WAVES OF CHANGE

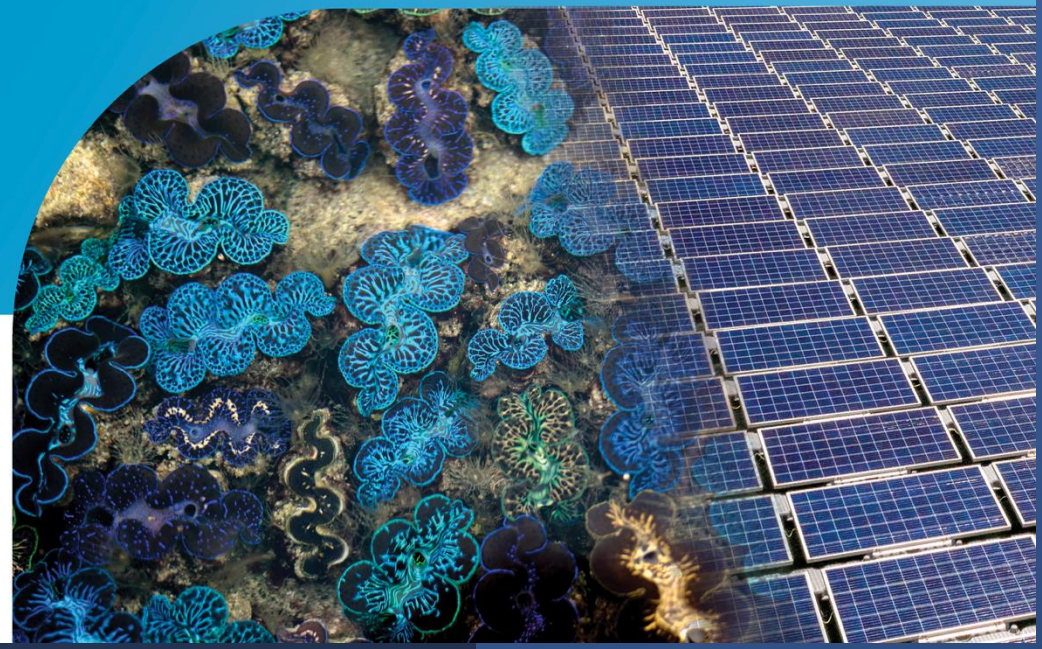
Harnessing Technology to Power the Sustainable Blue Economy

Workshop Two

25–28 May 2026 • Busan, Republic of Korea

ADB

Ministry of Oceans and Fisheries



Wave Energy for Coastal & Island Communities – INGINE's Technology and the Indonesia Pilot

Today's Conversation

- INGINE is a Korean wave energy developer with a mission to bring **clean energy access** to coastal and island communities.
- We are advancing a **commercial demonstration project** with PT PLN Indonesia Power.
- The pilot validates wave energy as a **distributed energy source** for coastal and rural areas.
- Today: our technology, the Indonesia project, and what it means for Asia-Pacific.

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A Mission-Driven Wave Energy Company

- Built from the start to deliver **clean energy access** to islands and coastal regions.
- Targets **small- to mid-scale distributed generation** with LCOE at or below diesel.
- Under R&D since **2012**; current maturity **TRL 7**.
- The Indonesia pilot opens the path to **commercial-scale deployment**.

