Strategy Paper for

Establishment of Offshore Wind Energy Projects

1.0 Background:

Government of India notified National Offshore Wind Energy Policy-2015 on 6 October 2015 for the development of offshore wind power in the country. The policy provides for offshore wind power development up to a seaward distance of 200 nautical miles from the baseline, i.e., up to the country's Exclusive Economic Zone (EEZ). Ministry of New & Renewable Energy (MNRE) is the Nodal Ministry, and the National Institute of Wind Energy (NIWE) is the Nodal Agency for the development of Offshore Wind Energy in India.

Preliminary studies carried out by NIWE across the coastline of India indicate good potential both off the Southern tip of the country and the West coast for offshore wind farm development in India. The offshore wind potential was assessed by the FOWIND (Facilitating Offshore Wind in India) consortium with NIWE as a knowledge partner. Based on a multi-criteria approach involving assessment of various parameters such as wind resource, bathymetry etc., eight zones each off the coast of Gujarat and Tamil Nadu were identified as potential offshore wind energy zones. The identified eight zones off the coast of Tamil Nadu & Gujarat and their locations are shown in Figure 1 and Figure 2 respectively.

Keeping in view the requirement of the holistic development of offshore wind farms in the country and to fast-track the process, the following three models are proposed: -

Model-1	This approach will be followed for demarcated offshore wind zones for which MNRE/NIWE has carried out detailed studies/surveys. Presently, identified Zone B3 (365 Sq.km) off the coast of Gujarat shall be considered in phase-1 of this model.
Model-2	This approach will be followed for identified offshore wind sites by NIWE for which detailed studies/surveys have not been carried out. Offshore wind developers may select a wind site within the identified zone and carry out required studies/surveys with the approval of MNRE subject to the clearances from various ministries/departments.
2(A)	MNRE through its implementing agencies will come up with bids for procurement of 2 GW of offshore wind power capacities tentatively in the FY 2024-25. Those developers who have carried out the studies and survey will be allowed to participate in the bidding for the development of such projects. Necessary central financial assistance in the form of Viability Gap Funding (VGF) for initial projects would be available to achieve a predetermined power tariff for these 2 GW of offshore wind power capacity.

2(B)	Developers who have carried out studies and surveys may also decide to develop offshore wind power projects by themselves for sale of power on a merchant basis or under bilateral agreements with consumers under the open access mechanism or for captive consumption. For such projects the benefits of provision of power evacuation infrastructure from the off shore pooling delivery point, waiver of transmission charges, Renewable Energy Credits with Multipliers, Carbon Credit benefits etc. as determined by GoI/ State Govts from time to time shall be applicable.
Model- 3	In this model, NIWE shall identify from time to time large offshore wind zones within the EEZ but not covered either under Model 1 or Model 2. Proposed offshore wind sites demarcated within these zones would be allocated for a fixed period on a lease basis through single-stage two envelope bidding. Project development shall be carried out by the prospective developer in this zone. The power generated from such projects shall be either used for captive consumption under open access mechanism or sold to any entity through a bilateral power purchase agreement or sold through Power Exchanges. Benefits like provision of power evacuation infrastructure from the off shore pooling delivery point, waiver of transmission charges, Renewable Energy Credits with Multipliers, Carbon Credit benefits etc. as determined by GoI/ State Govt's from time to time shall be applicable.

