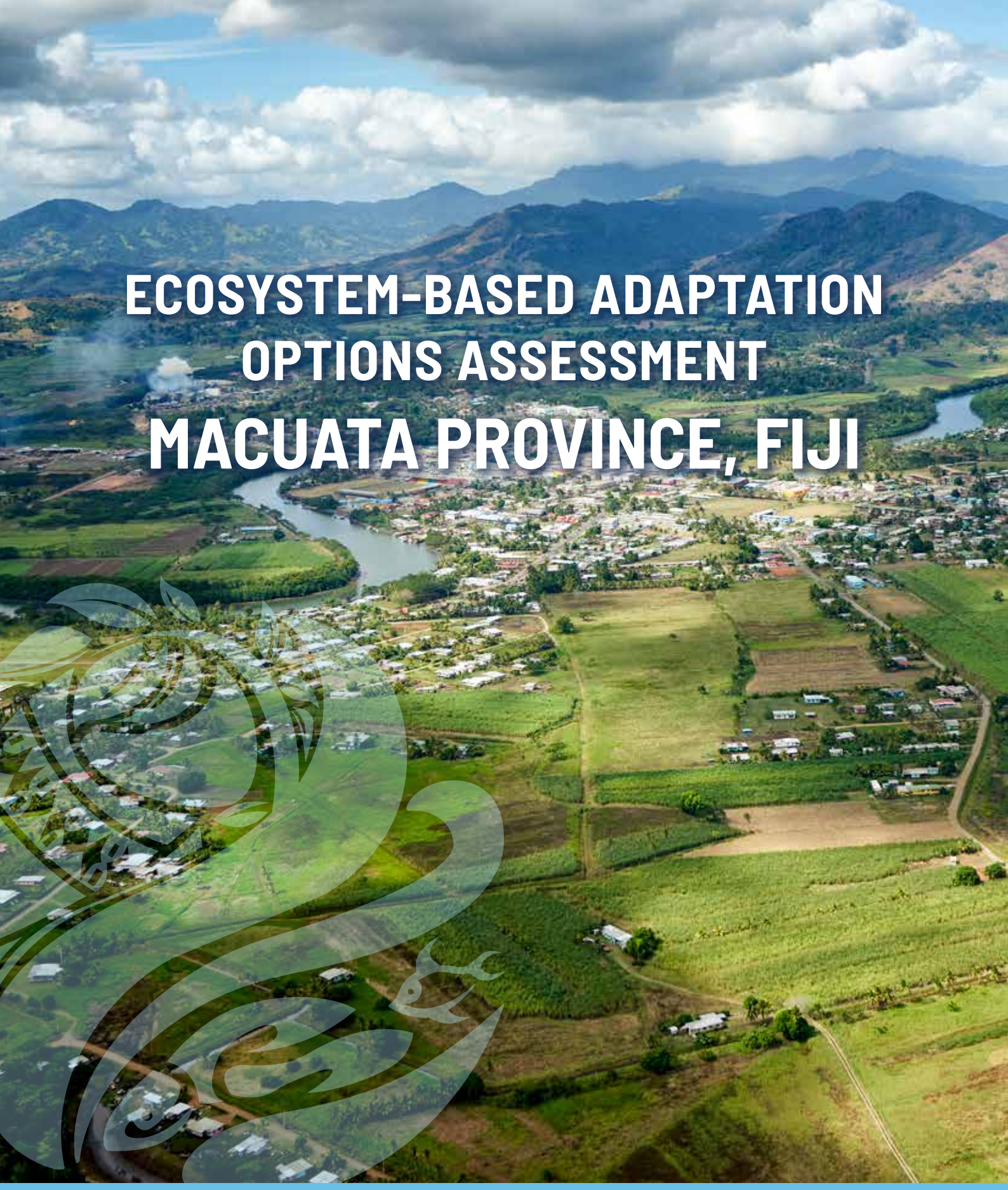

ECOSYSTEM-BASED ADAPTATION OPTIONS ASSESSMENT

MACUATA PROVINCE, FIJI

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SPREP's vision: The Pacific environment, sustaining our livelihoods and natural heritage in harmony with our cultures.

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ECOSYSTEM-BASED ADAPTATION OPTIONS ASSESSMENT

MACUATA PROVINCE

A report prepared by the Pacific Ecosystem-based Adaptation to Climate Change Project (PEBACC)

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CONTENTS

ACRONYMS

BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
EbA	Ecosystem-based Adaptation
EIA	Environmental Impact Assessment
ESRAM	Ecosystem and Socio-economic Resilience Analysis and Mapping
GSR	Great Sea Reef
IKI	International Climate Initiative
MPA	Marine Protected Area
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
NRMS	Natural Resource Management Strategy
PEBACC	Pacific Ecosystem-based Adaptation to Climate Change
SPREP	Secretariat of the Pacific Regional Environment Programme
WWF	World Wide Fund for Nature

GLOSSARY

Cakalevu	Great Sea Reef
Qoliqoli	traditional fishing grounds
Tabu	forbidden, usually with respect to use or approach
Tikina	district; provincial sub-division

EXECUTIVE SUMMARY

This project identifies two Ecosystem-based Adaptation (EbA) options that are organisational tools to strengthen the ability of the Government of Fiji to manage for the resilience and diversity of ecosystem services over time. This document is the second of a series, following a background Ecosystem and Socio-economic Resilience Analysis and Mapping (ESRAM) document that identifies key vulnerabilities associated with ecosystem services. This document serves to address those vulnerabilities within the context of governance and planning to inform future policy for Macuata Province. A third document (Macuata Province EbA Implementation Plan) provides details on the implementation considerations associated with the EbA options discussed here.