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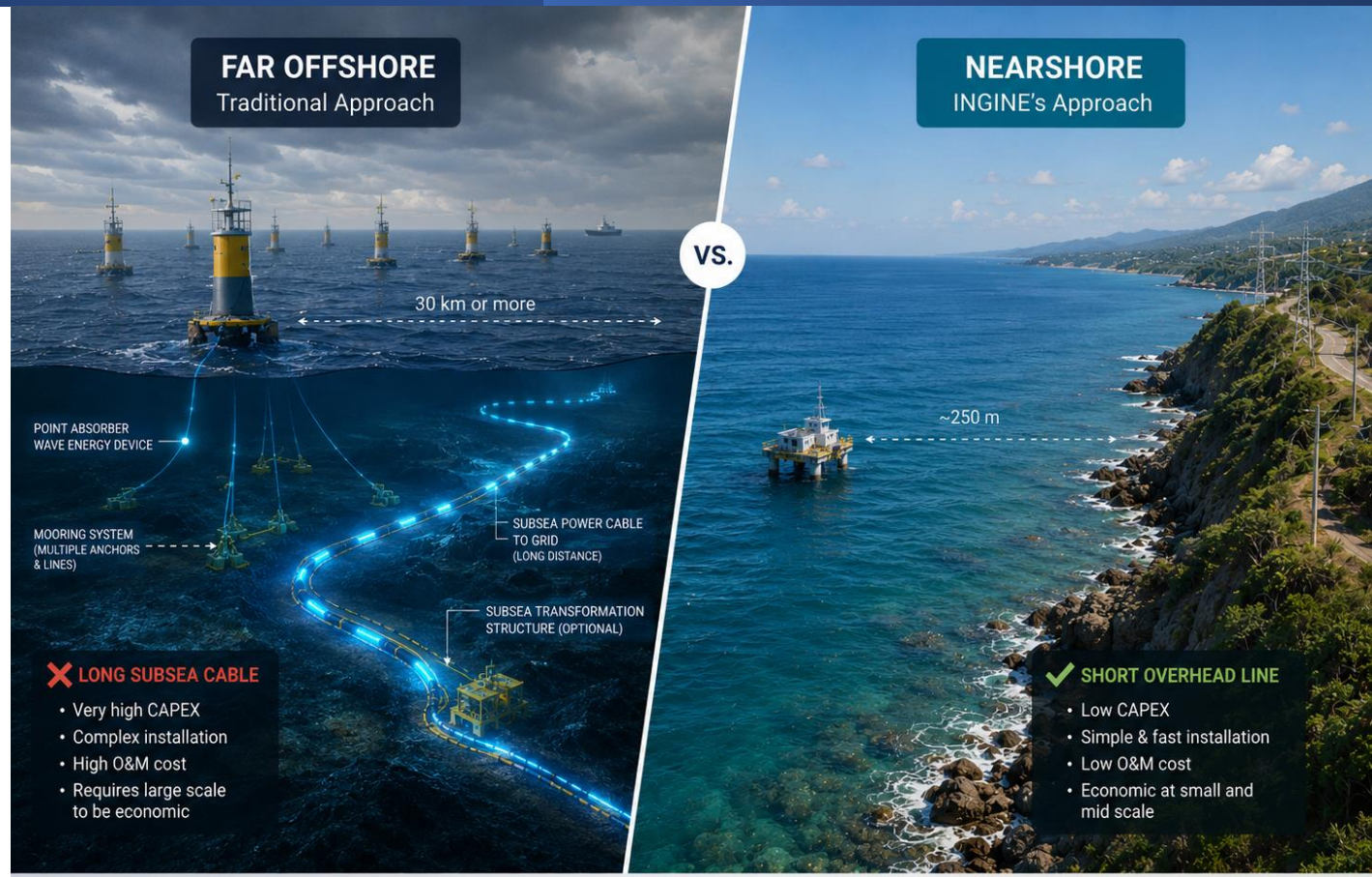
Why Onshore & Nearshore

- Distributed generation requires **eliminating subsea cable costs** — they force projects into large-farm scale.
- Our technology targets **onshore and nearshore** sites — economic at small and mid scale.
- Smaller coastal waves are captured through **6 degree-of-freedom energy harvesting** for maximum efficiency.



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Indonesia Pilot: Nearshore Platform

- A **nearshore platform** with the power module on top and wave-absorbing floats below.
- Float motion is transmitted via **ropes** to the power module, generating electricity.
- The platform also hosts **rooftop solar PV** in this project — and can host small wind where suitable.
- Site fully secured: **land use, marine spatial (KKPRL), and environmental (UKL-UPL)** permits all completed.