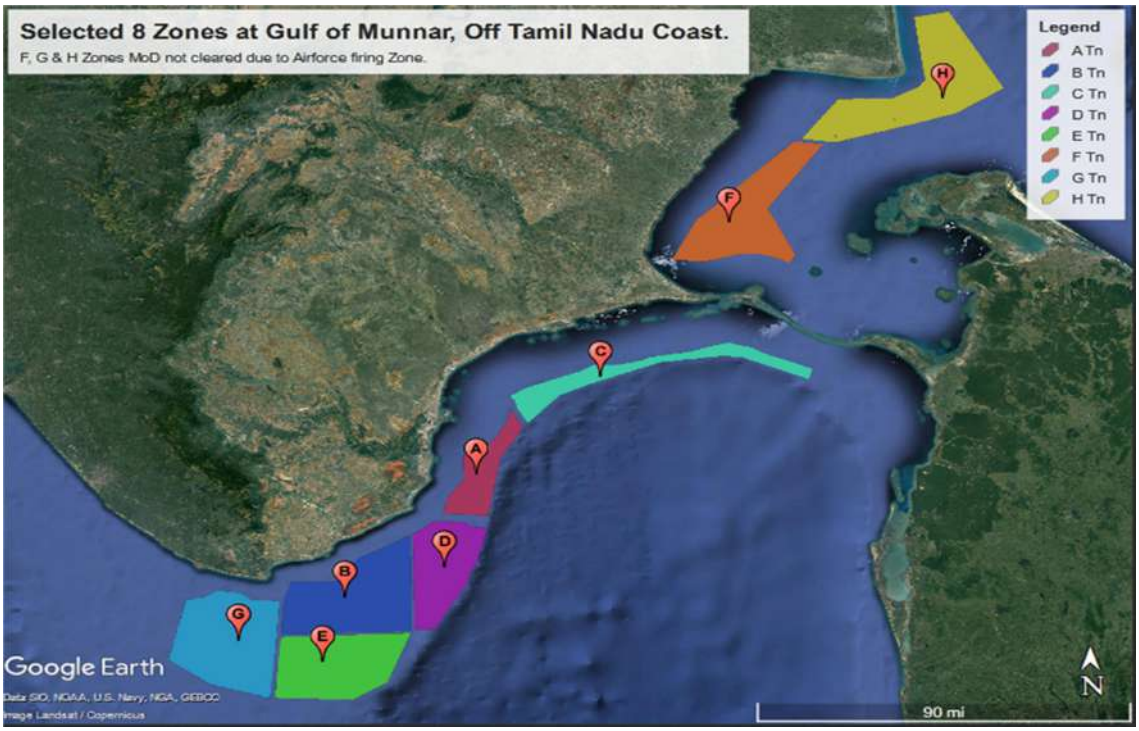

Fig. 1: Demarcated Offshore Wind Energy Zones at Tamil Nadu

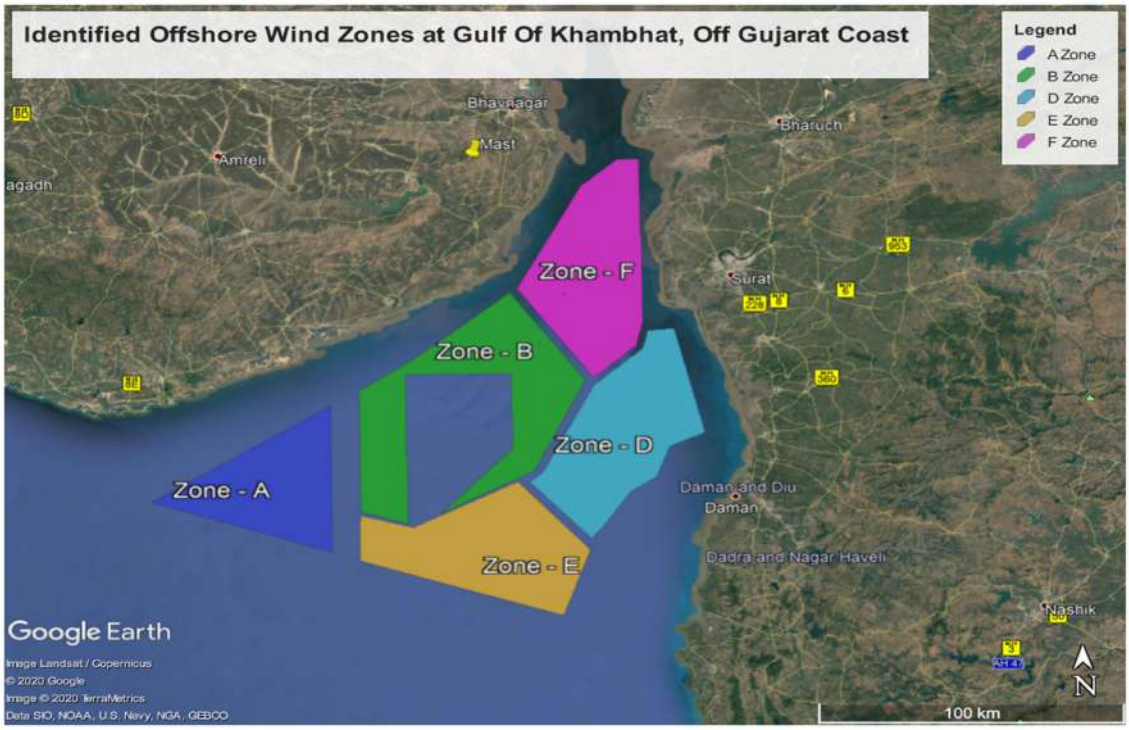

Fig. 2: Demarcated Offshore Wind Energy Zones at Gujarat Off Coast

For the initial offshore wind power projects under Model 1 & Model 2(A), it is envisaged that VGF (viability gap funding) or any other financial incentive as decided by GoI may be made available to bridge the gap between the actual tariff determined through the competitive bidding process and power purchase tariff by the designated entity.

Considering the above three models of development and to fast track the process to achieve the offshore wind energy target, an indicative auction trajectory is indicated in Table 1.

Table 1: *Indicative auction trajectory for offshore wind*

Year	Total Auction Trajectory (in GW)	Auction Capacity under Model 1 (in GW)	Auction Capacity under Model 2 (A) (in GW)	Auction Capacity under Model 3 (in GW)
2022-23	4	-	-	4
2023-24	4	1	-	3
2024-25	4	-	2	2

2025-26	5	-	4	1
2026-27	5	-	4	1
2027-28	5		4	1
2028-29	5	-	5	-
2029-30	5	-	5	-
Total	**37**	1	24	12

The detailed approach for the three models are elaborated below:-

2.0 Model-1 (Demarcated offshore zones for which MNRE/NIWE has carried out studies/surveys. Gujarat Zone B3 (365 Sq.km).

- This model of offshore wind project development shall be applicable to the offshore wind zones for which MNRE/NIWE have already carried out sufficient studies/ surveys that will enable developers to bid and commence the development of offshore wind projects.
- For the development of this project a single bid two stage process followed by an e-Reverse Auction (e-RA) will be adopted. The bidding will be carried out by SECI. The e-RA will be based either on the tariff or the VGF amount required for making the project viable with a pre-determined tariff.

NIWE has carried out the following investigations for a 365 Sq.km seabed area (which is sufficient for a 1.0 GW project capacity) of Zone B3, Gulf of Khambhat, off the coast of Gujarat:

1. Lidar-based offshore wind resource assessment for two years and data published on the NIWE website.
2. Geophysical investigation and Geotechnical investigation for 3nos of representative boreholes up to 60m soil depth#.
3. Rapid EIA study#
