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Draft policy brief: Promoting restorative practices for sustainable aquaculture development in Pacific Islands

Ariella D'Andrea and Chinthaka Hewavitharane

Draft policy brief

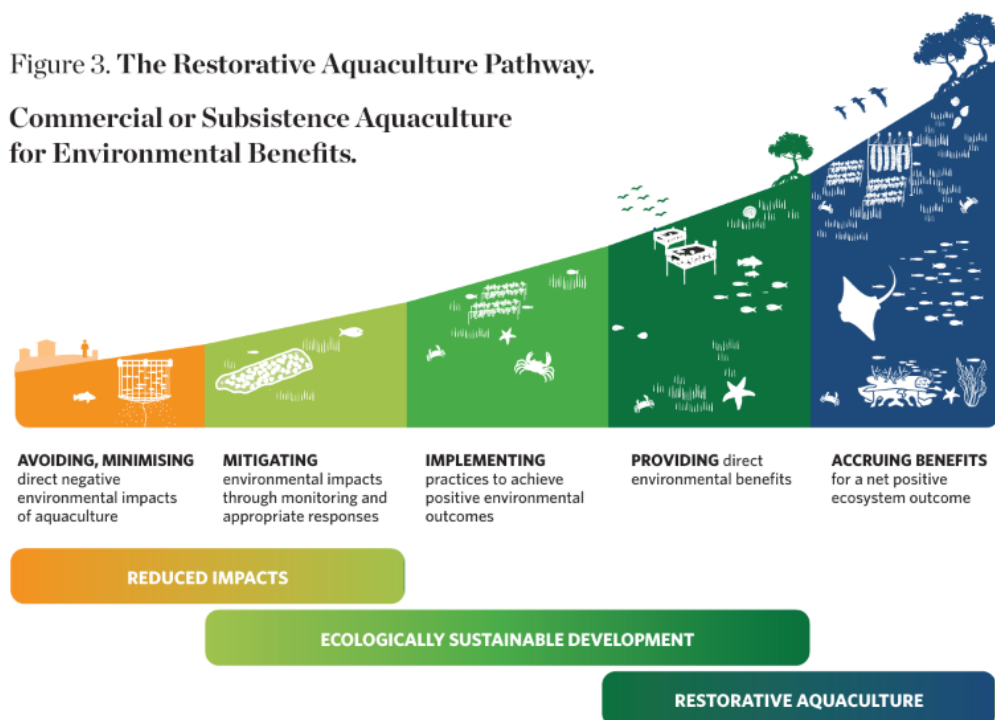
Promoting restorative practices for sustainable aquaculture development in Pacific Islands

Purpose

This policy brief provides key guidance to Pacific Island countries and territories (PICTs) on how to promote restorative aquaculture practices through legislation for a sustainable and resilient aquaculture sector, in line with the [Pacific Regional Aquaculture Strategy 2025].

Key messages

- ➔ Restorative practices can play a pivotal role in the sustainable intensification of aquaculture in PICTs by promoting a nature-positive mindset that accounts for other uses of coastal areas, including fishing or tourism.
- ➔ National policies and regulatory frameworks that are specific to aquaculture could include streamlined procedures for commercial farmers to implement restorative practices, in collaboration with local communities.
- ➔ By actively supporting restorative aquaculture, PICTs could attract public and private investment to the region, while contributing to international efforts towards a sustainable development model in harmony with nature.



Source: [The Nature Conservancy \(TNC\) 2021](#), p. 21

Pacific Island context

Although aquaculture production has surpassed capture fisheries in aquatic animal production globally for 2022, commercial aquaculture remains limited in many PICTs, with the exception of specific niche markets such as the black pearl (*Pinctada margaritifera*) industry in French Polynesia and the marine shrimp (*Penaeus stylirostris*) industry in New Caledonia. However small, the Pacific aquaculture sector is considered to have great socio-economic value and potential. Small-scale and community-based farms in the region cultivate various species, including oysters, trochus, giant clams, seaweed, sea cucumbers, freshwater prawns, and marine shrimp. These species contribute to both food security and economic development.

Clustering of small-scale aquaculture farmers has been tested in some locations to achieve economies of scale, with encouraging results. While some PICTs have a specific regulatory framework for aquaculture, including for community-based aquaculture, the sector mostly suffers from non-specific legislation covering related sectors, such as capture fisheries, tourism, environment, infrastructure, shipping, public health or biosecurity.

What is restorative aquaculture

Restorative aquaculture is a nature-based solution for the sustainable use of aquatic resources, alongside the ecosystem approach to aquaculture. It focuses on culture methods and species that benefit the environment (e.g. extractive, non-fed or low trophic aquaculture), including by avoiding fish meal and fish oils, as well as antibiotics and harmful chemicals, and by combining compatible species (e.g. polyculture of seaweed, bivalves and sea cucumber). While multi-trophic aquaculture and agri-aquaculture generally aim at remediating or mitigating the impact of fed farming, restorative aquaculture goes further by seeking a net positive ecological outcome.

Restorative aquaculture occurs when commercial or subsistence aquaculture provides direct ecological benefits to the environment, with the potential to generate net positive environmental outcomes. (TNC 2021: 16)

Restorative aquaculture practices can provide benefits in three main areas, namely water quality, habitat provision and climate resilience, by adapting the scale of cultivation to account for the carrying capacity of the water body. These practices can reduce greenhouse gas emissions and increase aquatic productivity, ultimately leading to enhanced biodiversity and resilient ecosystem services, including carbon sequestration and localised reduction of ocean acidification.

