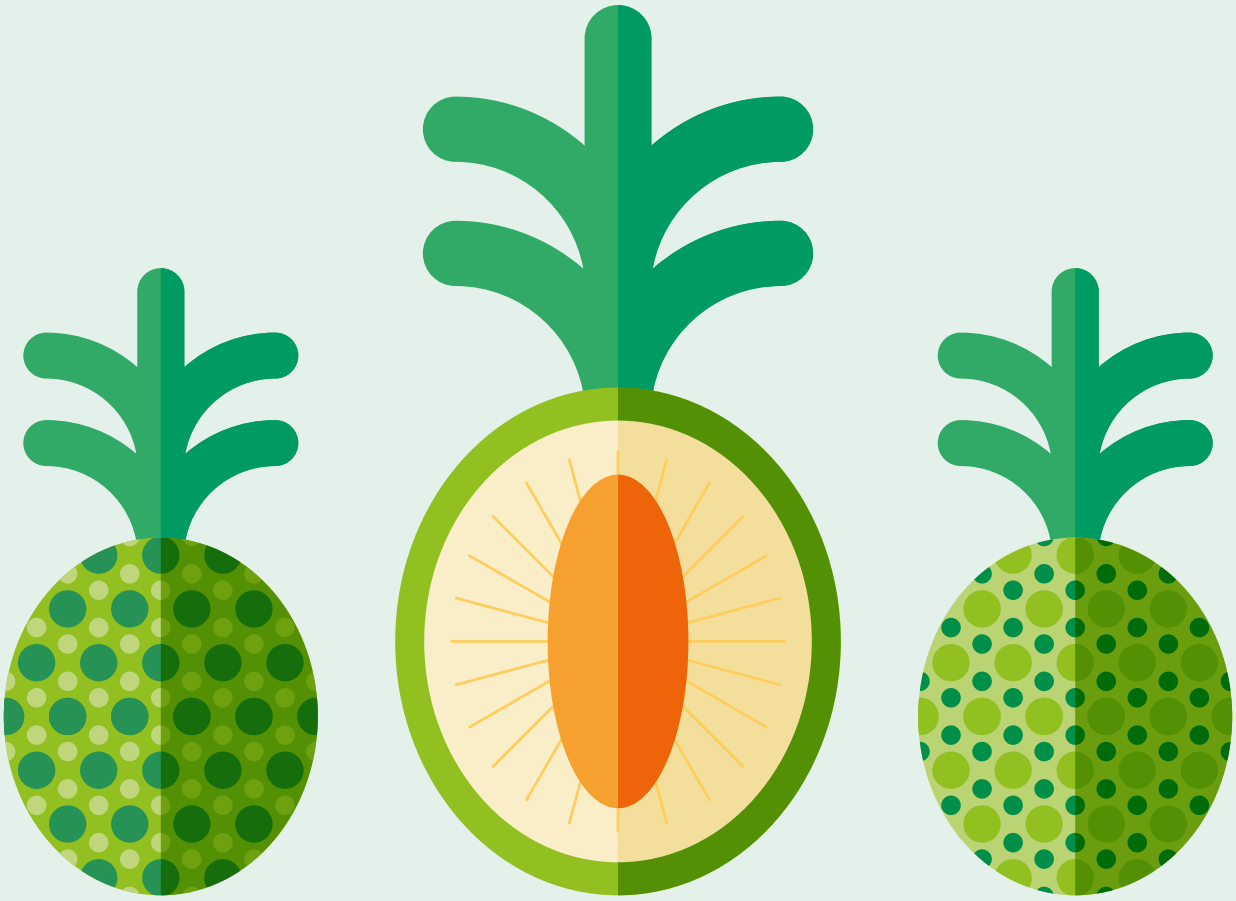
#1 CLIMATE RESILIENCE CASE STUDIES

Strengthening Climate Resilience through breadfruit recovery in Fiji

Family Farmers at the Heart of Climate Adaptation in the Pacific



WRF FRM ML

United Nations Decade of FAMILY FARMING 2019-2028

Co-funded by the European Union

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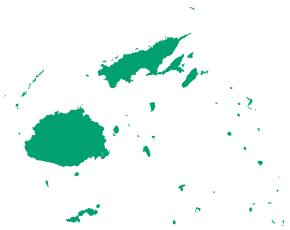
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1. **Context:** Fiji and Family Farmers facing Climate Change