Key vulnerabilities are addressed in this document by building on pre-existing momentum and capacity within government, the NGO community, iTaukei landowners and leadership, industry and others to help to centralise management toward sustainable outcomes. Working with stakeholders, two EbA options were considered, each having merits and similar goals. These EbA options are briefly described below.

1. **Review and update of the Macuata Province Natural Resource Management Strategy (NRMS).** This builds on prior work and current capacity to help guide a central natural resource strategy for Macuata Province that incorporates ridge-to-reef, connected landscapes to directly address resource vulnerabilities, and allows for coordination across sectors.
2. **Support large-scale resource conservation of marine resources by supporting the Great Sea Reef management, including a Ramsar designation and development of appropriate management plans.** This extends to marine management in the Qoliqoli Cokovata area and also includes the terrestrial impact zone.

In addition to the process of developing the EbA options, this document provides background information about the purpose and approaches for each EbA. In addition, three funding scenarios were identified to determine the best use of funding.

1. **Emphasise the NRMS development for Macuata Province.** This would provide most of the funds for the development of the NRMS, bearing in mind opportunities for collaboration and co-support with the management strategy in the Qoliqoli Cokovata as they arise.
2. **Emphasise the NRMS development, highlighting the Qoliqoli Cokovata as a management unit pilot strategy.** This allows for more comprehensive involvement with the Qoliqoli Cokovata management strategy and uses it as a pilot to inform ridge-to-reef management that can be applied to the rest of Macuata Province.
3. **Emphasise the Qoliqoli Cokovata process.** This option provides funding towards the development of the Qoliqoli Cokovata, as well as supporting Great Sea Reef (GSR) designation activities. As part of this process, reporting will be made to Government to advise for key considerations as part of the NRMS update, but will not directly assist with the update.

The second scenario was the selected strategy to best capitalise on ongoing programmes, as well as integrate broader management goals at the provincial level into management of connected landscapes in the Qoliqoli Cokovata management strategy design. There are many synergies with supporting these two projects that can produce higher value at less cost than working individually.

PEBACC will require contracted assistance to conduct the EbA scenario. There is high capacity within the NGO community working in Macuata Province and a strong history of working on such projects. However, there is also a need to increase overall capacity within government and implementing partners to include full ridge-to-reef considerations in restoration or management design, and this project will provide a good opportunity to achieve that goal for terrestrial, freshwater, coastal and marine environments that are vertically integrated among government and community structures.

Specific details of design, cost, feasibility, and other considerations are found in the Macuata Province Implementation Plan.

Local produce at the Labasa market. Small scale and subsistence farmers are directly affected by climate change events such as extended droughts.

1. INTRODUCTION

1.1 THE PEBACC PROJECT

Increased sensitivity of the Pacific Islands to environmental, social and economic change has prompted the need to seek and implement strategies that strengthen communities through interventions that buffer the supply and diversity of ecosystem services. The Secretariat of the Pacific Regional Environment Programme (SPREP) with funding from the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through the International Climate Initiative (IKI) initiated a four-phase project to seek and implement a strategy to strengthen communities through Ecosystem-based Adaptation (EbA) and management activities. The Pacific Ecosystem-based Adaptation to Climate Change (PEBACC) project is focused to identify, prioritise and implement EbA strategies to meet critical needs in three countries (Fiji, Vanuatu and Solomon Islands) at different scales: national, provincial, urban and island scales.

The key objectives of the PEBACC project are to identify what climate change factors and what suite of other circumstantial factors are limiting socio-economic resilience, particularly as it pertains to ecosystem services and the resilience of these services through time, and to prescribe a range of EbA actions that can broaden the range of possibilities for communities through enhancement of ecosystem services.

The major milestones of the five-year PEBACC project are:

1. **Ecosystem and socio-economic resilience analysis and mapping (ESRAM).** Baseline studies to identify vulnerabilities in ecosystem services at different scales to identify needs for adaptation planning.
2. **EbA options assessments.** A range of EbA activities that would build resilience in targeted areas. Options are prioritised based on a range of criteria including benefits, feasibility, durability and cost.
3. **Implementation plans.** A plan of action for deployment of funding and capacity support to be delivered at appropriate scales.
4. **Implementation of EbA options.** Commence activities according to the implementation plans, with monitoring and adaptation where appropriate.
5. **EbA and policy implications.** Synthesis of how EbA activities support community and ecosystem resilience, and successful approaches that should be considered for future policies in the host country and communities.

1.2 SUMMARY OF ESRAM STUDY: MACUATA PROVINCE

Over recent years, there have been increasing social and economic demands on the local natural resources of Macuata Province, in part due to the Government's 'Look North Policy' for major infrastructural developments and increased economic investments that allow for a streamlined development process involving landowners. This has led to an increasing trend of investments in projects such as mining, logging, tourism, agriculture and fisheries across the province. Concurrent with, and perhaps in response to, the boom of activity has been a rise in interest from donor-funded implementing organisations (NGOs, intergovernmental organisations, etc.) that have had a natural resource adaptation focus, largely aimed at the topics of sustainability, conservation, capacity building, and implementing of pilot projects over a range of themes: fisheries, coastal management, forestry, forest carbon, climate change resilience, adaptation, land management, agriculture, and green infrastructure.

