

## Auroville Consulting

Using our expertise in ecological and socially responsible development, we work for a prosperous eco-system that supports all life on this planet. Our approach is multi-faceted: We collaborate with academic, private and public sector partners both in India and Internationally, helping to develop sustainable urban and industrial development policies, ecologically friendly technologies – and the minds of future leaders. Founded in 2010, Auroville Consulting is a unit of the non-profit organization Auroville Foundation.

Web: [www.aurovilleconsulting.com](http://www.aurovilleconsulting.com)

## Sustainable Energy Transformation Tamil Nadu (SET)

SET aims to facilitate higher clean energy deployment in the State by working with stakeholders in order to find sustainable and equitable solutions. SET is a collaborative initiative by Auroville Consulting (AVC), Citizen Consumer and civic Action Group (CAG), the World Resources Institute India (WRI).

Web: <https://settn.energy>

---

Authors: Nilima Dharanipragada  
Reviewer: Martin Scherfler  
Designer: Thiagarajan Rajendiran,  
Auroville Consulting

Suggested Citation: Auroville Consulting (2022). Unlocking Offshore Wind in Tamil Nadu. Sustainable Energy Transformation Series.

Available at:

<https://www.aurovilleconsulting.com/unlocking-offshore-wind-in-tamil-nadu/>

# Briefing Note Unlocking Offshore Wind in Tamil Nadu

Date: July 2022

Author: Nilima Dharanipragada

Email: [nilima@aurovilleconsulting.com](mailto:nilima@aurovilleconsulting.com)

## Purpose

The aim of this note is to outline how the off-shore wind energy sector can be developed in Tamil Nadu.

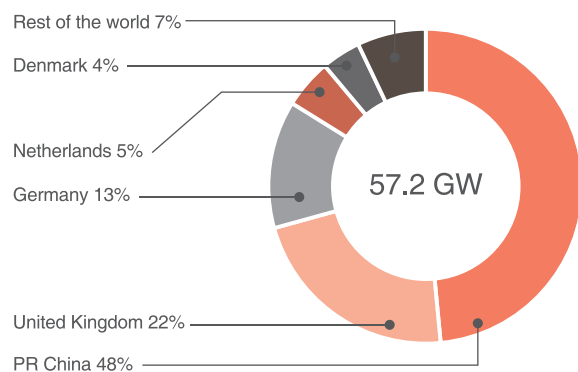
## Key messages

- Tamil Nadu's off-shore wind potential has been estimated at 35 GW (MNRE, n.d), one of the highest in the country.
- The State can play a key role in facilitating offshore wind energy in the following areas:
  - (i) Developing a State policy for offshore wind
  - (ii) Providing adequate evacuation infrastructure for offshore wind projects
  - (iii) Creating or providing access to port facilities for the installation process
  - (iv) Engaging with the local communities to overcome challenges
  - (v) Implementing skill training programs to provide a skilled workforce
  - (vi) Create a single-window to facilitate project clearance

## Background

The global offshore wind sector has observed a compound annual growth rate of 47.4% between 2017-2021, and the total installed capacity at the end of 2021 was 57.2 GW (Lee, J., and Zhao, F., 2022). These figures indicate the growing prevalence of offshore wind globally. The leading contributors include China - with almost half of the total global installed capacity (i.e 27.7 GW), and the United Kingdom (UK) with 12.5 GW (refer to Figure 1). India does not have any installed capacity as of 2022. However, there has been a recent build-up in momentum.

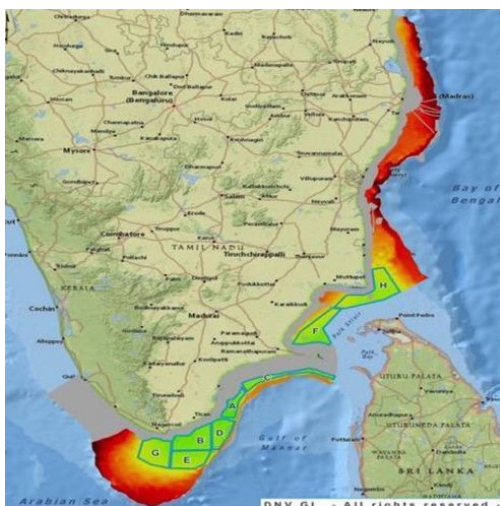
Figure 1 Total installation of offshore wind technology with a (%) share of leading countries (Lee, J., and Zhao, F., 2022).