330+

islands in the archipelago

70,991

agricultural households

Fiji is an upper-middle-income archipelago of more than 330 islands. Like its Pacific neighbors, **agriculture sits at the heart of the country's economy and rural communities,** providing both export revenue and the food and livelihoods that sustain its rural population. The last Fiji Agriculture Census recorded 70,991 agricultural households and 195,000 hectares of farmland, averaging 2.7 hectares per household, of which 65% have less than one hectare. Agriculture employs about 30% of the workforce, particularly in rural areas where 40% of the population resides[1], **making the agricultural sector crucial for income generation and food security in Fiji.**

But that way of life is under growing pressure. **Fiji is one of the Pacific territories most exposed to climate change,** with a tropical climate strongly influenced by the South Pacific Convergence Zone and the El Niño Southern Oscillation. Its family farmers are already dealing with rising sea levels, saltwater intrusion into low-lying farmland, more intense cyclones, increasingly erratic rainfall and prolonged droughts. **These are not distant risks: they are present realities, reshaping the conditions under which families grow their food and earn their livelihoods.**

The numbers tell a clear story. Temperatures have already risen by 0.7°C since pre-industrial levels, and **by 2030 Fiji is expected to experience a further 1.8°C increase,** rising sea levels and stronger cyclones[2]. The damage is

Climate change impacts in Fiji



1. IFAD, 2025. Republic of Fiji Country Strategy Note.
2. RCCAP, 2021. NextGen Projections for the Western Tropical Pacific: Current and Future Climate for Fiji.

not hypothetical either: Tropical Cyclone Winston in 2016 caused agricultural losses estimated at over USD 100 million; Cyclone Cody in January 2022 added further damage of over USD 4 million. Extreme events are no longer exceptional; they are already a recurring reality[3].

Underlying these climate pressures is a structural fragility that compounds the risk: the region's heavy reliance on imported food. Rice and wheat flour account for more than half of the Pacific's food imports, and this dependence exposes island nations to global price shocks and supply chain disruptions, as was demonstrated during the COVID-19 pandemic and the Russia-Ukraine conflict.

In this context, climate adaptation for family farming and food systems in Fiji is not an option: it is an urgent necessity. Through their practices and knowledge, **family farmers are already strengthening the climate resilience of Fiji's productive systems — and it is these farmers who hold some of the oldest, and yet most promising, answers to the threats they face.**

Understanding their work requires both a **gender and a youth lens.** In Fiji, **women bear the heaviest burden of climate impacts** — through food insecurity, time poverty and limited access to resources — while simultaneously holding some of the deepest knowledge of traditional farming practices[4]. At the same time, **young people in Fiji remain poorly represented** in terms of access to land, water, knowledge, extension services, finance and markets[5], making it a central challenge to keep youth in rural areas and make family farming an attractive livelihood for the next generation.

USD 100 M+

Tropical Cyclone Winston in 2016 caused agricultural losses

USD 4 M+

Cyclone Cody in January 2022 added further damage

The work of family farmers in Fiji takes place within a **national policy landscape** that increasingly recognises climate adaptation, food security and inclusive agriculture as interconnected priorities:

- **National Climate Change Policy (2018-2030).** Sets the overarching framework for climate-resilient development in Fiji, guiding agricultural adaptation through improved data, climate-smart practices and sustainable resource management.
- **Nationally Determined Contributions 3.0 (2025-2035).** Names Agriculture and Food Security among its seven priority adaptation sectors, committing to scale up climate-smart agriculture and agroforestry among smallholder farmers, while formally recognising Indigenous traditional knowledge as vital to building the country's adaptive capacity.

3. PIFON Background Paper on FOs and Climate Change.
4. Climate Adaptation in the Pacific Islands through a Gender Lens, 2025.
5. Youth in Agriculture Analysis Report, Fiji Agriculture Census, 2020.