Population growth rates in the recent decade have been negative overall (between 6.5 and 17.5 per cent decline), with the decline at least partially due to conversion of agricultural land leases back to traditional landowners, resulting in a displacement of non-iTaukei people from small lot farms, mostly in one of three ways:

Macuata Provincial Officers on an exchange visit to the Ra Province. The PEBACC project is building on existing efforts toward integrated natural resource management.

migration to Suva, migration to find agricultural solutions elsewhere (including Taveuni Island[1]), or consolidation into local, informal settlements in Macuata Province. These informal settlements are often located along the major transport routes, including the rivers and roadways, and are expanding into native forests, mangroves, and critical riparian areas. These settlements lack basic services, including access to clean water, wastewater treatment or disposal, and protection from climate extremes (e.g. flooding, drought). Rural drift in search of subsistence livelihoods is widely distributed and extensive in the province, particularly in low-lying areas, and is a primary source of environmental degradation that affects terrestrial, aquatic, and marine resources.

A recent and ongoing study by the Fiji Government Climate Change Division gauged the perceptions of villages throughout the province on topics such as ecosystem health, institutions and governance, financial and human resources, and the community's capacity to adapt and respond to past, present and future disasters and climate extremes. Included with ecosystem health were issues ranging from forest health, coastal ecosystem integrity, and watershed health with the perspective of short-term and long-term livelihoods. Categories were ranked on a scale of one to five, with one indicating community resilience at its lowest, and five at its highest. Overall, communities in the 99 villages surveyed gauged the capacity of their environmental resources at a mean value of 3.07 and a range of 2 to 4.75. There was generally poor agreement among communities about primary concerns for environmental resilience, but community perception for ecosystem health, watershed health and coastal resource health scored slightly below average (~2.5) in providing for future ecosystem services.

Most households in Macuata Province are subsistence-based, depending heavily on ecosystem services for water and food provisions, shelter, income generation and overall health and well-being. The ability of

[1] See PEBACC reports for Taveuni.

these ecosystems to continue to provide essential services is decreasing through activities such as small- and large-scale agricultural production, degradation of water bodies in marine and freshwater areas, and over-exploitation of marine, soil and forest resources.

Many traditional Fijian villages are located along riparian areas within watersheds or distributed along the low-lying coastal zone. As climate extremes increase in intensity, frequency, distribution and magnitude, detrimental impacts on local communities and economies of Macuata Province are anticipated to increase.

Climate change outcomes that are projected to have the broadest impact on ecosystem services are an increase in air and sea temperature and associated ocean acidification and coral bleaching, an increase in extreme rainfall events (storms and droughts), and sea-level rise.

Vanua Levu has experienced several recent climate change events, including extended drought periods, which greatly affected access to drinking water and subsistence agricultural production. Small farms have been unable to meet demands in local markets, resulting in loss of revenue for families and shortages in diversified diets. In the past few decades, Fiji has been affected by multiple devastating cyclones. In 2012 alone, Fiji experienced two major flooding events and one tropical cyclone (Evan), and frequent flooding events have affected Labasa and other low-lying areas on many occasions in recent years. The effects of natural disasters in Fiji are far-reaching and negatively affect agriculture, housing, transport infrastructure, tourism and primary industries, among other sectors.

Increased intensity and duration of climate extremes has greatly affected the urban areas and local economies, and has largely resulted in 'reactive' rather than 'proactive' management responses to mitigate the effects.

The marine environment is bound by the Great Sea Reef, locally known as *Cakaulevu*, the third largest continuous barrier reef in the southern hemisphere, and provides substantial fishing resources to Macuata Province.

The traditional fishing grounds *(qoliqoli)* provide for roughly 75,000 people in the province, many of whom are rural, indigenous and spread across 37 villages; approximately 4,000 people live adjacent to their *qoliqoli*. Over time, the Macuata *qoliqoli* have been exposed to increasing fishing pressures from both local subsistence and Labasa- and Suva-based commercial fisheries operators for export, largely to Suva.

For many years there has been significant outside project support to work with communities, the government, and industry to increase scrutiny of fisheries practices. These have included the establishment of no catch *(tabu)* areas, monitoring strategies, and marine protected areas. Regulation of fisheries resources in any context represents significant challenges, including managing for subsistence, traditional ownership, rights to local control and self-regulation, government capacity and enforcement, and adjustment to national priorities, among others.

The most critical issue facing coastal and marine ecosystem services is over-exploitation of reef fish and marine invertebrates. Fiji is at a critical juncture in policy implementation to preserve coastal and marine ecosystems and increase their resilience to climate change and human uses. Excessive harvesting of fish and invertebrates combined with pollution, soil erosion, and land-based run-off (sediment, wastewater, etc.) has led to a degraded marine habitat state, and has created a crisis in Fijian fisheries.

Communities are highly dependent on local marine resources for subsistence. Overfishing is prevalent and on the rise in both near-shore and deep-water fisheries. Sea turtle nesting has declined dramatically, giant clams are locally extinct in most places and two species no longer occur in Fiji, and large and important near-shore fish species are now uncommon.

In response to this crisis, the Ministry of Fisheries recently committed Fiji to the protection of groupers and coral trout at the worldwide United Nations Ocean Conference in 2017, by way of fishing bans, market bans during spawning season, and habitat protection via marine protected areas. Inclusion of the Macuata Qoliqoli Cokovata as a protected site under the Ramsar Convention on Wetlands of International Importance is under way, with local traditional management to also include fishing bans, better regulation and monitoring.