4. Oceanographic (Wave, Tide & current) for one month #.

#-Data will be shared after the concurrence of MOD (Ministry of Defence)

This model can be further extended to other zones where NIWE or other developers who have relinquished the capacity, have carried out the necessary studies & surveys and data is available for sharing subject to project viability and availability of required CFA.

2.1 *Offshore wind development process under Model-I.*

MNRE/designated agency will float a bid for 1GW in the demarcated 365 Sq.km area wherein the stage-1 clearances have already been accorded. The proposed site (365 sq.km) boundary coordinates are given in **Annexure-I**.

i. MNRE or its designated agency will enter into the 'Lease Agreement' for 30 years with the successful bidders (Offshore Wind Power Developer (OWPD)) in accordance with 'lease rules' to be notified. The OWPD shall be required to pay the annual floor lease fee of Rs 1.0 lakhs/Sq.km/year for the entire lease period.
ii. The successful bidders shall file the relevant information necessary for obtaining the Stage II clearances, subsequent to which Stage II clearances for the installation and commissioning of the offshore wind farm and transmission infrastructure shall be undertaken.
iii. MNRE or its designated agency shall enter into the Offshore Wind project 'Concessionaire Agreement' with the OWPD.
iv. The OWPD shall commission the project within four years from the date of the "Concessionaire agreement". (A period of four years is considered sufficient for the OWPD to establish an offshore wind farm once the Stage II Clearances are obtained for the site, subject to any of extenuating circumstances like non-availability of evacuation arrangements, etc., that are beyond the control of the developer, in which case this could be extended but in any case the project must be set up within 5 years)
v. The sale of power shall be through Solar Energy Corporation of India Ltd. (SECI) / Implementing agency. A back-to-back Power Sale Agreement will be signed with the State DISCOM of Gujarat / Any other State DISCOM for procuring the power from this particular project.
vi. Eligible OWPDs shall be able to avail suitable financial incentives such as VGF or any other financial mechanism as decided by MNRE from time to time.