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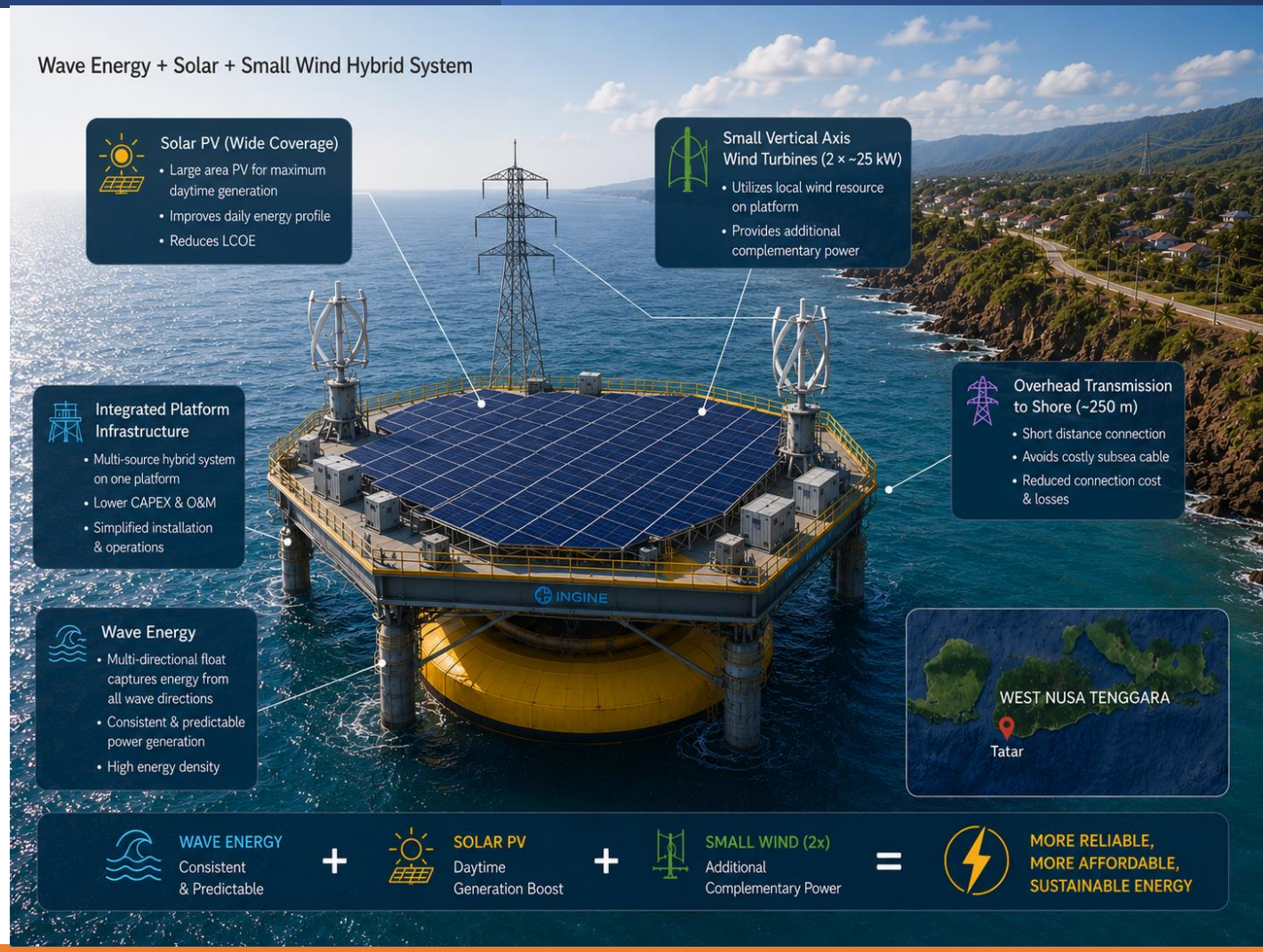
Multi-Source Synergy on One Platform

- Combining wave, solar, and wind on one platform raises **asset utilization** and lowers blended LCOE.
- Diverse sources mean **smoother combined output** — variability cancels rather than compounds.
- Wave is more **consistent and predictable** than solar or wind — a strong complement to both.