This innovative approach combines aquaculture production with environmental conservation goals, to create a sustainably managed aquaculture area that mimics natural ecosystems and may even produce a spillover effect benefiting local fishers, similarly to a marine protected area. Restorative aquaculture goes beyond government-led environmental restoration to promote tourism or stock enhancement to support fishing, by allowing both subsistence and income generating activities, while preserving aquatic ecosystems.

Why it is relevant to the Pacific region

PICTs' coastal areas and communities are vulnerable to climate change impacts, such as extreme weather events, sea level rise, ocean warming and acidification, and to marine pollution, including plastic debris, sewage, industrial waste, oil spills and chemical runoff. Overfishing is also reported, particularly around urban centres. Engaging local communities in restorative, climate-smart ocean farming can reduce illegal trade and poaching by providing sustainable livelihoods through inclusive aquaculture practices that enhance marine ecosystems and biodiversity.

In 2024, greenhouse gas emissions – which cause climate change and ocean acidification – were recognised as pollution of the marine environment in an Advisory Opinion of the International Tribunal for the Law of the Sea (ITLOS). It was also clarified that the obligation to protect and preserve the marine environment under the United Nations Convention on the Law of the Sea (UNCLOS) includes the obligation to restore degraded marine habitats and ecosystems as one of due diligence of state parties in the face of climate change.

Restorative aquaculture supports mangroves, seagrass beds and coral reefs, which help coping with climate change impacts and serve as habitat for key species. Some of these species may supply the local market, while others may be traded internationally, including giant clams and sea cucumbers under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Oyster and seaweed farming are climate-smart livelihood opportunities that offer food and nutrition security and sources of income for coastal communities. To ensure sustainability, the farming model must be carefully considered when developing the activity. Examples of SPC support include farming of mangrove oysters (*Magallana bilineata*) in Fiji (Muanaira Village) and farming and processing of seaweed (*Kappaphycus alvarezii*) in Solomon Islands (Wagina and Manaoba Islands).

Seaweed co-culture within oyster farming systems provides an opportunity for communities to harvest two crops from the same lease area. Projects are currently being deployed in several PICTs (Fiji, Samoa, French Polynesia), to promote the sustainable use of oyster and seaweed, and empower commercial and community entities by engaging in effective community-based mariculture and co-management models.

By combining public and private interest goals, restorative aquaculture can benefit from public-private partnerships, including by creating synergies with farmer cluster groups and community-based aquaculture initiatives. Specific aquaculture farms that successfully implement restorative practices may eventually be accounted for when reporting on the global biodiversity targets for 2030 agreed by state parties to the Convention on Biological Diversity, particularly Target 2 “restore 30% of all degraded ecosystems” and Target 3 “conserve 30% of land, waters and seas”.

When producing food, restorative aquaculture farms may also contribute to regenerative aquatic food systems, which include a dimension of social justice in addition to environmental concerns. Restorative aquaculture also fully aligns with the Blue Transformation Roadmap 2022–2030 of the Food and Aquaculture Organization of the United Nations (FAO), ticking the boxes of responsible governance of tenure, innovation, equitable access to resources, climate-smart and restorative practices, and monitoring and reporting of aquaculture operations.

How to promote restorative aquaculture

Ministers acknowledged the approach to formulating the Regional Aquaculture Strategy, supporting the goals and objectives outlined in the Regional Aquaculture Assessment. This will set the foundations for member consultations on the potential of restorative aquaculture and the associated opportunities it presents.

(Statement of Outcomes from the [Fourth Regional Fisheries Ministers Meeting 2023](#))

To facilitate implementation of restorative aquaculture practices, PICTs may consider adopting legislation and policy that thinks ‘aquaculture’. A supportive regulatory framework could aim to:

- Promote sustainable farming, including restorative aquaculture as a public interest activity, by simplifying the administrative requirements for the set-up, operation and decommissioning of an aquaculture facility, including environmental, biosecurity and food safety and quality controls.

- Determine the criteria for aquaculture zoning and site selection, identify suitable areas to

maximise environmental benefits from implementation of restorative practices, and ensure that aquaculture is included in national marine spatial planning efforts.

- Foster transparency and legal certainty by adopting, in consultation with local communities, secure marine and land tenure arrangements that incorporate the free, prior and informed consent of indigenous peoples, including customary right holders and traditional fishers.
- Prioritise farming of native, endemic or indigenous species and low trophic aquaculture to reduce or eliminate the use of imported seed and feed and to minimise the administrative burden of environmental and biosecurity regulations related to live fish imports and species introductions.
- Encourage the use of nature-based solutions for farm infrastructure and equipment, including hatcheries, cages, nets, boats or energy supply, which could facilitate related permitting processes. (For example, farming infrastructure can serve as a substrate for colonisation by aquatic organisms, such as sponges, corals, oysters, seaweeds and other types of marine life.)
- Determine the appropriate scale and intensity for restorative aquaculture operations depending on the carrying capacity of the water body, and consider amending environmental legislation to account for the positive environmental impact and reduced biosecurity risk.
- Introduce tax benefits, subsidies or other incentives, including market-based mechanism such as payment for ecosystem services, to account for the positive impact of restorative aquaculture on the environment and on local communities.
- Require data and information on aquaculture production through monitoring and reporting requirements, including on the environmental status of the ecosystem, to facilitate traceability and certification of restorative aquaculture products for international trade of both ornamental and food products, in line with international standards, such as CITES and Codex Alimentarius.

Further reading

FAO. 2025. Guidelines for Sustainable Aquaculture. Rome. <https://doi.org/10.4060/cd3785en>

TNC. 2021. Global Principles of Restorative Aquaculture. Arlington, VA. https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_PrinciplesofRestorativeAquaculture.pdf