



East Winds Asia K.K.

Hybrid Barge Transport Solution to Address Port Infrastructure Constraints in Japan's Offshore Wind Sector

Purpose of the Project

This project was carried out to verify the feasibility of resolving port and logistics constraints in Japan's offshore wind sector through the "Hybrid Barge" concept, which combines transport, floating storage and floating yard functions. The Government of Japan has set offshore wind deployment targets of 10 GW by 2030 and 30–45 GW by 2040; however, actual project development remains uncertain due to rising costs, interest rate fluctuations, regulatory adjustments, and supply chain constraints. Permanent port expansion requires substantial investment and long development periods, often making it difficult to align with the schedules of individual projects.

Against this background, there is a need for flexible and mobile logistics assets to complement fixed base port infrastructure. In this project, a comprehensive evaluation of the Hybrid Barge was conducted from technical, market, economic, and regulatory perspectives. The Hybrid Barge integrates temporary storage, transport, and buffer functions for large-scale components into a single asset, and is intended to complement rather than replace existing base ports. While existing services in Japan are generally premised on reliance on base port infrastructure, this concept is differentiated by its ability to provide greater flexibility.



Details of Demonstration

This project was implemented with EWindsA as the project lead, in cooperation with DUJAM Desk and external engineering partners. EWindsA was responsible for concept development, overall coordination, and stakeholder engagement. DUJAM Desk provided practical maritime and port logistics expertise, technical reviews, market analysis, and risk assessments. External technical partners were responsible for defining design requirements relating to hull strength, stability, deck loads, mooring, and ballast systems.

The implementation schedule covered the period from the second half of 2025 to the end of January 2026 as the feasibility study period, with Phase 1 focused on analyses required to achieve Final Investment Decision (FID) readiness. During the second half of 2025, baseline studies on the market, ports, and regulations were conducted together with a review of the basic design. From late 2025 to January 2026, the integrated report was prepared, assumptions were refined, and the roadmap was formulated.

Specific verification activities included the collection of publicly available information on Japan's offshore wind policies, auction results, and port constraints; assessment of conditions at major ports; and discussions with developers, EPCI contractors, logistics companies, and port stakeholders. In addition, demand scenarios, utilization rates, day rates, CAPEX, and OPEX were analyzed based on conservative assumptions, and commercialization schemes including SPV formation and a staged investment model were also examined.



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Project Outcome

As a result of the study, it was confirmed that the Hybrid Barge can be designed and operated within existing classification and regulatory frameworks, and that no critical technical obstacles were identified. It was confirmed that the required deck loads, stability, and ballast capacity can be achieved within the scope of general barge design rules applied by ClassNK and other classification societies. EWindsA's basic design also demonstrated the practical viability of the layout.

From a market perspective, while the volume of viable projects through 2030 may fall short of policy targets, port constraints are expected to continue, and demand for flexible logistics capacity is expected to increase particularly in new construction rounds from 2027 onward. It was confirmed that the Hybrid Barge could function as cross-project logistics assets addressing common issues such as yard shortages and insufficient port capacity.

From an economic perspective, the study demonstrated that, by adopting a phased investment model linked to viable projects, the project could potentially achieve IRR (Internal Rate of Return) levels that are considered reasonable for infrastructure assets, even under conservative assumptions for utilization rates, day rates, and construction costs.

Challenges and Solutions

The study identified key challenges including uncertainty in market timing and utilization rates, varying permitting requirements across ports, and differences in risk appetite among participating companies. Project delays could result in a mismatch between peak demand and the construction schedule.

To address these challenges, a phased investment model will be adopted, with the FID linked to multiple LOIs and pre-charter contracts. In addition, early consultations with MLIT, port authorities, and classification societies will help establish standard operating guidelines and reduce the burden of project-specific coordination. Furthermore, this business will be positioned as a portfolio-type investment serving multiple projects and applications rather than an investment in a single project.

Future Plans

The next step is to establish an SPV with shipping companies, trading houses, financial institutions, and other stakeholders to advance the Hybrid Barge business in Japan. At the same time, efforts will continue to obtain Approval in Principle (AiP) from ClassNK, while progressing detailed engineering, port interface studies, shipyard selection, contract negotiations, and financing activities.

The business model will combine project-based service agreements, and port support services. Revenue generation is expected to commence through deployment of the first unit to projects from around 2027 onward, followed by expansion into floating offshore wind, decommissioning activities, and neighboring Asian markets.