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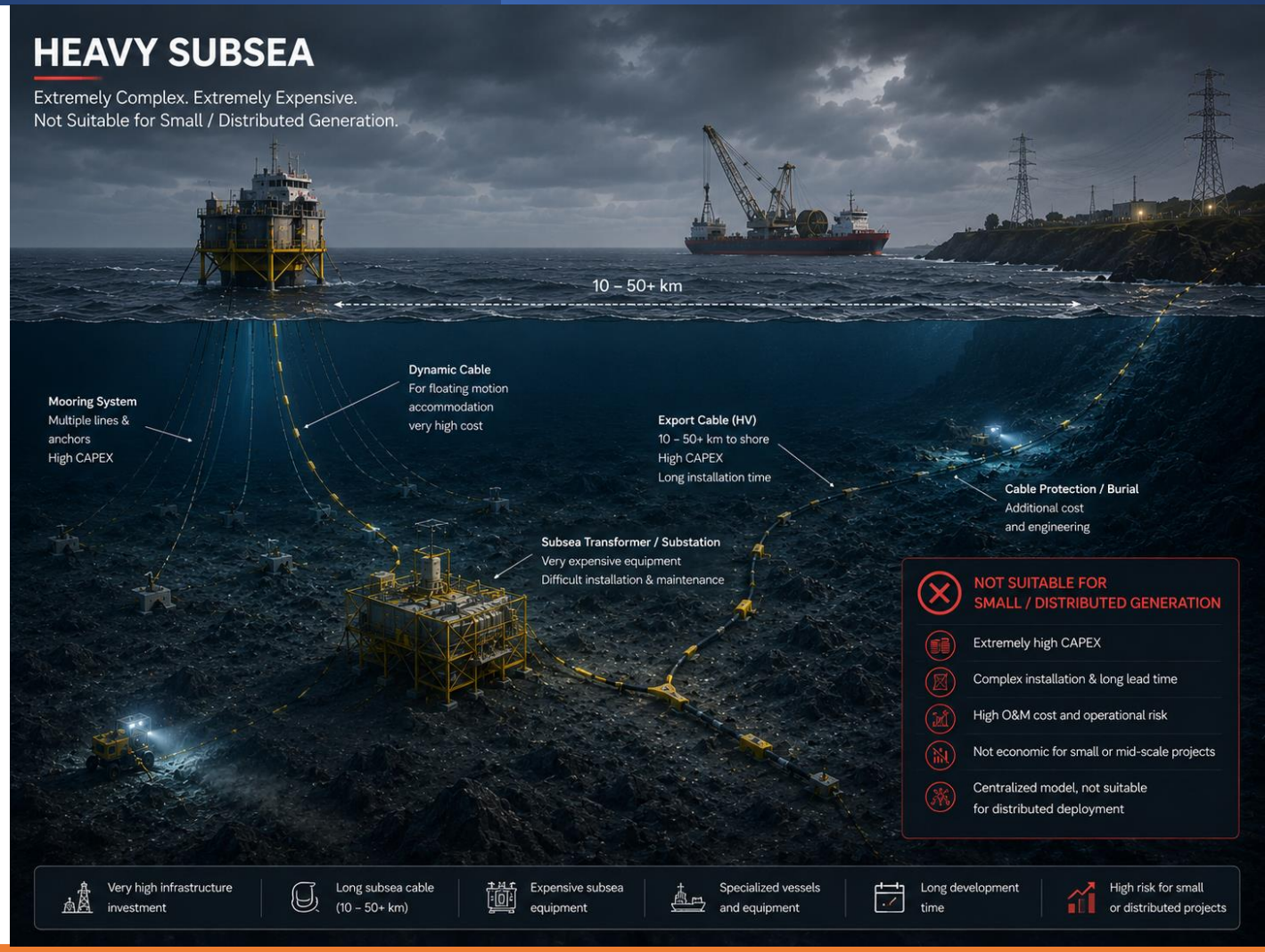
Overhead Transmission, Not Submarine Cable

- The platform will sit about **250 m offshore** and connect to land via a short overhead line.
- Two small transmission towers replace expensive **subsea cabling** — a major cost saver.
- At **20–30 MW commercial scale**, towers are shared — marginal transmission cost is negligible.



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Powering the Tatar Community

- The pilot will connect to the local grid and serve **Tatar village** on Indonesia's southern coast.
- Tatar is grid-connected but supply-constrained — the pilot will improve **reliability and capacity**.
- Scaled to **20–30 MW**, it can serve neighboring towns through the grid.

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The Community Welcomes the Project

- Residents have welcomed the pilot as a step toward more **stable energy access**.
- The local view: reliable power is a **prerequisite** for the village's economic development.
- Wave energy, drawn from their own coastline, brings **local ownership** of the energy transition.

