



Photo: Econnect Communication

## Building resilience

This document is intended for decision-makers across the Pacific with an interest in community-based adaptation to climate change, protecting local land and marine resources, and development.

The Australian Government's **Pacific Adaptation Strategy Assistance Program (PASAP)** brought together traditional and scientific knowledge and practices to assess the vulnerability of remote communities and their natural resources to climate change in Solomon Islands.

**Threatened:** Roviana homes built along lagoon coastlines are at risk of being flooded by storm surges and rising sea levels.

## Adapting to climate change in remote Roviana

Solomon Islands is made up of 992 islands. Small towns and remote villages, such as those in Roviana in the Western Province, are dispersed along extensive and remote coastlines.

The 17,000 people of Roviana, like those of many remote Pacific island populations, are custodians of the land and sea. They have been sustainably using the marine- and land-based resources for thousands of years.

However, the region's population is increasing and land and marine resources are dwindling. Commercial logging and fishing activities are growing. At the same time, less value is being placed on the traditional subsistence lifestyle.

Researchers gathered the knowledge and observations of the people of Roviana to understand how the impacts of climate change will also affect this remote region of Solomon Islands. The people have reported that:

- » coastal homes are being flooded by high tides
- » rainfall and wind are more erratic
- » fish stocks are declining and mangroves are dying
- » plant pests and diseases are increasing, and crop yields declining
- » temperatures during the day are too hot to work in the gardens.

Community-based adaptation options have been tailored to address the issues of most importance to the people of Roviana.



Photo: The University of Queensland

## Threatened resources



Photo: The University of Queensland

**Threatened:** Commercial logging in Roviana catchment areas is degrading the water quality of the Roviana lagoons. Logging causes increased erosion, which means more sediments and nutrients wash into waterways.

### Why action is needed on climate change

Climate change in Roviana means rising sea levels, higher air and sea temperatures, changing rainfall patterns, and more intense tropical cyclones.

Four specific climate projections have been identified for the Roviana region:

1. **Higher sea levels:** Sea levels in Solomon Islands are projected to rise 5–15 centimetres by 2030, and 20–60 centimetres by 2090. Some villages in Roviana are low lying and a sea-level rise of 50 centimetres will result in at least 50 per cent of their land being flooded.
2. **Higher air temperatures:** In Munda—a semi-urban centre in the Roviana region—annual temperature records from 1963 show that the mean, minimum and maximum temperatures have increased by 1°C, and are projected to continue to rise.
3. **Higher sea temperatures:** By 2050, the sea surface temperature is projected to increase by 1°C. It is projected that by 2045, the threshold acidification for healthy coral will be exceeded.
4. **More erratic and extreme rainfall:** Average annual rainfall will increase only slightly, but will occur in more intense events. This will cause more flooding, erosion, and washing of topsoil sediment into the lagoons.



Photo: The University of Queensland

**Threatened:** Coral reefs protect coastal and marine biodiversity and provide habitat for a primary food source. Reef fish make up 60 per cent of marine food consumed in the Roviana region, and are an important source of protein.

### Traditional know-how + science = more resilient communities

Research in Roviana undertaken as part of the Australian Government's Pacific Adaptation Strategy Assistance Program (PASAP) has found that both the environment and people are vulnerable to the effects of climate change.

By using existing community networks and traditional know-how, plus some simple tools and practices of modern science, the resilience of the environment and the people can be strengthened.

A local organisation, the Roviana Conservation Foundation (RCF), has been instrumental in working with PASAP researchers to consult communities about their concerns and ideas for strengthening adaptive capacity.

Being a local organisation, RCF was able to ensure communities were engaged in a respectful and productive manner.

RCF staff, traditional leaders and the broader community were actively involved alongside researchers during the assessments.

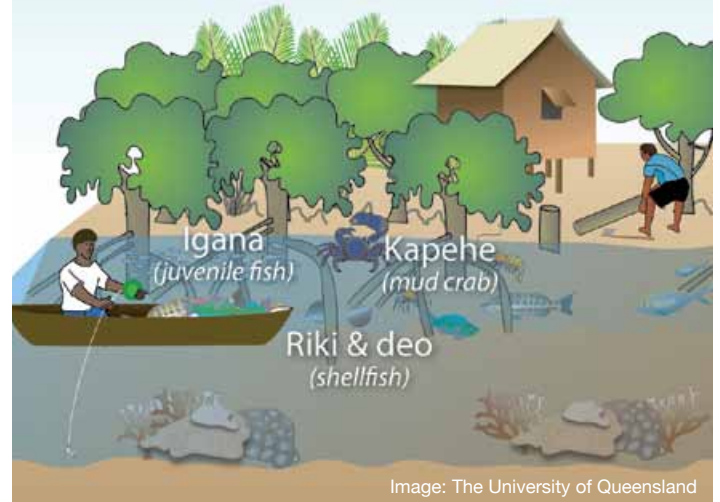
This participation yielded a rich exchange of information in both directions, helping the people of Roviana understand and respond to climate change.

