Blue Economy Skills for Odisha's Coastal Communities

For Odisha's 480 km coastline and its 150,000 Chilika fishers alone, the Blue Economy is not an abstract policy concept. It is the evolving context of livelihoods that communities have practised for generations — now at the intersection of technological change, climate stress, an...

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B practice-note Skill Development

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The challenge: Standard PMKVY curricula were not designed for maritime contexts. A skill development programme built around retail management, construction work, or IT fundamentals will not work for Kondh fishing communities in Kendrapara who have been reading tidal patterns since childhood. What these communities need is not generic training — it is formal recognition of what they already know, combined with specific new skills in the areas where technological change or market expansion creates genuine income opportunities.

Understanding the Starting Point: What Coastal Communities Already Know

The design error that most Blue Economy skill programmes make is treating fishing communities as unskilled. Traditional fishers in Odisha's coastal villages have sophisticated knowledge systems that took lifetimes to develop:

Ecological and oceanographic knowledge: Reading weather from cloud formations, wind direction, and wave patterns; understanding fish behaviour by season, temperature, and location; identifying productive fishing grounds through knowledge transmitted across generations; reading tidal cycles and their interaction with seasonal wind patterns to time fishing expeditions for safety and productivity.

Navigation: Celestial navigation, landmark-based coastal navigation, understanding of coastal currents and their seasonal variation — skills that GPS has supplemented but not replaced, particularly for small-craft fishers in shallow coastal and lagoon environments.

Gear knowledge: Design, construction, maintenance, and deployment of a range of traditional nets, traps, and hooks calibrated to specific species and habitats — knowledge that is species-specific, habitat-specific, and seasonally specific.

Processing and preservation: Traditional smoking, salting, drying, and fermentation of fish —

processing knowledge that has produced marketable products for centuries.

This knowledge is real, it is valuable, and it is currently invisible to the formal economy because it carries no credential. Any Blue Economy skill programme worth its design begins by asking: what do people here already know, and how do we build on that foundation rather than ignoring it?

The Recognition of Prior Learning (RPL) pathway — covered in the RPL Practice Note — is specifically applicable here. The Fisheries Sector Skill Council under NSDC has NSQF-aligned job roles covering traditional fishing, aquaculture, and fish processing that can be used for RPL certification of existing community knowledge.

The Five Skill Categories with Genuine Opportunity

1. Sustainable aquaculture operations

Aquaculture is the fastest-growing component of India's fisheries sector. The government is specifically promoting advanced aquaculture techniques including Biofloc technology (a system that uses microbial communities to convert waste into nutrition in intensive fish tanks) and Recirculatory Aquaculture Systems (RAS) as productivity interventions. Under PMMSY (Pradhan Mantri Matsya Sampada Yojana), significant capital subsidy is available for aquaculture infrastructure.

For coastal communities in Odisha, the most immediately accessible aquaculture opportunity is community-based coastal aquaculture — prawn and fish cultivation in brackish water ponds or coastal enclosures — using sustainable stocking densities and feed management practices that produce exportable product at premium prices. This is distinct from the destructive large-scale aquaculture that has degraded Chilika and Bhitarkanika; it is small-scale, community-managed, and designed to be compatible with the coastal ecosystem rather than destructive of it.

Skill requirements: Water quality testing and management (simple kits, not laboratory equipment); feed management and nutrition calculation; disease identification and prevention; harvest and post-harvest handling; MPEDA (Marine Products Export Development Authority) quality standard compliance for export-grade product.

Training pathway: The Fisheries and Aquaculture Infrastructure Development Fund (FIDF) provides concessional finance for aquaculture infrastructure. MPEDA runs training programmes on aquaculture quality standards. State Fisheries Department extension officers are the direct technical resource at block level. NGO role: connecting community members with government training and subsidy programmes, facilitating group applications under PMMSY, and supporting quality management after establishment.

2. Post-harvest handling and cold chain operation

Post-harvest losses in India's fisheries sector are currently 25–30% of catch — among the highest in Asia. Fish is highly perishable; without adequate ice, cold storage, and rapid handling, significant proportions of each catch are lost before reaching market or are downgraded to low-value dried fish when they could have commanded fresh-fish prices. Reducing these losses is both an income improvement for fishers and a supply chain improvement for buyers.