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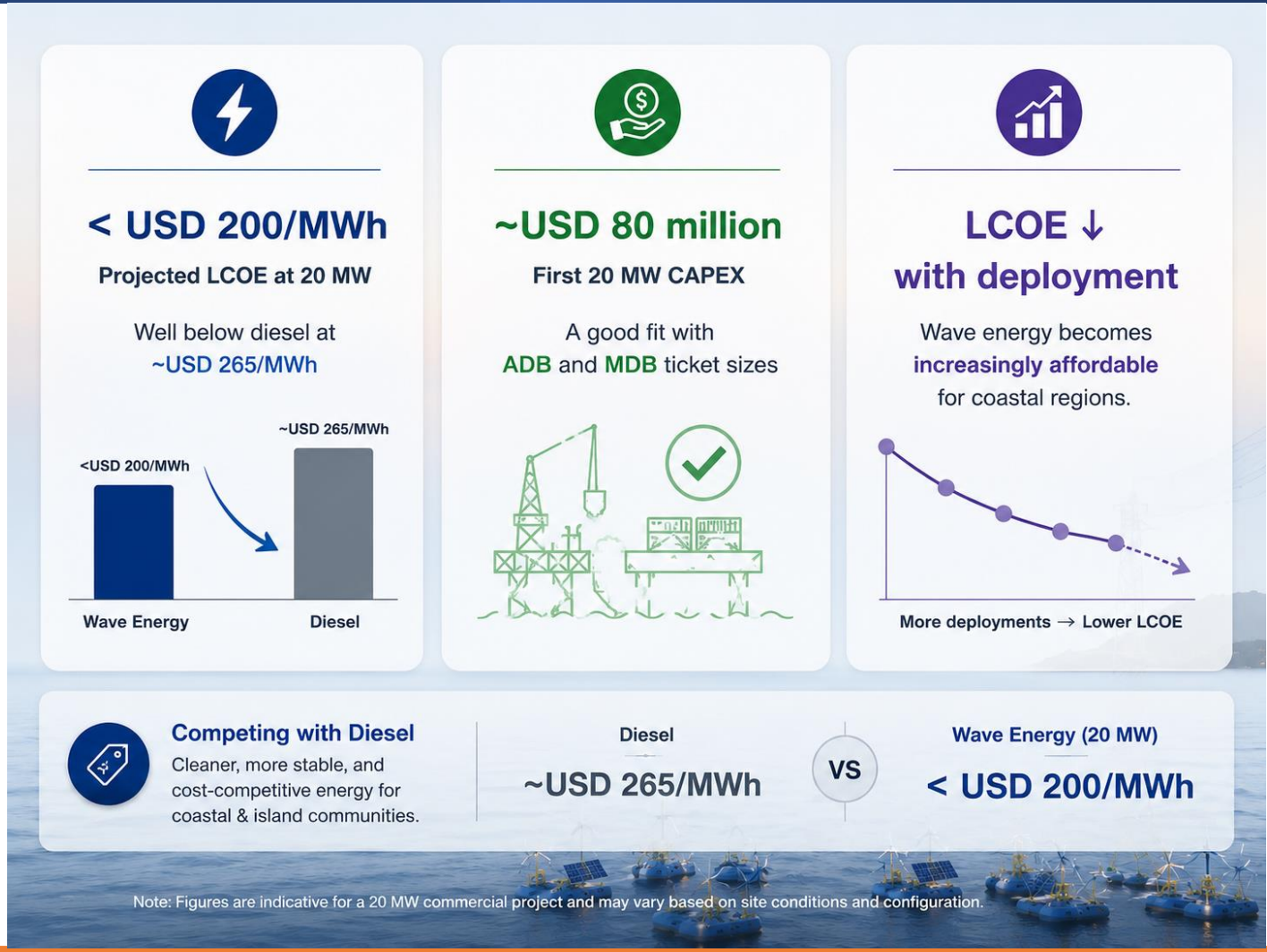
Path to Commercial Scale: Economics

- At a 20 MW commercial project, projected LCOE is **under USD 200/MWh** — well below diesel at ~USD 265/MWh.
- First 20 MW CAPEX is estimated at **~USD 80 million** — a good fit with ADB and MDB ticket sizes.
- LCOE falls further with each deployment — wave energy becomes **increasingly affordable** for coastal regions.