- **Policy for Gender in Agriculture in Fiji (2022 – 2027).** Recognises gender equality in agriculture as a prerequisite for food security, sustainable livelihoods and economic growth, acknowledging that women's full participation in the agrifood system is essential.
- **Youth in Agriculture Policy (2022 – 2027).** Aims to empower young people for active participation across all aspects of the agrifood system, recognising the critical role of young farmers in sustaining and modernising the sector for the generations ahead.

2. **Breadfruit:** A traditional Staple Reclaimed for Climate Resilience — and the Family Farmer Organisations Behind It



Breadfruit *(Artocarpus altilis)*

known in Fiji as *uto,* is a tropical fruit tree that has been cultivated across the Pacific Islands for over 3,000 years as a dietary staple.

Traditional family farming systems, which center on agroecological approaches, have demonstrated **remarkable resilience against external shocks and helped maintain food security across the Pacific for generations.** Local knowledge sustained over centuries, through a range of traditional and cultural practices, has been the foundation of this resilience and has enabled effective adaptation[6]. Today, as climate change accelerates, those same traditions are being reclaimed and the breadfruit tree stands at the heart of that recovery.

What is breadfruit?

Breadfruit *(Artocarpus altilis)*, known in Fiji as *uto,* is a tropical fruit tree that has been cultivated across the Pacific Islands for over 3,000 years as a dietary staple. It is a traditional crop that had been gradually sidelined by imported foods and that family farmers across the Pacific are now recovering with renewed urgency. Across the Pacific Islands, breadfruit is more than a food staple; it is a **vessel of heritage, knowledge and climate resilience.** Once regarded as a traditional crop from the past, it is now taking on new

6. PFO Background Paper on FOs and Climate Change.

relevance as farmers, scientists and communities work to restore its role in food systems shaped by environmental change.

Every breadfruit variety carries its own story. From circular varieties in Hawaii to spiny hybrids in the Marianas, every tree represents more than agriculture, it represents place. Each variety has its own strengths and characteristics, some tolerate drought, others are salt-resistant. That makes it an **ideal crop for climate adaptation.** In Fiji, the main commercial varieties — Uto Dina and Balekana — have been cultivated and selected by farmers over generations[7].

A climate-resilient crop

Among the staple crops of the Pacific, **breadfruit stands out for its low projected vulnerability to climate change,** particularly when compared to crops such as taro, domesticated yams, or rice, which face high or very high projected impacts[8]. Suitable climatic conditions for breadfruit cultivation persist across a broad range of the tropics and subtropics for the next several decades regardless of emissions pathway, indicating that it is a reliable and promising crop to implement as a potential climate adaptation strategy as part of sustainable agroforestry systems.



Every breadfruit variety carries its own story. From circular varieties in Hawaii to spiny hybrids in the Marianas, every tree represents more than agriculture, it represents place.

7. Breadfruit Manual, PIFON/NWC, 2022.
8. Breadfruit Manual: a manual for Growing and Marketing Breadfruit, 2022.



Tropical Cyclone Winston in 2016

Only 3 breadfruit trees were brought down; the rest recovered and resumed production within two to three months.

Its practical resilience has been tested in the field. Once established, **breadfruit trees can survive droughts of three to four months.** And while they are susceptible to strong cyclone winds, they are rarely uprooted: damage is typically limited to outer branches, and trees recover within weeks. This stands in sharp contrast to crops like banana or coconut, which suffer severe damage from tropical cyclones. Following Tropical Cyclone Winston in 2016 — a Category 5 storm, one of the most intense ever recorded in the Southern Hemisphere — of approximately 1,430 breadfruit trees established in Fiji's main orchards, only 3 were brought down; the rest recovered and resumed production within two to three months.

A breadfruit tree is also, in itself, **a generational investment:** it can produce significant quantities of fruit for decades without annual replanting, requires lower energy inputs than annual crops, and thrives under optimal conditions of 21–32°C and annual rainfall of 1,500–2,500 mm — making it particularly well suited to the humid tropical climate of the Pacific — while its broad canopy captures carbon and provides shade for intercropped plants[9].

