Fostering sustainability in rural Fiji: Indo-Fijian fisherwomen's local ecological knowledge of the practice of sun-drying fish

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This article examines how rural fisherwomen in Labasa, Fiji, leverage local ecological knowledge and skills to strengthen community resilience against climate change and contribute to rural sustainability. The author expands on findings from her research project undertaken as a research fellow at the Centre for Sustainable Futures at the University of the South Pacific, focusing on the integration of Indo-Fijian fisherwomen's ecological knowledge into nature-based solutions aimed at enhancing sustainable livelihoods and resilience to the impacts of climate change.



Split fish laid out on tin racks for sun-drying. Image: © Shereen Shabina Begg

Introduction

The practice of sun-drying is a common fish preservation method used in coastal communities across Fiji, particularly in areas where refrigeration is limited (FAO 2018). Pacific Island women's knowledge of sun-drying fish can contribute to resource sustainability and climate resilience. Relying primarily on solar energy, this practice provides a low-carbon and resource-efficient method of food preservation that minimises energy use and reduces post-harvest losses (FAO 2018; IPCC 2022; Al-Ismaili 2025). Sun-drying also functions as an important climate adaptation strategy in the face of increasing climate variability, including changing rainfall patterns and more frequent extreme weather events. By extending the shelf life of fish, the practice helps maintain and enhance household supplies and strengthen food security during periods of fishing disruption (FAO 2016; IPCC 2022). In addition, its integration into community-based fisheries practices and local ecological knowledge can contribute to sustainable marine resource management and strengthen local food security (Al-Ismaili 2025).

Beyond its economic and environmental value, sun-drying practices maintain local knowledge systems and support intergenerational knowledge transfer, reinforcing cultural continuity and community resilience (IPCC 2022). Moreover, women's role in processing and marketing dried fish contributes to livelihood diversification and strengthens local economies, particularly in coastal rural communities where access to formal employment is limited (WorldFish 2017; UNDP 2024). As such, women's local cultural practice of sun-drying fish can be understood as a locally grounded adaptation strategy that contributes to climate change adaptation and mitigation while supporting sustainable livelihoods in Pacific Island contexts.

Roles of women in the practice of sun-drying fish

This article provides valuable insights from three Indo-Fijian women (aged 40–65 years) from Labasa who are engaged in the practice of sun-drying fish, locally known as *karawaru*. The fisherwomen apply context-specific knowledge and expertise in fish preservation, environmental conditions and

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seasonal variability. The lived experiences of these women shed light on the strategies that can be used to strengthen the resilience of communities to the impacts of climate change.

In Labasa, which is located in Macuata on Vanua Levu, fisheries provide a primary source of livelihood for many households and contribute significantly to the local economy. Market vendors hold rich knowledge of local marine life, offering an extensive range of fish products from fresh caught fish to dried and smoked varieties (UNDP 2024). The quotations in this article are used as part of a storytelling technique designed to bridge the gap between objective reporting and raw human experience.

The practice of sun-drying fish plays an integral role in the small-scale fisheries sector among Indo-Fijian communities in Labasa. Women and men share harvesting duties, while women primarily manage post-harvesting and commercial activities. The three fisherwomen explained that Indo-Fijian women in rural communities mostly engage in freshwater and coastal fisheries closer to their community due to their domestic responsibilities. In contrast, men were commonly involved in coastal and offshore fisheries, including fishing in deeper coral reef areas.

> "While I catch most of the fish in freshwater and coastal areas, the men in my family provide the offshore and deep-water fish used for sun-drying. I clean, salt and dry the fish to ensure it lasts for a long time. My husband then sells the *karawaru* at the Labasa Market. Customers who know we sell *karawaru* also come directly to our home to buy it."
> Fisherwoman, 53 years old

Women with sensory disabilities, such as hearing and speech impairments, actively and meaningfully participate in the practice of sun-drying fish. In cases where fisherwomen are responsible for catching and bringing fish home, other household members, including women with disabilities, often take on post-harvest roles such as cleaning, arranging and monitoring the drying process. This division of labour enables women with diverse abilities, as well as those managing dual domestic and economic responsibilities, to participate in fisheries activities and collaboratively share tasks within their households.

Such participation contributes to household food and income security while creating opportunities for women with disabilities to enhance their financial independence and reducing reliance on others. Furthermore, their involvement promotes social inclusion, skill development and self-confidence, while gradually challenging societal perceptions by demonstrating their productive capabilities within both the household and the wider community.

> "After I bring the fish home, my sister-in-law, who cannot hear or speak, takes over much of the sun-drying work. She cleans, lays out and monitors the fish with great care, and she is fully involved in the process. In our household, sun-drying has become something we do together as it allows women like her and those of us managing both fishing and domestic responsibilities to share the workload. This not only helps us provide food and income for our family but also gives her a chance to earn her own money. Through this work, she has gained confidence and skills and people in the community now see what she is capable of doing." Fisherwoman, 53 years old

The three fisherwomen also reported significant challenges in the practice of sun-drying fish, particularly due to weather dependency and gender-based time burdens. The drying process relies heavily on consistent sunlight, but unpredictable weather conditions such as sudden rain, high humidity or cyclones can spoil entire batches, affecting income stability. These women often shoulder multiple responsibilities within the household, including childcare and domestic work, alongside their income-generating activities. This burden limits the time and energy they can devote to the practice of sun-drying fish, increasing physical strain and reducing productivity.