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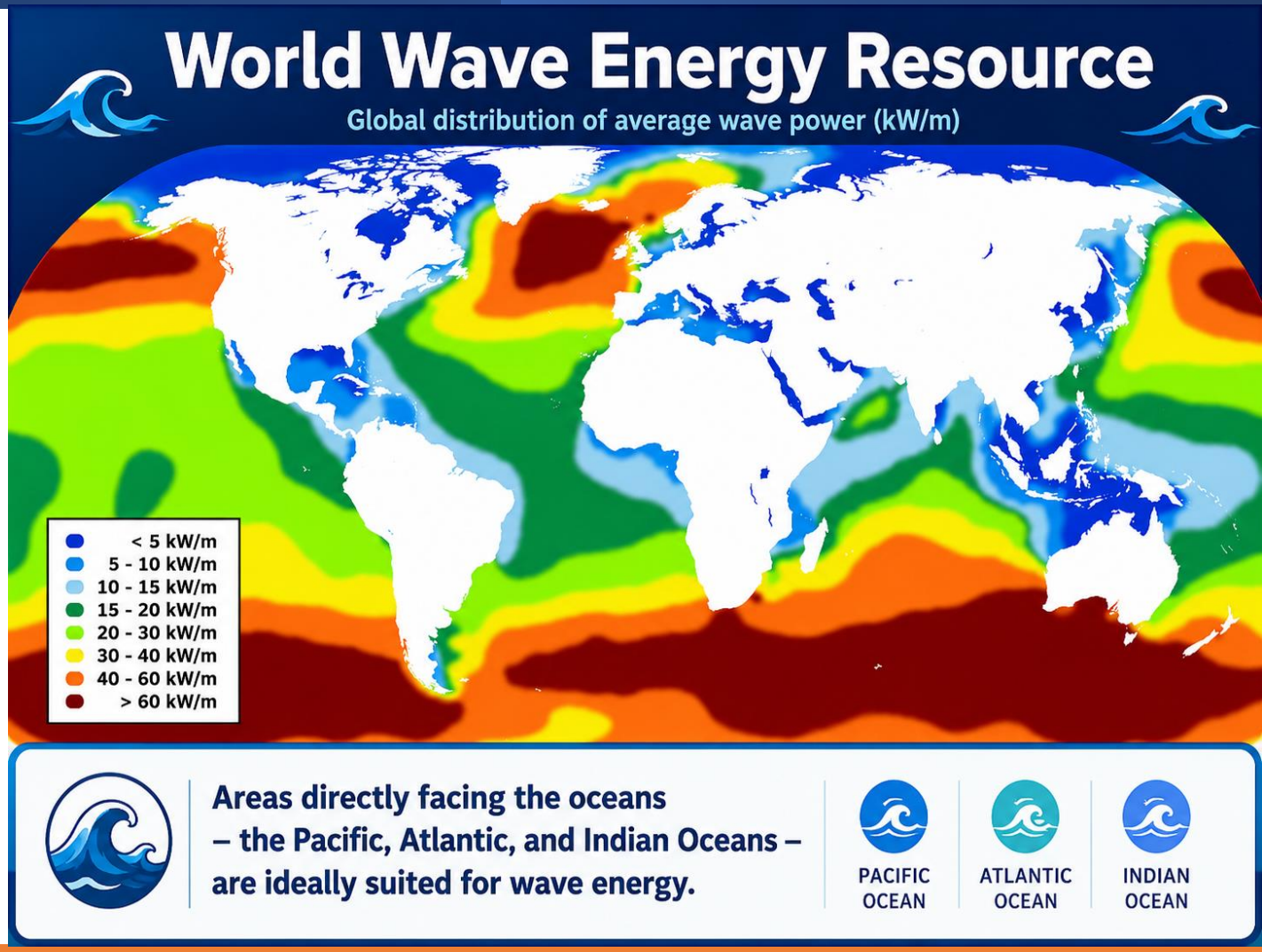
Where Wave Energy Fits Best

- Wave energy works best where **wave resources are abundant** — richer waves mean more output and lower LCOE.
- Our pilot site in **Nusa Tenggara Barat** is one such region, with strong wave resources.
- Coasts open to the **Pacific, Atlantic, and Indian Oceans** are well suited — broad opportunity across Asia-Pacific.