9. Breadfruit Manual: a manual for Growing and Marketing Breadfruit, 2022.

Agroforestry: an ancient practice, a climate solution

Breadfruit's full potential is expressed when **cultivated as part of agroforestry systems,** an approach that Pacific family farmers have practised for millennia, and that modern science is now recognising as one of the most promising climate solutions available.

Agroforestry **integrates trees with agricultural crops on the same plot of land,** increasing yields, improving soil health, and enhancing biodiversity. It draws on indigenous practices and knowledge that, in many communities, are no longer commonplace, but are being actively recovered. The high agrobiodiversity of Pacific Island agroforestry systems increases resistance and resiliency. Evidence indicates that those systems resist and recover from insect and disease problems better than monocultures do. If environmental stressors caused by climate change cause some crops or varieties to fail, other crops in the system can take their place[10].



The mitigation dimension is equally significant. **Above ground, breadfruit stores carbon in its biomass; below ground, its deep root systems sequester carbon into the soil** through complex interactions with fungi, bacteria and microfauna. Rather than depleting soil organic matter, breadfruit agroforestry actively improves soil health over time, making it a simultaneous adaptation and mitigation strategy.

A nutritional and cultural asset

Breadfruit addresses another pressing crisis: the Pacific Islands have some of the world's highest rates of non-communicable diseases (NCDs), representing 60–77% of all deaths in countries such as Fiji, Kiribati and Samoa, driven largely by the replacement of traditional diets with cheap imported processed foods. Breadfruit is gluten-free, has a lower glycaemic index

60–77%

of all deaths in countries such as Fiji, Kiribati and Samoa are caused by NCDs

10. Agroforestry: Enhancing resiliency in U.S. agricultural landscapes under changing conditions, 2017

than white rice or wheat bread, and is high in fibre, making it a direct nutritional alternative. The Tutu Rural Training Centre (TRTC) in Taveuni has demonstrated that breadfruit flour can replace up to one third of wheat flour in local bread and rolls, and estimates suggest that substituting just 10% of Fiji's wheat imports with breadfruit flour would represent a market of over 12,000 tonnes, valued at around FJD 10 million at current prices.

Breadfruit is therefore simultaneously a climate adaptation strategy, a food security instrument, an import substitution tool, and a public health asset — a crop at the centre of Pacific life for millennia, returning today with renewed urgency.

Family farmers organisations in Fiji: Putting breadfruit back at the center

The recovery of breadfruit as a strategic crop in Fiji has not happened spontaneously. It has required over a decade of applied research, capacity building and knowledge transfer — and, above all, **farmer organisations (FOs) capable of carrying that knowledge to rural communities.**

Pacific Farmer Organisations (PFO) is the umbrella body for national farmer organisations across the Pacific Island Countries and Territories. With 30 member organisations and over 95,000 farming households in 12 countries — 55% of them women farmers — and its secretariat based in Fiji, PFO is one of the most relevant institutional actors in the Pacific agrifood system[11].

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PFO's breadfruit programme began in 2011 with the **Pacific Breadfruit Project (PBP)**, developed in collaboration with the Australian Centre for International Agricultural Research (ACIAR). The project established, after 4 years, nearly 2,000 trees with 36 participating farmers across 16 hectares, primarily in western Viti Levu. Over the years, the initiative has continued — now continued through the EU-funded FORI programme (Farmer Innovation for Sustainable Breadfruit Value Chains) — focusing on three interconnected areas: expanding organic breadfruit cultivation using agroecological practices; developing processing capacity and value-added products for local and export markets; and preserving genetic diversity through nurseries and gene banks.

11. PIFON Background Paper on FOs and Climate Change.

Some of the results in Fiji to date are concrete and measurable:



Trees planted following recommended practices begin producing fruit in two years, compared to the usual four to five in wild-harvest conditions, **substantially improving financial viability for smallholder farmers**[12]**.** At full production, orchards established under the PBP are capable of producing 450 tonnes for export and domestic processing.



The Tutu Rural Training Centre (TRTC) established a breadfruit nursery and gene bank conserving 12 varieties, **securing genetic diversity for future generations.**



New processing capacity has been developed, including training on breadfruit flour and pasta production and the acquisition of new equipment.