These important steps are critical in staying the decline in fisheries and marine health and thereby improve the ability to adapt to climate extremes and population pressures.

Management for ecosystem resilience at the provincial scale has emerged in recent years with the development of a Natural Resource Management Strategy (NRMS) for Macuata Province, which provides for consolidating action items to build capacity and improve ecosystem services.

However, the capacity within the local provincial government has experienced many challenges, including integrating best management practices across sectors, provision of human resources and funding for operating and implementing the plan, and management of connected landscapes that fall under other provincial or local *tikina* jurisdictions.

PEBACC project goals for Macuata Province during the ESRAM and EbA development process were to identify pathways for natural resource management decision-making that include ecosystem resilience as a primary objective. Specific goals toward enhancing ecosystem services include:

- build on existing efforts toward integrated natural resource management by supporting government;
- increase cross-sector capacity to design and review projects that have sustainable outcomes;
- increase capacity to make long-term conservation management of marine, coastal, freshwater and terrestrial ecosystems;
- include management for connected landscapes to identify and manage for cumulative negative effects of multiple activities; and
- increase the durability and diversity of choices for communities through long-term investment into ecosystem service capacity.

Specific ecosystem services considered include:

- **forest health and extent –** expand native forest into abandoned agricultural lands in high elevations;
- **soil productivity** – create diverse agro-ecological systems, particularly on marginal lands, by changing agricultural and agroforestry practices;
- **riparian function** – attenuate terrestrial run-off to the marine environment;
- **biodiversity** – expand forest conservation, native forest restoration, reforestation, decrease in fragmentation, invasive species monitoring, and diversity in agricultural systems;
- **storm surge protection** – enhance coastal ecosystems, where appropriate, including expansion of mangroves;
- **attenuation of flood events** – enhance riparian zones, mangroves, and upland forests;
- **improvement of water quality** – improvements and best management practices of road construction and maintenance, wastewater treatment, stormwater management, and chemical applications;
- **freshwater sustainability** – protect and expand high elevation forests to slow run-off and increase cloud and rainwater infiltration to groundwater supply;
- **sustained food supply** – protect marine resources, improve habitats, develop aquaculture, and diversify crops; and
- **sustained income and independence** – shift reliance on income from cash crops to diversified investment that enhances ecosystems.

2. DEVELOPMENT OF EBA OPTIONS

2.1 APPROACH AND OVERVIEW OF EBA DEVELOPMENT PROCESS

The central approach to developing EbA options for Macuata Province was to gain an understanding of the key ongoing and successful initiatives that are operating in the province, and build on pre-existing efforts. The focus is on government's capacity to manage resources in connected landscapes, to help organisations guide how the many types of planned activities can include elements of protecting and enhancing ecosystem services, and to build long-term resilience into management decision-making at high political levels. These are not site-specific options, rather organisational processes that can protect, enhance, or mitigate for ecosystem services at risk, as well as building diversity and long-term supply of ecosystem services for the future. As part of the PEBACC process, several tasks were performed to best understand and develop EbA options. These tasks included:

- meetings outlining the ESRAM findings;
- meetings and workshops with government stakeholders to identify constraints and how decisions are made within and among agencies;
- meetings and workshops with government stakeholders in Cakaudrove Province to address landscape management in areas that are shared with Macuata Province;
- prioritisation of methods to approach resilience in decision-making;
- workshops, interviews and meetings to identify key strengths and challenges in managing ongoing projects, plans and regulatory issues;
- site visits across the province: major and minor streams, coastal areas, mangroves, water sources, native forest areas, road networks, sugarcane plantations, commodity markets, energy and processing infrastructure, etc.;
- GIS and data reviews, where appropriate; and
- events, meetings and workshops with NGOs and other operators working on large and small donor-funded projects in the province.

Interviews and meetings were held at the national level in Suva, the University of the South Pacific, at key ministry offices, headquarters and field offices of NGO implementation partners, and Fijian consultants who work across Macuata Province. These provided an overview of the provincial landscape and status of ongoing initiatives and helped to narrow the EbA options to be considered. Additional meetings with government and organisational entities in Savusavu were conducted to better understand the capacity of Cakaudrove provincial management to work across provincial boundaries in connected watersheds of Vanua Levu. Labasa served as a focal point for interviews, meetings and workshops with provincial government officials, ministry representatives, NGO organisations and key partners. Workshops were generally small in size, and were conducted as working meetings to discuss the roles and responsibilities of each government agency or partner, and to gain insight into the structure and cross-sector collaboration to address common issues. Interviews with implementation partners also added insight into the longevity and durability of projects completed, different approaches yielding different outcomes, and the level of 'vertical integration' among national-divisional-provincial-community connections that have been made over time.

Site-specific field trips were conducted for rapid surveys of issues affecting water quality, riparian zones, native forests, connected road networks, settlements and farming practices, coastal zones including mangrove areas, marine protected areas, and projects being conducted within the province. Interviews with farmers, fishers and citizens of the province aided in identifying constraints the communities have to implement longer-term investments in ecosystem services, and shed insight on what PEBACC could ultimately support at the provincial scale. Of importance was confirming the trajectories of change associated with land tenure, farming and fishing and estimating the trends in ecosystem function. These helped to provide realistic backstops for

what types of activities can be implemented at the provincial scale to benefit communities and individuals through reinforcing the roles of central government. The size and inaccessibility of much of Macuata Province meant that not all portions of the province were visited, but the catchments most familiar with Labasa-based staff were prioritised in the field review.