PMMSY specifically targets reducing post-harvest losses to 10% — a goal that requires both infrastructure investment and the skills to use that infrastructure correctly. Community-level ice production plants, fish landing centres with cold storage, insulated fish transport vehicles — government funding is available for this infrastructure. The bottleneck is often the operational skills to use the infrastructure effectively once it is built.

Skill requirements: Ice application techniques for different fish species (the correct ice-to-fish ratio, packing methods, storage duration limits); HACCP (Hazard Analysis Critical Control Points) basics for fish handling — the food safety standard required for formal market and export access; cold chain management in transport; temperature monitoring and record-keeping for buyer traceability requirements.

Training pathway: MPEDA and the National Institute of Fisheries Post-Harvest Technology and Training (NIFPHATT) run post-harvest handling training. The Fisheries Sector Skill Council has NSQF-aligned job roles specifically for fish processing and cold chain operations. NGO role: facilitating access to MPEDA training, supporting communities in applying for PMMSY post-harvest infrastructure subsidies, and maintaining quality monitoring after training.

3. Marine safety and vessel certification

The most immediately life-critical skill gap in Odisha's coastal fishing communities is marine safety — basic first aid, distress signalling, life-saving equipment use, and emergency communication. Fishers who have never encountered formal safety training work daily in one of the most dangerous occupational environments in India. Drowning and vessel accidents are the leading cause of fisher mortality.

PMMSY supports vessel modernisation including safety equipment — GPS, life jackets, flares, bilge pumps — but equipment without training to use it is incomplete. The Indian Coast Guard runs coastal safety outreach programmes. The National Disaster Management Authority has coastal community safety training modules.

Additional certification opportunity: Engine operation and maintenance certification for mechanised vessel operators is both a safety skill and a livelihood upgrading opportunity. A fisher who understands basic marine engine maintenance reduces the risk of breakdown at sea and extends the productive life of their vessel without dependence on expensive service

mechanics.

Training pathway: Indian Coast Guard's coastal safety programmes; NDMA coastal safety modules; National Maritime Academy training for smaller vessel certification; state Fisheries Department fisheries extension programmes. NGO role: community mobilisation for safety training events, advocating for Coast Guard outreach to interior coastal blocks that rarely receive safety visits, and ensuring life-saving equipment distributed under PMMSY is accompanied by training.

4. Eco-tourism and marine heritage guiding

Odisha's coastal eco-tourism potential is large and largely unrealised for the communities that live within it. Community-run Olive Ridley turtle-watching programmes at Gahirmatha and Rushikulya already attract thousands of visitors annually, with documented community income. Bhitarkanika wildlife tourism — saltwater crocodile observation, bird watching, mangrove boat tours — has national and international market potential that existing infrastructure reaches only partially. Chilika's Irrawaddy dolphin tours, flamingo migrations, and migratory bird season draw significant tourist traffic.

What these eco-tourism opportunities require from communities is specific: guide skills that include natural history knowledge in addition to the ecological knowledge fishers already possess; English or Hindi communication for domestic and international visitors; basic hospitality and service quality management; safety protocols for boat tours; and the business management skills to price, market, and sustain a tourism enterprise.

The evidence from Bhitarkanika is honest: A 2024 research study specifically on ecotourism in Bhitarkanika Wildlife Sanctuary found that while ecotourism had contributed to income augmentation, it had failed to genuinely empower communities — organisational participation had not been successful for reducing natural resource dependence, and proper strategies for inclusive ecotourism were still needed. This finding is important. Eco-tourism income in Odisha's coastal communities has not automatically translated into community agency or conservation behaviour change. It requires deliberate design for equity and genuine community governance of the tourism activity.

Design principles for community coastal eco-tourism that works:

- Community members as primary guides, not hired labour for outside operators
- Community governance of visitor numbers, pricing, and rules — not tour operator control
- Revenue stays in the community — not primarily to outside companies through minimal local employment
- Conservation outcome linkage — part of the tourism revenue explicitly allocated to

habitat protection activities
- Training in species identification, natural history communication, and safety alongside hospitality and business skills

Training pathway: Odisha Tourism's eco-retreat programme and its 50 eco-tourism centres provide one institutional pathway. IUCN's sustainable tourism guidelines provide the design framework. WWF India has supported community-based eco-tourism in comparable coastal contexts. NGO role: facilitating guide training with both natural history and hospitality components; supporting community governance structures for tourism; and advocating with Odisha Tourism for direct community linkage in its eco-tourism promotion.