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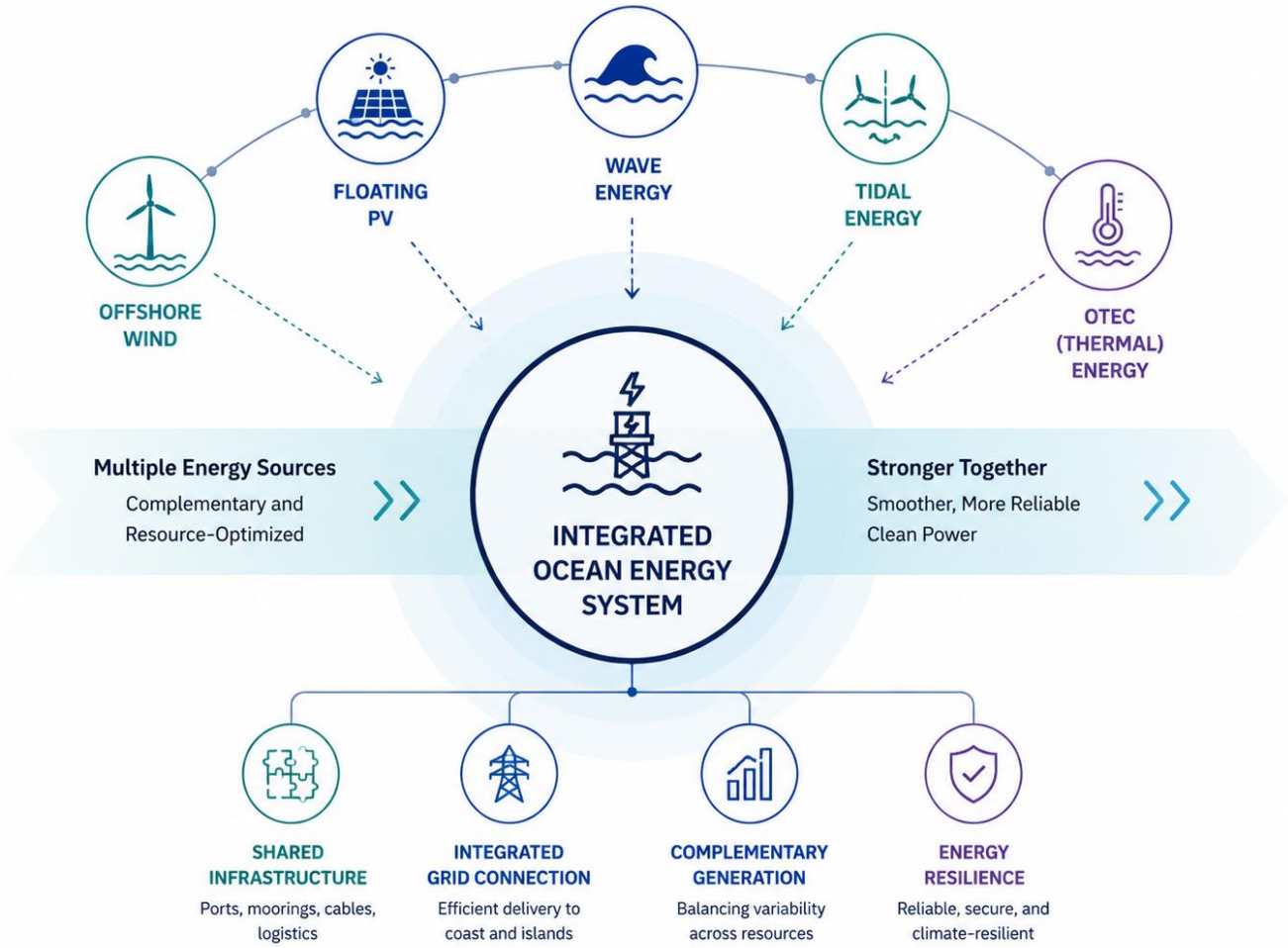
Ocean Must Be Part of the Next Renewable Mix

- Offshore wind and floating PV already show the **ocean is essential** to the energy transition.
- Marine energy — **wave, tidal, OTEC** — is the natural next step.
- Where possible, ocean space should **host multiple energy sources** — maximizing harvest from one footprint.



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Clean Energy Access for Coastal Communities

- Clean energy access for coastal regions needs systems that are **economically, environmentally, and ecologically** optimized.
- Wave energy — and marine energy more broadly — will play a **meaningful role** in that mix.
- **Thank you for your attention.**


Thank you!