Soil improvement experiments using organic mulching and biochar are underway, testing agroecological approaches to long-term soil health.

Tutu Rural Training Centre (TRTC) as a key agent in resilience building in Fiji

Fiji is the country with the highest concentration of farmer organisations across the entire PFO network. Among them, the **Tutu Rural Training Centre (TRTC)** in Taveuni stands out for its long-standing expertise in breadfruit and agroforestry. For many years, TRTC has maintained a dedicated breadfruit orchard of over 600 trees and offered comprehensive training on cultivation, processing and value-added products, becoming a reference point for breadfruit knowledge across the Pacific.

Its current action-research project, implemented together with PFO and the Fiji Ministry of Agriculture, goes a step further: researching organic breadfruit growing practices, increasing breadfruit flour production efficiency by 30% through an upgraded food laboratory, and establishing a breadfruit gene bank to preserve genetic diversity for future generations[13].

Beyond its breadfruit work, TRTC has also been a **reference for rural youth training** in Fiji for over five decades. Its long-standing programmes for young farmers have demonstrated that rural youth can build successful livelihoods from their own land, a concrete response to one of the sector's central challenges: keeping the next generation rooted in agriculture and in rural communities.

12. Breadfruit Manual, PIFON/NWC, 2022.
13. Breadfruit Manual: a manual for Growing and Marketing Breadfruit, 2022.

The role of farmer organisations in Fiji extends well beyond any single crop. A field study conducted in 2025 by the Integration Lab at the University of Notre Dame provides robust quantitative and qualitative evidence of this: **farmer organisations are central to knowledge sharing, resilience building and strategic partnerships,** playing a vital role in supporting smallholder farmers' adaptive capacity at every level. One concrete expression of this work is the Breadfruit Cultivation Manual published in 2022; a practical guide covering variety selection, propagation, orchard management, intercropping strategies and post-harvest management, that translates years of farmer-led research into knowledge accessible to any smallholder across the Pacific.

3. Where Policy Meets Practice: Fiji's NDC and Farmer-Led Adaptation

Nationally Determined Contributions (NDCs)

Submitted every five years, are planned actions by each country to reduce national emissions and adapt to the impacts of climate change.

PFO's work and that of its member organizations in Fiji does not happen in a vacuum. It is part of a global climate finance gap that threatens to become a structural crisis for family farming.

Nationally Determined Contributions (NDCs), submitted every five years, are planned actions by each country **to reduce national emissions and adapt to the impacts of climate change,** including several adaptation and mitigation commitments. **NDC actions involve different sectors, one of them being the agrifood sector.** In Asia and the Pacific, 98 percent of regional NDCs include adaptation actions in agrifood systems[14].

Fiji's NDC 3.0[15], submitted in November 2025, includes agriculture and food security among its seven priority adaptation sectors. The Global Goal on Adaptation (GGA), established under the Paris Agreement, signals that adaptation of the agrifood sector must be one of the central pillars of climate action in the coming years.

Within this sector, Fiji's Target A1 commits to **promoting Climate-Smart Agriculture (CSA) practices through an integrated approach to managing croplands, livestock, forests, and fisheries** across rural and peri-urban communities, with the explicit aim of protecting food security and the

14. Agrifood systems in nationally determined contributions in Asia and the Pacific, FAO 2025.
15. Fiji's Third Nationally Determined Contribution 2025-2035.

adaptive capacity of vulnerable groups. It is, notably, a conditional commitment, meaning its fulfillment depends on further access to finance, technology transfer, and capacity building. The NDC3.0 sets a measurable target on this front: raising the share of farmers (out of a baseline of 83,000) adopting sustainable resource management and CSA practices from 3% to 13% by 2035.

It is, notably, a conditional commitment, meaning its fulfillment depends on further access to finance, technology transfer, and capacity building. The NDC3.0 sets a measurable target on this front: raising the share of farmers (out of a baseline of 83,000) adopting sustainable resource management and CSA practices from 3% to 13% by 2035.

