

# Offshore Wind Power in India: Where do we stand!!!

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India has achieved about 34 GW of onshore wind energy capacity as of the beginning of 2019. India is the fourth-largest producer of power from wind after China, the USA and Germany. The Government of India (GoI) wishes to replicate the same success in the offshore wind energy sector.

The national target for offshore wind capacity has been identified at 5 GW by 2022 and 30 GW by 2030. This can be easily supported by India's coastline of over 7,500 Kms, with stronger, more consistent wind speeds and less turbulence than onshore winds. Studies conducted have identified good wind potential both in the southern tip and the west coast of India. Accordingly, the GoI has declared Gujarat and Tamil Nadu as the potential destinations for offshore wind projects in India.

**Regulatory Framework:** The GoI has identified the Ministry of New and Renewable Energy (MNRE), as the Nodal Ministry and National Institute of Wind Energy (NIWE), as the Nodal Agency for the development of offshore wind energy. The GoI has further, through MNRE, notified the National Offshore Wind Energy Policy 2015 (Offshore Wind Policy), which sets out the broad outline for the development and working of the offshore wind farms sector in India.

**Offshore Wind Policy:** Under the Offshore Wind Policy, the NIWE, as the nodal agency, will conduct international competitive bidding for setting up of offshore wind projects. NIWE, among others, will support the developers in setting up of offshore wind power farms and also facilitate in getting clearances from concerned Ministries/Departments.

**Draft Offshore Wind Energy Lease Rules (DOWELR):** MNRE has recently issued DOWELR for comments from stakeholders. DOWELR proposes that offshore sites be leased out to developers for 35 years, including 5 years of prospecting and 30 years of project installation and operation. Provisions related to fees, identification of project sites, penalties, cancellation of the lease, and restriction on wind energy generation for national security have also been proposed.

**Offshore Wind EOI:** In April 2018, NIWE issued the first EOI for setting up of 1000 MW offshore wind farm in Gujarat. The EOI received considerable interest from bidders across the globe, including Ørsted, Van Oord, Equinor, Copenhagen Infrastructure Partners, wpd, E.ON, Innogy and Senvion. However, no tender has been issued yet. One of the reasons could be, the GoI is yet to resolve the many regulatory and logistic issues required for the success of offshore wind power projects.

## Key Challenges & Mitigation Measures

**Port Facilities:** Adequate port facilities are essential for the establishment of offshore wind projects, and subsequent evacuation of power. There are 43 ports in Gujarat and 26 ports in Tamil Nadu, which could be used for offshore wind power development. However, these ports were not set up with offshore wind farms in mind and lacks

adequate storage, construction, and related facilities. The GoI needs to identify ports in different parts of the country and develop them to support offshore wind projects.

**Clearances & Approvals:** NIWE is required to take in-principle clearance from relevant GoI authorities (Stage I Clearance) before offering an offshore wind block for bidding. However, the developer upon the allocation of the offshore wind block will require further clearances/NOCs from all relevant GoI authorities (Stage II Clearance). NIWE is required to facilitate the clearance and provide a clear timeline for approvals. However, from experience in offshore oil and gas blocks, it has been seen that there is often uncertainty and delay around statutory clearances.

Further, additional clearances may be required from the State Government for creating evacuation infrastructure, logistics, etc. These may affect the overall timeline and viability of the offshore wind project. A single window-clearance with a specified timeline through NIWE could help resolve this issue.

**Infrastructure & Regulatory Issues:** There is no clarity on ownership of the offshore grid system. The Offshore Wind Policy only requires the transmission utilities to undertake onshore evacuation and grid connectivity. The EOI requires the developer to set up the electricity transmission infrastructure from the pooling station in the sea till the point of connection to the onshore sub-station. This may lead to uncompetitive high tariffs for such offshore wind power.

The Offshore Wind Policy lacks a clear target for offshore wind development to enable planned infrastructure development for the evacuation of offshore wind power. Further, the existing evacuation facilities are inadequate to cater to the need of the power sector. To address this, the GoI has introduced "The Green Energy Corridors Project" during the 12th Five Year Plan period. It has approved the intra-state transmission infrastructure projects of total cost over 10,000 crores (USD 1430 m). However, there have been delays in implementation in many States, and the infrastructure has failed to keep pace with project development.

The existing Grid Code has accorded "Must Run" status to wind power projects. Accordingly, wind power can only be curtailed for reasons of grid safety and security, and only after communicating such reasons to the generators. However, in the last few years, there has been an irregular curtailment of wind power. The onshore developers in the State Tamil Nadu and Andhra Pradesh have suffered substantial financial losses.

Before venturing into offshore wind projects, the GoI needs to prepare/upgrade the existing grid system to be able to integrate the electricity generated from offshore wind farms.

**High Cost:** Offshore wind farms are far more expensive than onshore farms. The higher costs are due to the requirement of larger offshore structures, and complex logistics for installation and transmission of power. The developer may also require additional investment for waterways, and other infrastructure to connect to the closest port. One way to reduce infrastructure cost could be by way of 'Clustering' of offshore wind projects, i.e., have multiple wind farms located geographically close enough to share transmission infrastructure.

The EOI designates a GoI agency to enter into a PPA for purchase and sale of power from the offshore power plant for 25 years, backed by an adequate payment security mechanism. This may also help reduce cost as it will allow developers to get more favorable terms from investors.

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