3.0 Model-2 (Demarcated offshore zones for which no studies/surveys have been carried out)

This model will be followed for identified wind sites/zones by NIWE within the Exclusive Economic Zone (EEZ) of the country for which studies/surveys are yet to be commenced. The process followed for offshore wind power project development under this model shall be as follows:

Model 2(A):

a. NIWE will facilitate as a single-window (one-stop-shop) and will coordinate with different authorities for stage – 1 and stage – 2 clearances.
b. NIWE will issue guidelines along with application format for offshore study/ survey including wind resource assessment, the geophysical, geotechnical oceanography, environment impact assessment, etc.
c. OWPD may select any site/sites for investigations. There will be a minimum gap of one km between the mast location/ LIDAR site & bore holes of one developer and the mast location/site & bore holes of another developer. The OWPD will give information to NIWE about the sites where they propose to carry out the survey/investigation, and they

will commence the survey/investigation only after permission is received from NIWE. The sites will be allocated to developers on the basis of a first come first serve basis.

d. OWPD may approach NIWE for stage – 1 and stage – 2 clearances for carrying out study/ survey in the identified area.
e. Based on the stage – 1 and stage – 2 clearances from various authorities, NIWE will issue an in-principle approval and consent letter respectively.
f. After a period of two years (say e.g., during FY 2024-25), SECI/Implementing Agency will issue a bid for procurement of 2 GW power from offshore wind power projects along with necessary financial support from the Ministry.
g. The process of competitive bidding and further project development by the bid winners will be as per the process detailed under Model-1.

Model 2(B):

h. OWPDs may elect to submit proposals for project development under open access within a period of 5 years from the date of the consent letter. Post expiry of 5 year period, Ministry may grant extensions from case to case after examination of the request. Post expiry of the 6-year period, all clearances to the relevant company shall be withdrawn and they will need to deposit the data they have collected.
i. In case of project development under open access regime, the OWPD may submit the proposal along with DPR to NIWE. NIWE will issue guidelines for scrutiny of DPR and facilitate for necessary clearances. The OWPD has to enter into concessionaire and lease agreement. Lease rent as per specified in the lease agreement will be payable by the developer.
j. The OWPD shall commission the project within four years from the date of the "Concessionaire agreement". (A period of four years is considered sufficient for the OWPD to establish an offshore wind farm once the Stage II Clearances are obtained for the site, subject to any of extenuating circumstances like non-availability of evacuation arrangements, etc., that are beyond the control of the OWPD, in which case this could be extended but in any case the project must be set up within 5 years)
k. OWPD shall not share the study/ survey data with any third party other than its own affiliates, subsidiaries, or holding/parent company.

The potential identified zones that can be offered under model-2 is given in **Annexure-2.**

4.0. Model-3 (Allocation of offshore wind sites under a lease with site exclusivity rights for a fixed period)

This model envisages offshore project development for sale of power under open access/captive/third party sale without any VGF assistance from Govt. of India.

- Ministry of New and Renewable Energy / Nodal Agency through a competitive process shall allocate identified offshore wind energy blocks to prospective OWPDs under an exclusive lease for a stipulated period for the development of offshore Wind Energy projects. The development of offshore wind energy projects shall be taken up by the selected OWPD within the stipulated period and the power offtake will be the responsibility of the OWPD. The allocation of sea beds shall be through a bidding carried out under a single stage two envelop process; a technical bid to assess bidders' techno-financial capability and a financial bid for the lease fee for the bidded offshore sea blocks.