

The **Pacific Insight Briefs** capture climate and disaster integration knowledge, lessons, and insights from the Australia Pacific Climate Partnership, and implementing partners. The ten thematic briefs were developed with support from the University of Technology Sydney.



**Australia Pacific  
Climate Partnership**

## Pacific Insight Brief 7 | Food and Water Security

The impact of climate change on food and water security in the Pacific region is significant. This is in large part due to the high rates of family farming and the exposure and sensitivity of farming systems to climate pressures and shocks. Further, the isolation and increasing dependence on food imports means many Pacific Island countries (PICs) are subject to disruptions in global food production and supply chain issues.

This brief provides insights based on the Australia Pacific Climate Partnership's (Climate Partnership) experience in supporting a range of research, analysis, and guidance development to support resilient food and water systems in the Pacific.

### Insights and lessons

#### **Climate change threatens what are already fragile, often inefficient water and food management systems in many contexts in the Pacific.**

From reduced productive range, increased pests and disease, contaminated water and soil resources through saltwater intrusion, drought, heat stress and extreme weather events, climate change threatens water and food security in the Pacific in multiple ways. Given the reliance on local production, climate impacts will be felt across a range of household, social and economic domains. People with disabilities, and other marginalised people are often the last to access food and suffer the worst food security outcomes.

#### **Climate impacts on global food systems will also impact the Pacific.**

Pacific Island countries import large quantities of wheat and rice. Given the high dependency of Pacific Island countries on imported grain, potential declines in global supply and increase in cost have major food security implications. Rice will become increasingly more expensive and more challenging and unsustainable to grow due to climate change, much more so than traditional (root crop) food staples. Reducing food dependency on imports can be achieved through promoting Pacific staples and increasing efforts in processing and value adding to address the 'inconvenience' of Pacific root and tuber crops.

#### **The importance of family farming and self-sufficiency is likely only to increase during times of global change and disruptions as is likely to result from climate change.**

This was seen during the pandemic for example, where many households and communities returned to or increased local production as national, regional and international systems were disrupted. There is a growing likelihood that such disruptions will increase in the future.

As a result, self-sufficient and climate resilient food and water management systems become even more important. Additionally, such systems offer diversified livelihood options by creating market opportunities for local products and produce.

#### **Adequate data and information to support planning and decision making, and broader water governance remain a key challenge.**

As climate threatens water resources, such as ground water, an understanding of the quality and quantity of the resource becomes more critical for decision making. Further, analysis suggests that while structures for water governance are often in place at community levels, decision makers and managers of local resources face resource, information, coordination, and other governance challenges and need to strengthen climate risk management - it is evident that most Pacific Island countries and territories will not meet the 2030 targets for Sustainable Development Goal 6 – clean water and sanitation.

#### **Incorporating traditional knowledge acquired over generations by farmers is important for selecting local food varieties and applying suitable farming practices that will minimise the impacts of climate change.**

In addition, climate-smart agricultural practices are generally based on traditional approaches that can minimise the impacts of increasing temperatures, more extreme rainfall events, flooding, and pests and disease. Agricultural practices that use chemical inputs are likely to become less effective over time as changing climate conditions continue. Ultimately if farmers are to ensure sustainable livelihoods for their families, now and into the future, the cropping practices they adopt must anticipate and be responsive to changing climate, work in harmony with local environmental systems, while also being economical for farmers.

Doing so will also help to address health and nutrition challenges (e.g. non-communicable diseases) associated with increased consumption of imported, processed foods (see Pacific Insight Brief on Health for information on links to diet, nutrition, health and climate change).

**Partnerships that connect regional expertise with local extension support and individual farmers is needed.**

For example, the Centre for Pacific Crops and Trees (CePaCT) is helping to conserve, characterise and distribute climate adapted plant genetic resources to Vanuatu following natural disasters. These crops are vitally important for food and nutrition security in the face of climate change. In Tonga, Mainstreaming of Rural Development Innovation (MORDI) are a key partner for CePaCT in replicating these crops in country and distributing them to farmers - providing a critical role in ensuring knowledge is put into practice.