2.2 STAKEHOLDER CONSIDERATIONS: EMERGING THEMES

The inquiry identified a number of dispersed and 'stand-alone' (e.g. pilot) projects occurring across the province, mostly operated by consulting entities, the NGO community, or other donor-funded implementers. During the past ten years, a large number of international organisations appeared on the Macuata landscape. While many pilot projects have been initiated, there has not been a commensurate increase in conservation success at the provincial scale, nor have there been clear and widespread elements of coordination between multiple projects and inter-provincial government collaboration for management across catchments, or within a single catchment. Typically, it appears that communities and government entities see projects come and go, depending on the focus of implementing entity, shifting governmental priorities, and limited provincial government resources. Hence, long term capacity-building towards resilience in ecosystem services at both the government and community levels is elusive.

For those projects that are successful at local scales, sustainability and project durability (e.g. project persistence after the project funding lifetime) has been difficult. This is due in part to:

- shifting priorities from funding sources, implementation goals, national circumstances, etc.;
- a lack of local ownership, engagement or linkages from the community to the provincial and the national levels;
- absence of a clear, cross-sector and centralised strategy or framework to guide the need, placement, and implementation of projects, as well as limitations for government resources to operate;

A barge carries sand on the Labasa river, Macuata province. The design of the Macuata EbA options recognised the need to address the challenge of political boundaries in connected landscapes for successful ridge-to-reef ecosystem management.

- low institutional capacity at the government level to operate both laterally (inter-agency) and vertically (community-province-division-nation) to consolidate community needs with direct placement of actions to meet long-term goals; and
- low or compartmentalised placement of coordinating staff and absence of operating budgets to be effective in centralised cross-sector management in the government structure.

Planning documents, particularly an important Natural Resource Management Strategy (NRMS) for Macuata Province, have been in place over the past few years and have provided a key resource for the direction of adaptive management currently under way. Options in the NRMS were identified for specific tasks that can help to minimise environmental impacts as well as mitigate or enhance current resources. These actions are identified and intended to be applied on a case-by-case basis, or specific actions by specific agencies to strengthen capacity. The Ministry of iTaukei Affairs and the Ministry of Environment were largely operating as a focal point out of offices in Labasa in the implementation of the strategy, with development support from the World Wide Fund for Nature-Pacific (WWF-Pacific). A key asset of this strategy includes the increased awareness of managing to meet long-term goals, and additional refinement towards resilience of ecosystem goods and services. However, the ability to be autonomous and have cross-sectoral and inter-provincial access has emerged as a limiting factor to have widespread effectiveness. The NRMS is described as a working document, and there is good opportunity to build on past awareness-building to strengthen the strategy to include managing for resilience and provide central mechanisms for governance at the divisional level to transcend sectors and political boundaries.

Several themes emerged from stakeholder inputs and interactions, defining specific needs:

- a need to link ecosystem-based functions with the socio-economic and political landscape – managing for natural resources as an investment into the future requires time, resources and change in behaviours to create more choices;
- a need to track, monitor and link ongoing projects of all types with a context of resource use, potential community confusion, and conflicting missions;
- a need to identify, map, quantify, address, mitigate and geographically bind the cumulative effects of projects in an ecological and social context;
- a need to address the challenge of political boundaries in connected landscapes for successful ridge-to-reef ecosystem management;
- a need to cross ministerial mission boundaries to address environmental concerns across disciplines, especially for projects not requiring fully developed environmental impact assessments, through use of best management practices (such as maintaining stream buffers in road maintenance projects).
- a need for centralised planning resources, or a multidisciplinary task-force to increase awareness of actions to ecosystem services, and make these available during the planning and implementation process for all proposed projects or interventions; this includes an autonomous operating budget for outreach;
- a need to organise outside donor-driven projects so that common mission goals are met in meaningful ways, and all work to increase durability of projects and build long-lasting environmental awareness and choices for communities – 'smart investment' strategies to yield long-term dividends;
- a need to localise management and oversight obligations to increase capacity and ownership, while still managing cohesively for ecosystems; and
- a need for community organisation to prioritise and address their own resource concerns, allowing for clear linkages to have community concerns emerge laterally and vertically through the political structure (inter-agency and community-district-provincial-divisional-national structures).

To address these needs at the provincial level, organisational EbA options have been made to identify strategies and frameworks to guide and reinforce resilience of ecosystem services to individual choices and decision-making and climate extremes. These options sought to strengthen pre-existing efforts where possible, to maximise current awareness campaigns and build on strengths of existing capacity.

2.3 EBA CRITERIA AND PRIORITISATION CONSIDERATIONS

The following objectives were identified as priority considerations in EbA option design to strengthen the role of government in natural resource management:

- Emphasise organisational and planning issues and build on and strengthen existing plans.
- Manage for connected landscapes, regardless of administrative boundaries.
- Encourage cross-sector and vertical integration of stakeholders and decision-makers.
- Address issues affecting ecosystem services in terrestrial, freshwater, coastal and marine environments.
- Address resource management constraints that ultimately increase supply and the diversity of supply of ecosystem services over time.
- Increase diversity of choices that can be made through time to address social, political, economic changes, through human-caused or climate-related extremes.

