain. For example, unlike traditional offshore turbines, which are built on top of steel tubes driven into the sea floor, the Fukushima turbines will sit much further out in deeper water, on buoyant steel cylinders, kept upright with ballast and tethered to the seabed via mooring lines. However, that makes them costly to build and maintain.

“Without subsidies, we couldn’t

justify investment,” says a senior executive at one of the companies in the project group.

Under the government’s feed-in tariff system, which was introduced in July this year, utilities may be required to buy the electricity generated by offshore wind turbines at up to Y42 per kilowatt hour – about double the rates of onshore turbines, and among the highest rates in the world.

The sheer pace of expansion is also a risk.

Where it took Denmark, for example, 20 years to develop 1GW of offshore wind energy: “Japan is aiming for the same in less than half the time,” notes Jatin Sharma, London-based head of offshore at renewable energy underwriter, GCube.

For now, though, the biggest obstacle is the 1,300 fishermen who regularly trawl the region’s waters, and who have baulked at the proposed intrusion.

In an ideal world, says Marubeni’s Tomofumi Fukuda, deputy general manager at the domestic power project, the sponsors would have consulted with locals more, as they did in Nagasaki prefecture.

There an Environment

Ministry-led project to install a single 2MW turbine, was preceded by “three or four years” of negotiations before operations began in August.

Since March, Mr Fukuda has been making two trips a week to talk to fishing union leaders, in efforts to convince them the project poses no risk to their livelihoods.

If no agreement is reached by the end of February next year, he says, then initial installations planned for the calmer months of May to July may have to be scrapped, which would mean the entire project would be scuppered.

Mr Fukuda puts the chances of such an outcome at “30 per cent”.

Prof Ishihara, however, remains undaunted.

Japan’s annual offshore wind power inventory could ultimately amount to as much as 1,570GW – about eight times the current capacity of Japan’s power companies. And, in time, he says, the country’s deepwater wind-farm technology could be in demand around the world.

“This has always been my dream,” he says. “Energy has to change – and sustainable energy is the future.”

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