



Steel for generating wind power in Gujarat

Danish firm COWI will build India's first offshore wind power project off the coast of Gujarat. The industry response and the resulting growth will help India ensure energy security and a transition into a low carbon economy, writes *Orchie Bandyopadhyay*.

With Danish engineering firm Cowi winning the contract to design the first offshore wind farm of about 50 MW off the coast of Gujarat, it seems India is finally adding offshore renewable energy to its energy mix. Though the size of the demonstration project, which is supported by the European Commission, has not yet been determined, Cowi's role will involve consultancy and engineering services. The services will include electrical design, conceptual design of the foundation based on geotechnical studies and metocean

analyses, and layout of the wind farm.

The policy side of the job will work out the size of subsidies, electricity costs, and connection to the power grid. Cowi will also help the authorities establish an offshore wind knowledge bank.

"The Government of India has high ambitions based on a climate point of view, and for which it needs new renewable energy technologies. India has the necessary capacity and the will to develop and establish offshore wind. We plan to design an installation of around 50 megawatts," said Marc Normann, Director of COWI's department industry

& energy.

The planning phase will take three-and-a-half years, after which the project is set out for tendering and the new policy for implementation. The project is expected to be completed in 2019.

A 7,600 km coastline offers India a huge offshore potential, and with the Government approving a National Offshore Wind Energy Policy in September 2015, India's wind energy capacity is bound to see a significant rise.

The policy paves the way for offshore wind energy development, including, setting up of offshore wind power

projects and beginning of research and development activities.

Key aspects of the policy are: International Competitive Bidding: NIWE is to allocate the blocks to project developers through an open international competitive bidding process.

Clearances and Intermediate Off-taker: NIWE is to facilitate necessary clearances for project developers

Costs: The Policy identifies various challenges that would affect the costs of the project developers;

Environmental Aspects: Various surveys and comprehensive studies have to be conducted before the blocks of offshore wind energy can be demarcated;

Security: The project developer will have the responsibility under the policy to ensure the security of the offshore wind energy project.

Calling the offshore wind policy a pioneering step, Minister of State (independent charge) for Power, Coal and New & Renewable Energy Piyush Goyal, said, "Under the policy, there will be wind energy mapping of the country and locations with high potential will be identified. The Government will get all approvals for these areas from departments such as defence, shipping and space and offer them under bidding."

Of India's 36,642 MW of installed renewable power capacity, around 23,864 MW is onshore wind energy alone.

Though wind energy is the fastest growing renewable energy source for electricity generation in India, and the country has achieved significant success in the onshore wind power development, with 24 GW of wind energy capacity already installed and generating power, there are targets yet to be achieved.

Dr S Gomathinayagam, Director-General, National Institute of Wind Energy, said, "We have a huge target for wind power which is set at 50 to 60 GW by 2022 from the existing 24GW. This can be harnessed very effectively as there is no land availability problems as far as

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off shore wind is concerned. Also, it will help the country comply with carbon reduction norms."

While stating that the project is good news, Dr Gomathinayagam said, "For techno-economic viability of any offshore project in India, it should be part of the Integrated Coastal Zone Management, catering to multipurpose needs of the Government of India such as coastal security and navigational assistance, maritime operations and research, bio diversity and marine ecosystem protection, shipping and light houses (being developed now as tourist attraction), defence strategic needs and electricity generation and submarine transmission."

Giving the example of hydro projects, Dr Gomathinayagam said, "Even though

large area submergence is involved in hydel projects, the multipurpose nature such as flood control, water storage, electricity generation, agricultural facilitation, tourist attraction, makes hydro projects viable."

Pointing out that turbines that produce wind power have become more powerful and more efficient, Dr Gomathinayagam said that bigger turbines (5MW and above) utilising cutting-edge technology will increase yields. Yet another, a positive outcome will be creation of employment.

"Offshore wind offers a large, untapped energy resource for India that can create thousands of manufacturing, construction and supply chain jobs along the coastal, rural and urban areas of the country," added Dr Gomathinayagam.

According to the Minister, preliminary



The GWEC is spearheading a four-year project aiming to develop a roadmap for offshore wind power development in India, with the focus on the states of Gujarat and Tamil Nadu

estimates showed the Gujarat coastline has the potential to generate around 106,000 megawatts (MW) of offshore wind energy and Tamil Nadu about 60,000 MW. Worldwide installed capacity of offshore wind projects is around 8,500 MW and of that, around 4,500 MW is in the UK alone.

Dr Gomathinayagam states that India will have to look and adopt from European experiences in offshore wind power, while adding that NIWE is a partner of the Global Wind Energy Council's (GWEC) Facilitating Offshore Wind in India (FOWIND) project in India. The GWEC is spearheading a four-year project aiming to develop a roadmap for offshore wind power development in India, with the focus on the states of Gujarat and Tamil Nadu. The project essentially seeks to establish structural collaboration and knowledge sharing between the EU and India on offshore wind technology, policy and regulation, and serve as a platform for promoting offshore wind

research and development activities. It focuses on the states of Gujarat and Tamil Nadu for identification of potential zones for development through preliminary resource and feasibility assessments for future offshore wind developments, along with techno-commercial analysis and preliminary resource assessment. The project is supported by €4m (\$5.5m) from the EU's Indo-European Cooperation on Renewable Energy programme.

Welcoming all efforts, including the COWI led initiative towards the development of an offshore wind sector in India, GWEC secretary general Steve Sawyer said, "FOWIND is in the process of assessing the gaps and existing capacity in India for supporting an offshore wind sector. We are shortly coming out with a detailed assessment of the supply chain, port infrastructure and logistics study for Gujarat and Tamil Nadu. Last year we published the first pre-feasibility assessments for offshore

wind farm development for the two states."

Though Europe is the definitive leader in offshore wind, Sawyer has cautioned India against repeating mistakes made by Europe and China, which led by overly-enthusiastic volume projections, faced escalating costs, equipment failures, and a slow-down of offshore development before momentum returned and efforts to bring costs down began.

Talking about the future of off shore wind in India, Sawyer said, "Given India's political commitment towards integrating RE into its energy mix at COP21 in Paris late last year, we feel that offshore wind will play a big role in its upcoming clean energy led transition to a low carbon energy future."

Greening blue energy, written in collaboration with E.ON and the Swedish International Development Cooperation Agency, for assessing the impact of offshore wind energy installations on marine ecosystems and biodiversity, however, warns that their potential impact on marine biodiversity should not be overlooked.

While saying that offshore wind is an increasingly competitive power source, industry experts say that advances in technology and industry maturity will make offshore wind an attractive investment. For India, since this is only the beginning, much more would need to be done to promote this new and promising source. 