**Supporting farmer organisations and Ministries of Agriculture with contextualised technical information and resources offers good value.**

Farmer organisations have an important role to play in supporting vital changes in farming practices for managing climate change. These farmer organisations are effective in providing resources, including information and knowledge which can be merged with traditional knowledge; however, they need access to information and guidance to address unprecedented climate change. The Climate Partnership-supported farmer training modules aim to address this and have been actively promoted by Pacific Island Farmers Organisation (PIFON) as well as Tutu Rural Training Centre in Fiji. These modules have also been modified to support Pacific Horticultural and Agricultural Market Access Program (PHAMA) Plus ginger farmers. Separately, PHAMA Plus is also experimenting with climate resilient Taro varieties through its demonstration farms, in partnership with the Fiji Ministry of Agriculture.

**Extension officers play a critical role in balancing technical information with local context and require further resourcing.**

With embedded traditional and local knowledge and understanding of local context and language, extension officers can translate technical information to local farmers. Supporting extension officers and increasing farmer-to-farmer learning has been shown to facilitate the uptake of adaptive practices and to support innovation.

**Strengthening access to national and international markets offers opportunities to increase household and community resilience through increased income and livelihood diversification.**

Reliable access to markets can be enhanced through investments in basic infrastructure that is critical for processing agricultural exports, such as the decentralised climate/disaster resilient Pack House program in Tonga.

**Establishment of Marine Protected Areas (MPAs) are a key strategy towards building resilience into marine ecosystems and safeguarding fish stocks for sustainable extraction.**

MPAs enable locally managed protected areas as a basis for safeguarding marine resources while protecting fragile coral reef systems. Support for MPA establishment and management should not be overlooked as a food security strategy, also offering potential tourism and conservation outcomes.

**Urbanising settings in the Pacific present urgent development challenges, especially for water security and sanitation.**

Competing development concerns faced by urban residents are exacerbated by climate and disaster impacts. Lack of access to basic water and sanitation services are urgent issues, for example in Betio, South Tarawa (Kiribati), where overcrowding and climate impacts create compounding challenges. A growing population faced with an unpredictable climate is only putting further pressure on already constrained water resources and sanitation services. Genuine engagement and consultation with diverse community members is essential to design sustainable and appropriate solutions in Betio and other urbanising contexts in the Pacific.

**Anticipatory action relating to food and water security protects livelihoods in times of major cyclones.**

An economic study developed under the Climate Partnership found that people and communities take preventive actions to enhance food security upon receiving early warning messages, mostly in the forms of early harvests before the landfall and protecting water sources or tanks. Some commercial farmers have a safe place to store seedlings in times of cyclones or major floods. This highlights the value of Early Warning System (EWS) to prompt local action.

## Case example | Farmer training modules.

In order to put in place farming practices that are climatically, environmentally, and economically smart, farmers have to understand what factors influence climate in the Pacific Islands and their impact on agriculture. The Farmer Training Modules, comprised of a series of eight modules, introduce and describe sustainable cropping practices that aim to be less damaging to the natural environment, build sustainable and resilient farming systems, and adapt to the impacts of climate and disasters. The eight training modules, which are available in the resources section of ClimateWise, explain to farmers and their trainers the rationale for adopting the practices (why) and the method for adopting the practices (how).

The modules have been disseminated by the Pacific Island Farmers Network (PIFON) and the Tutu Rural Training Centre (TRTC) in Fiji. While the resources have been used in a range of settings, and they appear to provide useful a framework for developing an understanding of the issues, experience suggests that farmers need highly tailored resources that speak to their local and specific context and issues. Building on modules like this, development programs can consider resourcing local, sector and community specific training, learning and guidance resources.

This has been demonstrated for example through the Climate Partnership's collaboration with PHAMA Plus, which saw the farmer training modules used to guide coconut sector farmers in PNG through an adaptation pathways workshop (pictured right) in September 2023.



## Opportunities

**Traditional farming systems offer opportunities to both mitigate and adapt to climate change.** Traditional agriculture uses organic fertiliser and incorporates mulching and composting which improves the quality of the soil and also sequesters carbon. Opportunity exists to support investments that merge traditional agricultural practices with climate resilient practices.