Tree seedlings ready for replanting. Korotari nursery, Labasa, Macuata province. PEBACC is supporting replanting efforts in the province.

Funding scenarios were based on a set of prioritisation guidelines that produced the highest efficiencies of several factors. These qualitative factors include the following to determine the best fit for PEBACC objectives, leveraging ongoing partnerships:

- **Tangible benefits provided**. Project outcomes that directly translate toward building resilience in ecosystem services and capacity to increase ecosystem services through time.
- **Timing of delivery of benefits**. The length of time required before tangible benefits are realised.
- Duration of benefit delivery. The timeframe the project will provide or contribute to tangible benefits or tangible outcomes that move toward those benefits.
- **Durability of project**. The permanence or resilience of the project to social, political, or environmental changes and the likelihood of the project persisting beyond the PEBACC lifespan.
- **Feasibility to conduct**. The awareness, capacity, stakeholder engagement, and external factors that constrain the project's success.
- **Startup efforts, dependencies and synergies with ongoing activities**. The efforts and resources required to initiate the project and become more autonomous, including PEBACC staff capacity to implement directly.
- **Cost of the project**. Costs associated with implementation, and certainty of costs (e.g. open-ended or finite delivery).
- **Contribution value**. How deployment of PEBACC funding will have substantive impacts toward the project goals (e.g. is funding critical or diluted by pre-existing projects).

2.4 EBA OPTION GOALS AND UTILITY FOR GOVERNMENT AND PARTNER ORGANISATIONS

Organisational EbA options presented here are designed to have utility across a wide range of natural resource management objectives and missions that are ongoing and are potentials for implementation in the future. The breadth of scope of the EbA options should have utility to inform or support missions within Macuata Province that include the following objectives:

- food security;
- water security;
- avoiding desertification;
- avoiding deforestation and degradation;
- carbon offsets or sequestration;
- conservation of biodiversity;
- wetland conservation;
- invasive species management;
- certified sustainable timber supply;
- ecotourism;
- disaster risk management;
- marine conservation;
- agricultural enhancement;
- green infrastructure;
- aquaculture industry;
- non-timber forest products;
- sustainable product markets (cacao, virgin tree oils, handcrafts, certified timber, etc.);
- microfinance; and
- policy and law.

Horses graze on an overgrown plantation, Macuata province. Steep forested mountains are a common feature of the Macuata landscape.

3. ECOSYSTEM-BASED ADAPTATION OPTIONS

To address the needs identified in Section 2.2, the following represent over-arching goals for EbA at the provincial scale, and are incorporated into their design.

- **Increasing management focus toward resilience** through ecosystem-based mechanisms, empowering government and central resources to manage across sectors and political divisions.
- **Employ adaptive management**, where natural resource professionals can identify how actions and mitigations are increasing resilience, and apply working techniques and methodologies to avoid management-related problems.
- **Create opportunities** to allow for individual, community and government decision-making to opt for resilience-based options over activities that degrade or make resources scarce.

To meet these key capacity issues, two major EbA options were developed in partnership with government and partner organisations. They are described in the following sections.

- **Review and update of the Macuata Province Natural Resource Management Strategy (NRMS)**. This builds on prior work and current capacity to help guide a central natural resource strategy for Macuata Province that incorporates ridge-to-reef, connected landscapes to directly address resource vulnerabilities, and allows for coordination across sectors.
- **Support large-scale resource conservation of marine resources** by supporting the Great Sea Reef *(Cakaulevu)* management, including a Ramsar designation and development of appropriate management plans, which extends to focus on marine management in the Qoliqoli Cokovata area to also include the terrestrial impact zone. This project is offered as a subset 'pilot' management area to the NRMS design.

3.1 INTEGRATED NATURAL RESOURCE MANAGEMENT STRATEGY: UPDATE TOWARD RESILIENCE

3.1.1 Background

Over the period 2012 to 2014, WWF-Pacific worked with a broad range of stakeholders and the Macuata Provincial Office to formulate a Natural Resource Management Strategy (NRMS). It was produced in consultation with resource owners, relevant government stakeholders and non-governmental organisations for Macuata Province. The effort was led by WWF, Macuata Provincial Office, the Ministries of iTaukei Affairs, Agriculture, Forestry and Fisheries, Health and Natural Resources, and the Labasa Town Council. The goals of the NRMS were to:

- strengthen sectoral management of natural resources through awareness, capacity building, legislation and empowerment;
- conserve and protect the biological diversity and integrity of ecosystems; and
- promote sustainable development within the province.

Produced in 2014, the NRMS was a valuable strategic exercise, and a necessary step, given the increasing number of developments facilitated under the government's 'Look North Policy', which allows for development initiatives to empower Northern Division citizens in decision-making, largely through improvements to infrastructure, education, and projects to protect natural resources. Macuata Province is experiencing a boom in economic expansion and development, attracting investors to the region, as well as international donors and implementers focused on a range of activities, including natural resource management and adaptation to climate change. Trends in this expansion have led to a direct approach to the

resource owners (*mataqali*, landowner or local level) to implement projects. These groups may not understand or be accountable for the long-term consequences to ecosystem resilience of the proposed developments, especially in contributing potential negative effects to the downstream environment (e.g. 'cumulative effects'). Efforts by iTaukei Affairs and others have been made to incorporate the NRMS principles into project designs, where possible, and there is a general increase in awareness about implementing planning activities using the NRMS.

