

How can the budget unlock India's future as an offshore wind powerhouse

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India's 7,600 km-long coastline presents an enormous opportunity to ramp up the country's offshore wind power capacity, thereby increasing clean electricity supply for the country's growing economy, and creating sustainable jobs. The government last month approved a ₹7,453 crore (~USD 900 million) offshore wind funding scheme, a welcome move to kickstart the industry—but a considerably larger financial support will be required to ensure the sector's sustainable growth and promote manufacturing of offshore wind turbines.

Despite its enormous potential, India has thus far lagged behind its global peers with no installed offshore wind capacity in the country despite the international market size reaching close to 75 GW. In India, just two of the nine coastal states – Gujarat and Tamil Nadu – have a combined offshore wind potential of 71 GW. India aims to install more than half of this capacity (37 GW) by 2030, as part of its overall non-fossil-fuel goal of 500 GW.

The government's new funding scheme helps address this early inertia by including INR 6,853 crores (US\$ 800 million) of viability gap funding (VGF) to incentivise the development of India's first offshore wind energy projects, with the remaining amount allocated towards upgrading ports to manage the logistical requirements of these projects. This scheme not only marks the launch of offshore wind in India but is also expected to bring much needed private investment to a sector which developers have shown little interest in so far, due to operational challenges and offtake concerns due to high generation prices.

Nevertheless, there is a strong case for India to prioritize offshore wind projects. They deliver better reliability of electricity supply, even during peak hours, owing to faster wind speeds and higher capacity factors, compared to other renewable energy (RE) sources including onshore wind. Moreover, they aren't much affected by the land constraints, which is a growing concern associated with RE projects in many states.

Despite its many advantages, the upfront cost of installing offshore wind energy plants is significantly higher than all other RE sources (including onshore wind) due to the complexity of the marine environment and the stronger structures and foundations required. This also makes offshore wind more than twice as expensive, in terms of its generation cost, as compared to alternative sources such as coal, solar and onshore wind. In addition, there are several operational and technical complexities associated with installing offshore wind.

Therefore, India's upcoming Union budget—which the government is set to unveil next week—should include a comprehensive support package for offshore wind. This package should not only aim to boost its share in India's RE mix but also

stimulate domestic manufacturing of offshore turbines. This can generate green jobs, enhance peak electricity demand management, and reduce emissions.

The government should also explore avenues to gradually decrease the VGF requirements overtime. For instance, introducing renewable purchase obligations (RPOs) for offshore wind projects and extending them to the industries which are currently in high-tariff brackets can reduce the requirements for government support while maintaining industrial competitiveness. Even in the UK, renewable obligation certificates (ROCs), similar to renewable energy certificates (RECs) in India, were used to support offshore wind developers in the industry's initial phase of deployment. The UK is now the second largest offshore wind market in the world.

The government should simultaneously start incentivising investments in building a robust domestic supply chain and logistical base for offshore wind. This will ensure the sector's sustainable growth and boost local employment and economic growth in the country. Though India will initially have to rely on imports, a strong domestic manufacturing base in the long-term will also shield India from any global supply disruptions, that have impacted the sector in the last 3-4 years. Achieving such localization objectives—which will be in direct competition with the existing manufacturing bases in Taiwan, South Korea and China) underscores the need for optimal government support (including VGF) in the coming years.

India is already an established manufacturer of onshore wind equipment including turbines and blades, albeit on a small scale. However, most manufacturing capacity is focused on 2 MW class onshore turbines, whereas the larger offshore turbines have a rating of 6—12 MW. Introducing production-linked incentives scheme in the sector could incentivise Indian manufacturers to make the larger components needed, which could even be exported to international markets.

Similarly, existing installation and operational services used by the offshore oil industry in India can be adapted to wind farm deployment. Tapping into such overlaps and investing in the capacity building will be in line with the government's *Atmanirbhar Bharat* (self-reliance) mission. Since the construction of an offshore wind farm takes 5-8 years, the upcoming budget provides a golden opportunity to accelerate the investment required by the sector.

India's newly elected government is expected to drive the country toward its 2030 clean energy goals. But to ensure offshore wind energy growth in India, the government must now develop a comprehensive roadmap with a clear timeline for implementing a comprehensive range of measures to put wind in the sails of India's offshore wind sector.