**Supporting smallholder farmers to have access to weather and climate information,** financial services, improved climate resilient planting materials and agricultural inputs, plant health services, appropriate livestock breeds and animal health services, and markets for selling their products (both fresh and processed) will enable them to improve their livelihoods and food and nutrition security. Increasing and strengthening efforts in processing and value adding will improve food security and market opportunities.

**Opportunities to scale-up research, share existing research findings and develop climate resilient agriculture practices through existing Australian programs** and coordinate support with regional partners like SPC and Pacific Farmer Organisations ought to be explored. The genetic diversity of many Pacific food crops is maintained in the CePaCT, managed by SPC, the only regional gene bank. Innovation and preservation of cultivars that are suited to island conditions and resilient to climate change will be essential for future Pacific agriculture. Linking scientific knowledge

with local farmers through local organisations can accelerate climate action, as can involving farmers in the research itself. Data providing evidence about these cultivars can be disseminated to farmers through demonstration plots, factsheets, farmer videos and farmer-to-farmer sessions.

**Develop highly tailored and locally specific support resources.** While general resources and guidance is useful, initiatives looking to engage with farmers need to translate general concepts and best practice to local context. Experience with PHAMA Plus for example demonstrates the value in supporting farmers workshop adaptation pathways based on collaborative workshops that merge best practice with local knowledge and priorities.

**To address the range of water management issues, the focus on water resources and WASH needs to be elevated.** Areas include legislation and administration; regional governance of WASH integration of hydrologic and demographic planning; drought preparedness and planning; irrigation design and management; urban planning and design; and integrated catchment management. At the regional level, there are a number of water and WASH related areas that would benefit from additional targeted assistance and support through regional organisations and co-financing with major donors or bilateral assistance to national governments.

**The Australian Government’s Climate Resilient Communities program, commencing in mid-2024**, with an initial value of AUD208.5 million and an initial investment term of five years (2024–29), will provide significant funds to support people in the Indo-Pacific to be more resilient to climate change and disasters. The program will focus on food and water security and energy with co-funding of bilateral programs to Pacific Island countries as well as integrated climate and disaster resilience across the development program.

**Opportunities to expand programs such as the Atoll Food Futures Program to other soil, land and water constrained environments and the PHAMA Plus program to the North Pacific countries and Timor-Leste** and strengthen the program’s focus on addressing climate change and disasters as a core pillar could be explored. Success, lessons and approaches piloted through these models should be built upon.

### Case example | Atoll Food Futures.

Live and Learn Environmental Education’s Atoll Food Futures (AFF) is an Australian aid-funded investment implemented in Kiribati and is supporting vulnerable atoll populations to adopt climate-smart agriculture technologies to improve their food security and reduce the over-reliance on imported food. The four key themes of the AFF project are:

1. Sustained use of affordable water efficient technologies and designs.
2. Local food economies with consistent input supply chains.
3. Improved diet quality.
4. Increased consumption of locally grown foods.

AFF activities include installing 160 Biofilta Foodcubes (large tubs routinely filled with fertile soil and compost) and 160 keyhole gardens (raised garden beds with a composting area at the centre, that are usually circular with a path cut out to the central compost unit) and upgrades to the nursery and compost house in South Tarawa. Seed, root vegetables and tree cuttings were provided for the community and compost and seed saving training was conducted for households and stakeholders. Water tanks and pumps were installed, to share between targeted households.

Recent research explored how AFF was supporting the resilience of a community in Kiribati. Nine participants of the AFF project described how Foodcubes enabled them to grow fruit and vegetables, because growing directly in soil was becoming increasingly untenable due to salinity. Participants also described emerging transformative actions they had taken as a result of AFF. A woman was selling some of the cabbages she grew in a Foodcube to a local Chinese restaurant, with her family consuming the remaining cabbages. Other AFF participants noted how the vegetables they grew and ate made them feel healthier, and selling some of their produce enabled them to purchase necessary household items, and also save money as well. Participants noted their improved knowledge and skills in climate resilient farming; access to Foodcubes and seeds through the project; improved awareness of nutrition; and increased income generation and savings from growing food through the project.



### Further reading:

Please visit the resources section of [ClimateWise](#), to access a range of knowledge products including the Farmer Training Modules, a report on the Fiji Taro Climate-smart Demonstration Farms, and research on Climate Impacts on Pacific Water Security and Water Resource Management.