The current five-year NRMS operates from five thematic perspectives with 18 sub-areas within all themes. The major themes are coarsely described as:

- **biodiversity**, which groups major sub-areas as forest, marine, freshwater, research, climate change and heritage sites;
- **capacity building** for training, awareness, and increase in knowledge, skills and experience of provincial environment officers;
- **sustainable financing** to include sub-areas of fundraising and NRMS trust fund issues;
- **leadership and governance**, with sub-areas to include networking, data gathering, monitoring and evaluation, 'watchdog' (safeguards), and stakeholder engagement; and
- **sustainable economic development**, to include rural development, development plans and greening of local industries.

For each thematic area, the NRMS identifies relevant activities, costs, timelines and lead agencies to service the needs or meet the goals identified. For the past five years, staff at the Provincial Office of the Ministry of iTaukei Affairs has been among the leaders to implement the plan across sectors and increase awareness about the plan.

Direct access to communities, coupled with the need to conduct *measurable* and *results-oriented* projects in relatively short timeframes (one to five years) has led to a 'distributed' method of planning and implementation. Cases are considered with the principles of the NRMS in mind (when applicable), but not necessarily integrated across sectors or geographically linked to manage for increased long-term resilience of ecosystem functions, and ultimately ecosystem services that communities rely on.

While pilot projects have been conducted to varying levels of success, there is a need to organise multiple pilot projects in an environmental context that exceeds project timelines, and provides government and communities with progress toward resilience. There is a need to coordinate activities so that resilience is a goal and progress towards it can be tracked. This will increase the ability to measure overall effectiveness of decades of multiple donor-funded projects on ecosystem service enhancement and stability.

Managing for cumulative effects, through mitigating consequences of human-built systems or through positive outcomes of environmental restoration, is critically important for adaptive ecosystem management.

Where environmental impact assessments (EIAs) are required for larger development projects, the sheer volume of projects proves a major challenge for government officials, especially when linking multiple (and unrelated) projects to assess any cumulative effects. Even smaller projects, such as the design and construction or restoration of a road, are often not consulted across sectors nor are accounted for in cumulative effects analyses to determine any impacts to environmental functions. As an example, road work often involves only the use of an engineer and road planner, without a pathway of consultation with local Ministry of Environment personnel on the design with environmental safeguards in place (such surface grade and buffer widths to riparian or coastal zones, or other best management practices).

Complicating matters is the fact that connected landscapes (watersheds) of Macuata Province are largely shared with other provinces on Vanua Levu (Figure 1, Table 1). Many of the headwater sections affecting the northern coastline and population centres of Vanua Levu are affected by activities that may not originate in Macuata Province, such as logging or mining in upland areas in Cakaudrove Province.

These areas are subjected to different approval processes as well as differences in capacity of personnel and institutions from two different provincial governments. Strategies that transcend political boundaries are required to best manage for ecosystem services, particularly for large-scale issues affecting water quality, water quantity, and biodiversity, and adapting to past land-use practices and climate extremes. As such, housing of an NRMS at the provincial scale is better served through the Office of the Commissioner Northern to be directly available to the lead decision-maker(s).

The current Macuata NRMS, described as a working document, provides a pathway for identifying and implementing activities, including EbA actions, in the province. It is incorporated into the Provincial Corporate Plan and is intended to ensure that developments within the province happen in a sustainable manner so that food security and the livelihoods of people are protected. However, other considerations, such as cumulative effects in connected landscapes, as well as organising principles to link multiple projects with overall environmental and community well-being across provincial boundaries, are needed as part of a plan review and update.

Additionally, there is a need to establish a task force or advisory body with autonomy to advise and support upper level government (e.g. Commissioner Northern's Office) in the alignment of management goals. This EbA seeks to build on the successes of the current plan and capacity to incorporate a broader and more in-depth scope toward managing for ecosystem resilience.