The Indian Government had set an off-shore wind target of 5 GW by 2022, and a target of 30 GW by 2030 (MNRE, 2018). While the target of 5GW by 2022 could not be achieved, the Indian Government forged strategic partnerships with countries such as Denmark, UK, and the European Union (EU) to achieve the 2030 target.

Potential areas for harnessing offshore wind had been identified by the National Institute of Wind Energy (NIWE) and a preliminary resource assessment indicated that a potential of 35 GW (MNRE, 2018) of fixed bottom type can be harnessed off the coast of Tamil Nadu (refer to Figure 2) – one of the highest potential areas in India.

Figure 2 Potential areas for offshore wind (highlighted in colour) off the coast of Tamil Nadu (Giles, J. et al, 2018).



## National Policy

In 2015, a national policy on offshore wind energy was released by the MNRE to guide its development. The policy outlines the involvement and coordination of multiple national and State Government bodies, and thereby indicates where the State Government can actively participate in the unlocking of offshore wind.

Offshore wind projects require several clearances/no objection certificates (NOCs) before being installed, as stated in the National Offshore Wind Energy Policy (MNRE, 2015). There are two stages to this: Stage I relates to acquiring clearances/NOCs for participating in the bidding process. Stage II relates to commissioning, allocation of block and seabed leasing, installation, and decommissioning. The Tamil Nadu Government is mainly involved in Stage II (refer to Table.1 below)

Table 1 Government bodies involved in providing clearances/NOC at stages I & II for permitting offshore wind projects.

Ministry/Department	Involvement at Stages	
	Stage I	Stage II
MNRE (Nodal Ministry)	✓	✓
NIWE (Nodal Agency)	✓	✓
Ministry of Defence	✓	✓
Offshore Defence Advisory Group	✓	✓
Ministry of Environment, Forests and Climate Change	✓	✓
Ministry of External Affairs	✓	✓
Ministry of Home Affairs	✓	✓
Ministry of Shipping	×	✓
Central Transmission Utility	×	✓
Ministry of Civil Aviation	×	✓
Ministry of Petroleum & Natural Gas	×	✓
Department of Space	×	✓
Department of Telecommunication	×	✓
Ministry of Mines	×	✓
State Transmission Utility (TANTRANSCO)	×	✓
Discom (TANGEDCO)/ Private Company	×	✓
State Maritime Board (Tamil Nadu Maritime Board)	×	✓

## Enablers

An increased global emphasis on off-shore wind paired with the need for sustainable energy sources has created a positive climate for India to adopt it. Several

factors – social, technical and political – encourage this adoption in Tamil Nadu:

### 1. International partnerships

International Governments have signed MoUs with the Indian Government for developing offshore wind farms in India.

### 2. Existing project pipeline

Preliminary projects are already underway and are supported by the Centre, State and international bodies.

### 3. Land resource constraint

Land is a limited resource and there is a growing competition for it by different sectors. Offshore wind farms reduce this competition for the energy sector. Additionally, offshore wind turbines experience better wind profiles for harnessing energy compared to onshore. Thus, they are an attractive option for a clean source of energy.

### 4. Existing value chain

The offshore wind sector may be facilitated with the use of the existing and established value chain for onshore wind technology and infrastructure in the State and may be expanded as per any additional requirements.

## Barriers

The nature of offshore technology and its requirements, pose certain barriers; especially due to the fact that it is an emerging technology in India.

### 1. High capital cost

Offshore wind farms demand a high capital cost due to the scale of infrastructure and raw materials required, the process of installing turbines offshore, and evacuating the energy from offshore to the grid.

### 2. Complex project clearance process

A minimum of 17 Government bodies at national and State level are involved in carrying out offshore wind projects. This results in long project timelines and delays.

### 3. Lack of skilled manpower

There is a lack of skilled and trained local capacity for carrying out offshore wind development in the State.

### 4. Lack of adequate port infrastructure

For the development of offshore wind farms, port infrastructure plays a critical role. In Tamil Nadu, a single port with all the infrastructural requirements to install offshore wind turbines does not exist currently.

### 5. Social and environmental concerns

Offshore wind projects can also face social and environmental issues, especially relating to fishing communities, resulting in delays. In 2018, fishermen in Thoothukudi objected to the installation of a LiDAR system (The New Indian Express, 2018). They are currently still not installed.