5. Seaweed cultivation

Seaweed cultivation is an emerging livelihood opportunity for coastal communities that the Indian government explicitly identified as a priority in October 2024 — issuing guidelines to facilitate import and domestic cultivation. Seaweed has applications in food, pharmaceuticals, cosmetics, animal feed, and biofuel. It grows in coastal waters without requiring land, freshwater, or chemical inputs. Cultivation requires physical labour that existing fishing communities can provide, and it does not compete with fishing activity.

India's primary seaweed cultivation is currently concentrated in Tamil Nadu and Gujarat. Odisha's coastal conditions — the combination of tropical temperatures, shallow coastal waters, and nutrient-rich runoff — make seaweed cultivation feasible, though it has not been demonstrated at scale in the state. This is an emerging opportunity, not an established pathway, and NGOs should approach it as a pilot before scale.

The honest caveat: Market development for seaweed produced by new Odisha cultivators requires active NGO facilitation — buyers, quality standards, and supply chain connections that don't yet exist for Odisha production. Don't begin cultivation training without first identifying a buyer or processor willing to purchase Odisha seaweed.

What Makes Blue Economy Training Work in Coastal Tribal Contexts

Recognition of existing knowledge first. Begin every programme with a community mapping of what fishers already know in each skill category. This tells you what the programme is actually adding, creates the respectful relationship that makes learning possible, and identifies who the peer teachers and community resource persons are.

Language and communication: Coastal Odisha communities speak Odia dialects, but many also speak Telugu (in Ganjam), Bengali (in Balasore and Bhadrak), and distinct coastal dialects.

Training in the community's primary language — not generic Odia — produces better outcomes. Wherever possible, train community members from within the community rather than bringing in outside trainers.

Seasonal calendar alignment: Fishing communities cannot attend training during peak fishing seasons. Programme calendars must be built around the community's own seasonal calendar, scheduling training during lean seasons when the opportunity cost is lowest.

Women in Blue Economy programming: Women in coastal fishing communities typically manage fish drying, processing, and local market sales — roles that are often economically significant and consistently underrecognised in Blue Economy programming. Post-harvest handling, cold chain operations, and marketing skills are all areas where women's existing roles can be formalised, upgraded, and economically enhanced. Blue Economy skill programmes that address only boat-based fishing skills exclude women by design.

Government Scheme Navigation

PMMSY (Pradhan Mantri Matsya Sampada Yojana): The flagship fisheries scheme with ₹2,761.80 crore budget for 2026–27. Covers: infrastructure (fishing harbours, cold chains, landing centres); vessel modernisation with safety equipment; aquaculture investment with capital subsidy; insurance for fishers. NGO role: helping community members understand eligibility, prepare applications, and access subsidies.

FIDF (Fisheries and Aquaculture Infrastructure Development Fund): Concessional finance for fisheries infrastructure through NABARD and SIDBI. Relevant for community-level cold storage and processing units.

NFDP (National Fisheries Digital Platform, 2024): Digital IDs for fishers, streamlined insurance access, performance-linked incentives. NGO role: registration support and digital literacy.

PM Vishwakarma: Traditional fishers with boat-building, net-making, or other craft skills may qualify for PM Vishwakarma artisan recognition — RPL certification pathway.

Related Knowledge Commons content: Skill Development Sector Primer (Sector 06) · Environment & Climate Sector Primer (Sector 07) · Practice Note: Mangrove Restoration — Community-Led Models · Practice Note: Demand-Driven Skill Training — The Employer Partnership Model

Evidence Grade: B — Multi-study. This Practice Note draws on the KPI Academy fisheries sector analysis (April 2026), the Insights on India Blue Economy analysis (April 2026), the IJSAT Blue

Economy and community eco-tourism study, the Frontiers in Forests study on ecotourism and local livelihoods *(2024),* the ORF marine fisheries governance analysis *(*April *2026),* CEEW sustainable tourism analysis *(*July *2025),* and official MPEDA and PMMSY programme documentation. Last reviewed*:* April *2026.*

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