

Clean Energy Finance and Investment Roadmap

Notes and final agenda for Workshop 1: offshore wind

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Unlocking capital for offshore wind: background and context

Offshore wind (OSW) can play a critical role in meeting India's renewable energy targets, particularly given the country's 7 600 kilometres of coastline, while also helping to alleviate growing pressure from land competition for on-shore wind developments.

A number of initiatives have looked to support OSW development in India, such as the 2013-18 Facilitating Offshore Wind ([FOWIND](#)) project led by a Global Wind Energy Council (GWEC) consortium that produced several assessments, including feasibility studies for Gujarat and Tamil Nadu with the National Institute of Wind Energy (NIWE). These reports identified eight zones in each state representing 36 gigawatts (GW) and 35 GW of potential capacity, respectively. GWEC also released a [report](#) in 2016 on challenges to OSW development, considering for instance manufacturing and supply chain needs, port infrastructure and other logistical issues (e.g. to transport longer blades).

In 2015, the Government of India released its [National Offshore Wind Energy Policy](#), formulating the legal framework for OSW development, and the First Offshore Wind Power in India ([FOWPI](#)) initiative, led by a COWI consortium, produced several technical reports in 2016-19 to support implementation of early OSW additions. This led to commercial discussions on OSW economics, followed by an Expression of Interest (EOI) issued by NIWE in 2018 for a 1 GW project in Gujarat. Interest from developers counted [35 Indian and international firms](#), but the EOI did not proceed for a number of reasons, including high capital costs, infrastructure constraints and lack of a financial support scheme.

Still, the Ministry of New and Renewable Energy (MNRE) signalled [ambitions](#) in 2018 to achieve 5 GW of OSW capacity by 2022 and 30 GW by 2030. The government also published [Guidelines on Offshore Wind Power Assessment Studies and Surveys](#) in 2018, and NIWE released a [Wind Data Sharing Policy](#) in 2019. Additional initiatives have included a partnership between MNRE, NIWE and the Danish Energy Agency for the Financial Modelling of Offshore Wind Farms in India (FIMOI). Since 2019, FIMOI has developed technology reports and levelised cost of energy (LCOE) estimates. The joint Indo-Danish [Centre of Excellence for Offshore Wind](#) (COE-OSW) also has organised workshops on: planning and permitting; financial framework and auction design; grid and supply chain infrastructure; and technical standards and rules for innovation.

LCOE estimates from the FIMOI assessment include several important infrastructural needs that will influence the competitiveness of OSW and that equally are a concern for potential project developers. Ambiguity regarding various modalities such as sea bed leasing, transmission and evacuation infrastructure could potentially double the presumed costs from 2018 FOWIND estimates, thereby requiring financial support and/or a clearer investor environment (e.g. through long-term power purchase agreements backed by a payment security mechanism).

Additional risks highlighted for OSW development include licencing and permits, whose approval processes and timing under the 2018 EOI were noted as an issue for some developers, as well as concerns about grid capacity and flexibility, potentially requiring upgrades to address balancing costs and potential curtailment ([IFR100, 2019](#)). Data and more precise mapping can also be a concern, although efforts like the LiDAR remote sensing off the coast of Gujarat being carried out by NIWE should help to address this.

These data and mapping improvements are supporting continued interest in OSW, such as the September 2021 [proposal](#) by Copenhagen Infrastructure Partners to develop a 1 GW OSW farm in the Gulf of Mannar off Tamil Nadu. RWE and Tata Power also recently [announced a partnership](#) in February 2022 to explore joint development of OSW in India. Additional efforts, such as those by the working group under GEWC India, equally aim to open the pipeline for OSW development. These will help bring together the various pieces needed to enable the first OSW projects in India, whilst support for other measures (e.g. port infrastructure development and domestic manufacturing capacity) will help enable scale and cost-competitive OSW in line with 2030 targets.

Reaching those targets will also require enabling the quantum of capital needed to deploy OSW at scale. Estimates suggest that OSW costs could require investment of USD 2.5-3 billion per GW (not counting other related infrastructure costs), where as much as 30-40% of those costs could be related to risks in building a clear supply chain with scalable growth. Further estimates on financing needs are being prepared by COE-OSW.

A Roadmap to improve finance and investment in OSW

Enabling the prospects for OSW development requires targeted actions to channel capital to early projects whilst enabling a pipeline of future capacity additions. This includes co-ordination of public interventions, international climate and development finance, and related support mechanisms to unlock commercial capital for OSW projects and to redouble investor opportunities.

Development of a *Clean Energy Finance and Investment Roadmap* can help India to meet this challenge, building upon existing initiatives and ongoing discussions to enable the necessary capital flows for a vibrant OSW market. Bringing together government and stakeholders, the Roadmap will develop an action plan that identifies and addresses critical bottlenecks in order to develop tailored financing solutions and suitable investment vehicles that can help to scale up OSW deployment in India.

As needed, the Roadmap will also consider policy and other factors influencing OSW finance and investments. This includes elements such as infrastructure needs (e.g. port and transmission capacity), socioeconomic considerations such as training and capacity building for skilled labour, and financial support for expansion of domestic manufacturing capabilities.

Additional information on the Roadmap process can be found in the *CEFI Roadmap Background PDF*.

Agenda - 4th March 2022 – online Zoom event

- 14h30 (IST) Welcome address & remarks *Director of OECD Environment Directorate, Dr. Rodolfo Lacy*
Ambassador of Denmark to India, H. E. Freddy Svane
- 14h40 Offshore wind in India: vision and policy ambitions *Shri Dinesh Dayanand Jagdale, MNRE*
Short presentation setting the scene for discussion *Dr. Prabir Kumar Dash, MNRE*
- 15h00 CEFI Roadmap *Mr. John Dulac, OECD & Ms. Poonam Sandhu, NRDC*
Overview & recap of stakeholder consultations on challenges and opportunities
- 15h15 Group discussion: solutions to enable market development
Opening remarks *Dr. Rajesh Katyal, Deputy Director General, NIWE*
Mr. SK Mishra, Director, SECI
Ms. Pooja Kulkarni, MD & CEO, Guidance Tamil Nadu
Suggested framing questions for the group:
On elements to unlock the first offshore wind projects (*Poll*)
a. *What specific measures/solutions can address these priorities?*
On elements to enable strategic plans/actions to 2030 (*Poll*)
b. *What specific measures/solutions can address these priorities?*
- 16h15 Group discussion: actions to unlock finance and investment for 2030 ambitions
Moderator: Rebecca Williams, GWEC
Opening remarks *Mr. Markus Kösters, Head of Business Development, RWE*
Mr. Shivanand Nimbargi, MD & CEO, Ayana Power
Suggested framing questions for the group:
a. *What level of investment is needed (e.g. manufacturing capacity and port infrastructure) to scale offshore wind development – and who/how to finance this?*
b. *Are current financing models (e.g. for onshore wind and solar) sufficient? Are new investment vehicles needed (e.g. to draw in institutional investors)?*
c. *What support / guarantees (e.g. offtake guarantee or viability gap fund) are needed to de-risk early investments?*
d. *Where can international support (e.g. technical assistance, development/climate finance, tech transfer) improve finance and investment in offshore wind? Is blended finance needed, and if so, how can this be applied to support robust market development?*
- 17h00 Concluding remarks & next steps *Ms. Poonam Sandhu, NRDC*