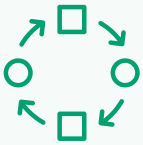
Agroforestry is named directly among Fiji's priority adaptation technologies, alongside climate-resilient crop varieties, a description that maps closely onto breadfruit's role as an underutilized, climate-resilient species. The NDC3.0 also formally recognizes traditional knowledge, committing under Target A15 to further integrate the cultural and traditional knowledge of Fiji's Indigenous iTaukei communities into the design of adaptation interventions, describing it as "the wisdom, practices, and innovations of Fiji's indigenous iTaukei communities and other local knowledge systems" that Fiji values and safeguards as vital to building its adaptive capacity.

The work documented in this case, the revival of breadfruit as a resilient crop through agroforestry practices, the strengthening of farmer organizations as a support channel, and the drive to build a value chain that reduces import dependency, is precisely the kind of **concrete, ground-level action that global frameworks need in order to come to life.**

4. What Fiji's Breadfruit Revival and FOs Teach Us: Lessons from the Field

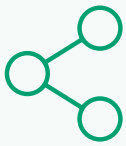
The story of breadfruit in Fiji is a story about what happens when traditional knowledge, farmer-led organisation and sustained investment in local capacity come together. It is not a story of a single project with a start and end date, it is a story of a long process of recovery, learning and institutional building that is still unfolding. Several lessons emerge from it that extend well beyond Fiji and the Pacific.

Traditional crops as a climate strategy.



The breadfruit revival in Fiji demonstrates that **some of the most effective responses to climate change are not technological breakthroughs but the recovery of what was already there.** Breadfruit has survived cyclones, droughts and saltwater intrusion for millennia. It requires low external inputs, improves the soil it grows in, sequesters carbon, and produces food for decades from a single planting. The challenge was never the crop itself; it was the institutional and market conditions needed to make it viable again for smallholder farmers. When those conditions were built, through research, training, value chain development and farmer-to-farmer exchange, the crop responded.

Farmer organisations are central to the infrastructure of adaptation.



The integration of breadfruit into agroforestry systems in Fiji has delivered measurable benefits: greater crop diversity, improved soil health, reduced vulnerability to extreme weather, and additional income streams. But none of this happened through individual farmers acting alone. It happened because PFO and its member organisations provided the technical knowledge, propagation material, training and market connections that smallholders could not access on their own. Farmer organisations are not a delivery mechanism for external programmes, they are the infrastructure through which climate adaptation becomes possible at scale.

The finance gap is the binding constraint.



Most of farmers in Fiji turn to farmer organisations for climate adaptation support, yet the global climate finance reaching smallholder agrifood systems is far from enough. Fiji's own NDC 3.0 sets ambitious targets; raising the share of farmers adopting climate-smart practices from 3% to 13% by 2035, but these targets are explicitly conditional on access to international finance, technology transfer and capacity building. The work documented in this case study shows that the demand exists, the knowledge exists and the organisations to deliver it exist. What is missing is proportional, sustained and accessible climate finance that reaches farmers through the organisations that are on the ground.

Women and youth are not a target group; they are the backbone.

Across PFO's network, 55% of farming households are headed by women, who bear the heaviest burden of climate impacts — through food insecurity, time poverty and limited access to resources — while simultaneously holding some of the deepest knowledge of traditional farming practices. Young people, for their part, remain poorly represented in terms of access to land, knowledge, finance and markets, and keeping them engaged in rural agriculture is one of the sector's defining challenges. Any climate adaptation strategy that does not explicitly invest in the participation, leadership and resource access of both women and youth is, by definition, an incomplete one.

Fiji and the Pacific Islands are not waiting.

Perhaps the most important lesson from this case is the simplest one. Family farmers in Fiji are not waiting for climate emergency to be solved at the global level. They are planting breadfruit orchards, establishing agroforestry systems, building gene banks to preserve variety diversity, and exchanging knowledge across islands and across generations. They are, in the language of the Global Goal on Adaptation, already building the resilience that international frameworks are trying to catalyse. The question for COP31 and future COPs is not whether this work is happening; it is whether the global community will invest in it at the scale it deserves.



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