The practice of sun-drying fish

The youngest of the three fisherwomen (40 years of age) explained that in her household, she is assisted by her elderly family members, including her mother-in-law, in the cleaning, salting and drying process. She detailed the practice of sun-drying and preparing sun-dried fish as follows:

> "To make *karawarau*, we start by cleaning the fish properly, that is, removing the guts and washing it well while it's still fresh to prevent spoilage. Then we split it open and flatten it so it can dry faster in the sun. We slit the thicker areas of the flesh to allow quicker drying. After that, we rub plenty of salt all over the fish and sometimes leave it for a few hours or overnight so the salt can soak in. Salt not only adds flavour but also helps draw out moisture and prevent bacterial growth. The next step is to lay the fish out under the sun, usually on racks or mats. We leave it there for a couple of days, turning it now and then so it dries evenly. At night, we bring it inside or cover it to keep away moisture and flies. Drying usually takes 2–3 days, depending on the weather. When it's fully dried, the fish becomes firm and has very low moisture content, allowing it to be stored for weeks or even months. Dried fish is stored in woven baskets, airtight containers or hung in dry kitchen areas."
> Fisherwoman, 40 years old



Close-up of processed split and dried fish. Image: © Shereen Shabina Begg

Uses of sun-dried fish

The women described how sun-dried fish serves multiple vital purposes, both as a food source and as an important cultural and economic asset. They explained that it is an important source of protein, providing a reliable food supply in rural communities. The process of cooking sun-dried fish is deeply ingrained in Indo-Fijian culture and is linked to traditional food practices that have been passed down through generations. Sun-dried fish is often regarded as an acquired taste and constitutes an important component of Fiji's Indo-Fijian culinary heritage, particularly within South Indian-derived food traditions.

Across diverse Indo-Fijian cultural contexts, sun-dried fish curry is a customary dish at social gatherings, valued for its lower cost and favourable taste compared to meat-based curries. Sun-dried fish is frequently carried abroad as a gift by individuals visiting family and friends. The 53-year-old fisherwoman shared that before cooking, the dried fish is typically soaked in water to soften its texture and reduce excess salt.

> "The popular dish is *karawaru* curry, where the fish is cooked with ingredients such as onions, garlic, tomatoes, chili, curry powder, garam masala and coconut milk, resulting in a rich, aromatic dish served with roti or rice. Additional ingredients such as tamarind, mustard seeds and vinegar provide a spicy, tangy condiment. For a quicker option, the fish is often fried with onions and chili, creating a crispy, salty snack or side dish. As an ingredient, *karawaru* is widely used in cooking, adding a rich, salty flavour to dishes like eggplant, breadfruit and potato curries, stews and soups, often paired with coconut milk and spices."
> Fisherwoman, 40 years old

She further revealed that there is demand for sun-dried fish because people perceive it to have medicinal benefits, including the provision of essential nutrients such as omega-3 fatty acids. Such knowledge is shaped by intergenerational transmission of local cultural practices and reinforced through interactions with customers who purchase sun-dried fish.

> "In earlier periods sun-dried fish served not only as a dietary staple but also operated as an informal medium of exchange within many traditional Indo-Fijian communities. When I was young, I observed that my mother, a fisherwoman, used *karawaru* as a bartering commodity, exchanging it with local farmers for food items such as rice, oil, spices, sugar, fruits and vegetables."
> Fisherwoman, 65 years old

Sun-dried fish as a sustainable livelihood strategy for climate resilience

The three fisherwomen explained that sun-dried fish represents a viable component of sustainable livelihood strategies for small-scale fishers in coastal rural communities. Its production relies on low-cost, labour-intensive methods that require minimal technological input, making it accessible and economically feasible for resource-constrained populations.

> "The sale of sun-dried fish at local markets, like the Labasa Market, plays a key role in income generation for my family and me, much like other Indo-Fijian rural households. Vendors from Savusavu, Suva, Nadi and Lautoka also purchase sun-dried fish in large quantities to support tourism and local consumption demands in the urban markets... The practice of sun-drying fish allows us to convert highly perishable marine and coastal resources into a durable commodity that can be stored, transported and exchanged over time." Fisherwoman, 40 years old

According to the three fisherwomen, sun-dried fish constitute a climate adaptation mechanism. Its production through the practice of sun-drying enhances the overall fisheries value chain by and extending storage duration without reliance on refrigeration or energy-intensive preservation technologies, enabling households to stabilise food availability across periods of fluctuating fish catch, thereby strengthening local food security systems.

> "The practice of sun-drying fish lets households preserve surplus catch during periods of abundance. The durability of sun-dried fish enables its use as an emergency food reserve during times of scarcity, strengthening coping capacity in our disaster-prone environment."
> Fisherwoman, 65 years old

Conclusion

Sun-dried fish in Fiji represents a livelihood resource that integrates economic, cultural and environmental dimensions within coastal and island communities. The practice underpins household food security and income diversification by transforming fresh fish into a longer lasting product that can be stored, traded and consumed over time. This contributes to more stable livelihoods, particularly in contexts characterised by seasonal variability and exposure to climatic shocks.

Sun-dried fish is also deeply embedded in local socio-cultural systems, reflecting long-standing ecological knowledge and customary food practices. Its production is closely associated with gendered divisions of labour, with women playing a central role in processing, preservation and market participation, thereby reinforcing its significance as a site of knowledge transmission and social organisation. Through collaborative task-sharing in sun-drying, women, including those with disabilities, support one another by contributing their knowledge and skills, thereby enhancing household resilience, promoting inclusive participation and strengthening the overall sustainability of the practice.

Overall, sun-dried fish production contributes to climate resilience by supporting low-energy preservation methods, enhancing adaptive capacity and strengthening both formal and informal exchange networks. Its combined roles in sustaining nutrition, enabling livelihood flexibility and preserving cultural continuity position sun-drying fish as an important and enduring component of sustainable development strategies in Fiji's small island context.

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