## Recommendations & Conclusions

As the cost of offshore wind energy is currently not competitive with other energy sources the Tamil Nadu Government may need to play a facilitating role in creating a market for offshore wind.

The Tamil Nadu Government can play a key role in facilitating offshore wind projects by:

### 1. Developing a State policy for offshore wind

As per the guidance provided by the national policy on offshore wind energy, Tamil Nadu may consider developing an offshore wind policy at State level. Offshore wind may also be included under the Renewable Energy Purchase Obligations.

### 2. Providing adequate evacuation infrastructure for offshore wind projects

Feasibility assessments may be carried out to identify strategic locations (onshore or offshore) for the evacuation of energy to minimize infrastructural cost.

The national policy states that the Central Transmission Utility and State Transmission Utility (STU) will be responsible for the evacuation of offshore wind energy once brought onshore. The Tamil Nadu Government may identify and facilitate the acquisition of these strategically located lands for grid integration, in coordination with the STU for an efficient system for evacuation.

### 3. Creating or providing access to port facilities for the installation process

The wind components are assembled and then transported offshore from ports. Thus, the proximity of the port to the potential site, the area available to store and assemble/manufacture the components, and the available berth infrastructure are key to the economic and technical success of the offshore wind projects.

The V.O. Chidambaranar (VOC) Port Trust in Thoothkudi was identified as a key port for offshore wind in Tamil Nadu<sup>1</sup>. However, it does not currently support all the activities required for offshore wind farms. Thus, infrastructural advancements are required for this particular port.

Alternatively, different ports with sufficient scope to undertake different processes of the project can be identified and their role defined accordingly. The growing size of offshore wind turbines may also be factored in while identifying ports, for future planning.

---

<sup>1</sup> This port has had previous experience in handling wind turbine components, such as blades sizes of 74.90 m. It is located 40 km from the central electricity grid (400 KV) and 1 km from a State electricity grid pooling station (220 KV). (VOC Port Trust, 2021).

#### **4. Engaging with the local communities to overcome challenges**

Local communities may resist offshore wind development due to various social and environmental reasons. Working with these communities can smoothen the process.

#### **5. Implementing skill training programs to provide a skilled workforce**

By engaging and coordinating with stakeholders such as local manufacturing, supply chain participants,

educational institutions and communities, an indigenous skilled workforce may be developed for the deployment of offshore wind for the long run.

#### **6. Creating a single window for project clearance**

Project clearance facilitation services could be provided by the State Government in order to minimize the clearance time and delays.

---

### **References**

1. Giles, J., Menezes, R., Davison, F., Katkar, D., Fernandez, L V., Frelin, C., Hosseini, R K., and Beghi, M. (2018). Feasibility Study For Offshore Wind Farm Development In Tamil Nadu. FOWIND, European Union. Available at: <https://mnre.gov.in/img/documents/uploads/3fc822d4816d4e1093ec854144fde5d1.pdf> (Accessed on 11 July 2022).
2. Lee, J., and Zhao, F. (2022). Global Wind Report 2022, GWEC. Available at: <https://gwec.net/global-wind-report-2022/> (Accessed on 23 June 2022).
3. MNRE. (2015). The National Offshore Wind Energy Policy - Ministry of New and Renewable Energy Notification. The Gazette of India. Available at: <https://mnre.gov.in/img/documents/uploads/3debf9158b643d8a3e06a7a007f2ef9.pdf> (Accessed on 28 June 2022).
4. MNRE (2018). F. No. 225/3/2018 Wind, Government of India, Ministry of New and Renewable Energy (Wind Energy Division). Available at: <https://mnre.gov.in/img/documents/uploads/42f765854e204d72bb36b46c9e0c4cfa.pdf> (Accessed on 23 June 2022).
5. MNRE (n.d). Offshore Wind. Available at: <https://mnre.gov.in/wind/offshore-wind/> (Accessed on 8 July 2022).
6. The New Indian Express. (2018). Fishers protest hit system to measure wind potential. Express News Service Chennai. Available at: <https://www.newindianexpress.com/states/tamil-nadu/2018/dec/05/fishers-protest-hit-system-to-measure-wind-potential-1907348.html> (Accessed on 28 June 2022).
7. VOC Port Trust. (2021). 42nd Administration Report. Available at: <https://www.vocport.gov.in/port/UserInterface/PDF/Administration%20Report%202020-21-1-90combined322022124540.pdf> (Accessed on 28 June 2022).