## Petupetuana lopu toa va leana (degraded mangroves)



**Threatened:** Mangroves are important for stopping erosion and providing homes for fish, as well as providing building materials for communities. Mangroves are being degraded by human and natural activities.

## Petupetuana pu toa va leana (healthy mangroves)



**Solutions:** Researchers have published a booklet using local language and illustrations to explain why and how the Roviana communities should protect their natural resources.

## Simple tools to build local knowledge

A key activity that is helping Roviana people understand how sea-level rise will impact their communities is land-based surveying.

Dr Simon Albert, research fellow at The University of Queensland, says: 'Sea-level rise is one of the critical threats that communities across the Pacific are facing. Communities don't have a good understanding of exactly when they will be inundated—are they 50 cm above sea level or are they 200 cm above sea level?'

He developed a unique surveying tool that allows remote communities to calculate which areas of land will be flooded by sea-level rise. This will help people plan new developments and building relocations.



**Illustrating:** Overlaying sea-level rise data onto maps of the Roviana region allowed local communities to recognise how their homes may be impacted by climate change.

## Communicating climate science

Researchers used maps to present the complex climate data and illustrate to communities how the impacts of climate change might affect their local area.

The maps were presented at village workshops, which provided further opportunities for communities to have input into the resilience-building activities.

A booklet has been produced that outlines the results of the research and actions that the people of Roviana can take to build their resilience. It is published in the local language and uses colourful illustrations to make it accessible and engaging.

After being involved in the project from start to finish, some activities which the communities are now undertaking, include:

- » replanting mangroves and corals
- » redesigning marine protected areas to increase connections between marine and coastal environments
- » establishing demonstration sites for new crop varieties
- » distributing new resistant varieties of staple crops
- » constructing seawalls to protect trees and houses
- » documenting the traditional knowledge of communities
- » holding regular meetings within community groups to raise awareness of climate change and resilience-building activities.

These actions were developed by scientists and Roviana people working together, showing that climate science combined with local knowledge and community-driven action can successfully build resilience to climate change.

## Adaptation options



Photo: The University of Queensland

**Solutions:** Dr Simon Albert, research fellow at the University of Queensland in Australia, developed a simple and inexpensive method for the people of Roviana to calculate which areas of their land are vulnerable to flooding by sea level rise.

## Actions to strengthen communities and the environment

A five-year *Roviana Climate Change Resilience Plan (2013–2017)* has been developed following the research in Roviana. The Roviana Conservation Foundation is overseeing the implementation of the plan.

The plan outlines six actions to build resilience against the impacts of climate change:

1. strengthen governance and leadership
2. maintain the health of ecosystems
3. enhance food security
4. protect coastal infrastructure, such as houses, gardens and sea walls
5. build capacity and awareness
6. develop partnerships.

The people of Roviana have taken ownership of the Climate Change Resilience Plan and are now implementing actions to strengthen themselves and their environment.



Photo: The University of Queensland

**Solutions:** Children harvest Ngali nuts and learn traditional bush-food skills to strengthen their knowledge and skills. These skills will help remote communities adapt to the social and climate changes that are happening in the Pacific region.



Photo: Econnect Communication

**Solutions:** Solomon Islands' Kastom Gaden Association promotes organic cropping with farmers through a mix of newsletters, public events and high-frequency radio. This illustration of the 'seed-saving cycle' is painted on a wall of the association's office in the Solomon Islands capital, Honiara.

## More information

The Australian Government's **Pacific Adaptation Strategy Assistance Program (PASAP)** assisted 15 Pacific island countries to assess their vulnerability to climate change and incorporate adaptive measures into planning and development.

For further information on Solomon Islands community resilience or other PASAP projects, go to [www.tiny.cc/t5axxw](http://www.tiny.cc/t5axxw) or contact [InternationalAdaptation@climatechange.gov.au](mailto:InternationalAdaptation@climatechange.gov.au)



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