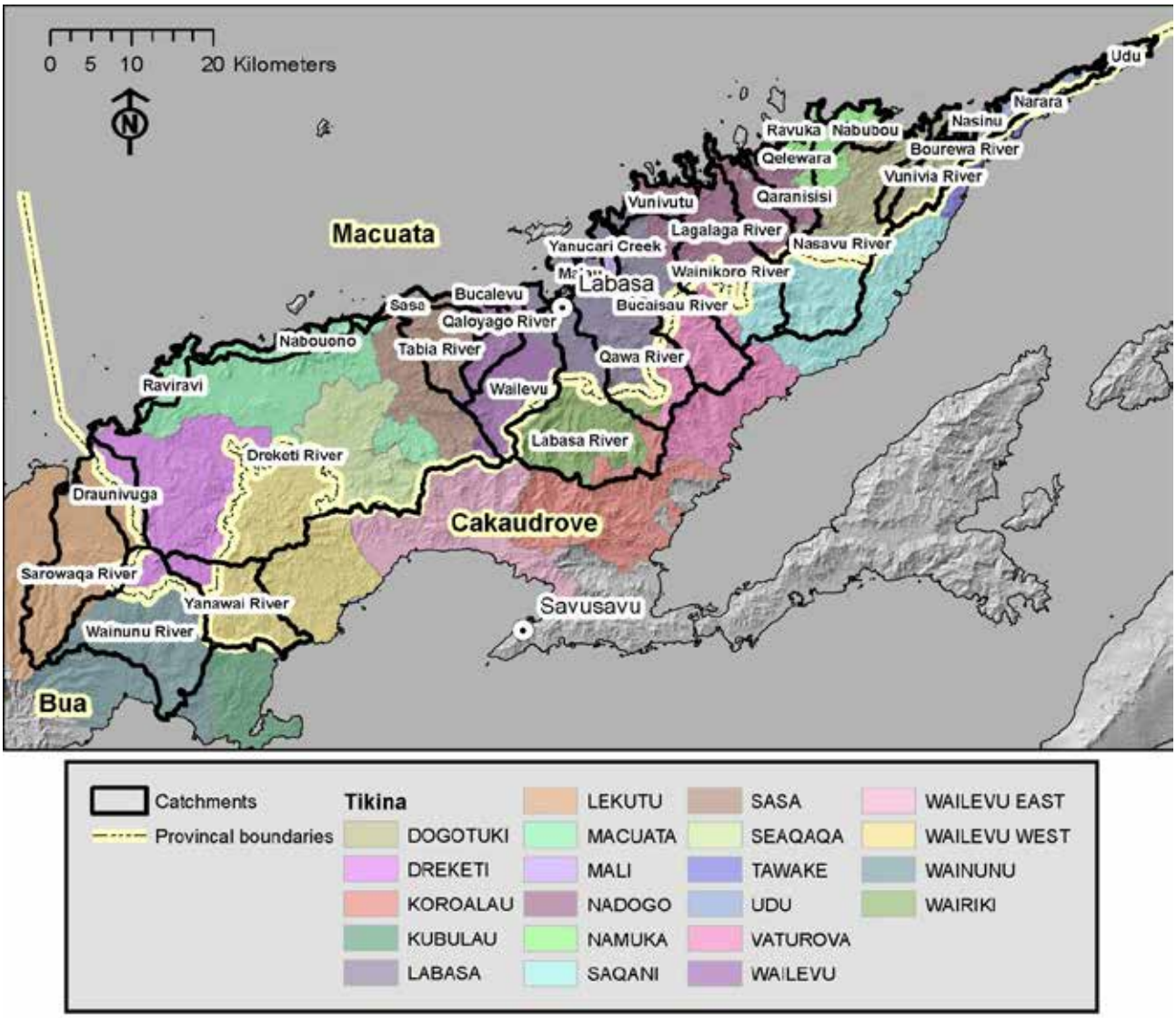


FIGURE 1. Catchments located wholly or in part within Macuata Province.

TABLE 1. Catchment area and proportion of total area by province. Areas with less than 1% of land area is a legacy of GIS analysis and reported here for continuity.

Catchment	Area (km²)	Macuata	Cakaudrove	Bua
Bourewa River	21.4	100%	-	-
Bucaisau River	150.9	54%	46%	-
Bucalevu	9.8	100%	-	-
Draunivuga	58.0	47%	-	53%
Dreketi River	850.5	84%	16%	-
Labasa River	207.3	23%	77%	-
Lagalaga River	61.1	100%	<1%	-
Malau	24.8	100%	-	-
Nabouono	20.1	100%	-	-
Nabubou	27.6	100%	-	-
Narara	32.8	97%	3%	-
Nasavu River	218.8	60%	40%	-
Nasinu	10.8	99%	1%	-
Qaloyago River	41.2	100%	-	-
Qaranisisi	48.6	100%	<1%	-
Qawa River	152.1	66%	34%	-
Qelewara	25.0	100%	-	-
Raviravi	45.3	100%	-	-
Ravuka	15.8	100%	-	-
Sarowaqa River	156.7	2%	-	98%
Sasa	18.8	100%	-	-
Tabia River	76.5	100%	-	-
Udu	11.1	80%	20%	-
Vunivia River	56.8	100%	<1%	-
Vunivutu	40.7	100%	-	-
Wailevu	114.9	96%	4%	-
Wainikoro River	172.0	58%	42%	-
Wainunu River	198.3	16%	<1%	84%
Yanawai River	105.0	18%	80%	2%
Yanucari Creek	16.4	100%	-	-

3.1.2 Purpose and need

The current Macuata NRMS is expiring in 2018. In addition to extending the lifespan of the NRMS, there is a need to identify pathways to build *resilience* in ecosystem management, including EbA that reaches the gamut of activities and outcomes: organisational activities, planning- and policy-related outcomes, the inclusion of capacity building and training, and implementation of specific ground- or sea-based treatments or interventions that yield measurable benefits to ecosystem services.

Identifying critical pathways is important, particularly through project outreach, design and implementation to ensure that resilience to climate- and non-climate changes allow for longevity and enhancement of ecosystem services. As such, the NRMS should be linked by 'management units' to all development activities conducted within the province, including infrastructure, energy, health, and natural resource management. Additionally, the NRMS should take an island-scale approach (with a focus on all connected areas affecting Macuata Province) and organise across provincial boundaries in order to minimise complexities associated with governance and meet the needs and objectives of the Northern Division provinces of Bua, Cakaudrove and Macuata. Measurable outcomes to ecosystem services often require longer timescales to observe, and it is important to have a robust and similarly long-term view of resource planning so that any benefits or unintended consequences are monitored through time.

A key element to a successful NRMS is to establish a pathway that incorporates activities across-sectors and provides the 'port of entry' for projects in the province. Potential conflicts can arise when natural resource-based development projects designed to improve capacity or ecosystem services operate in relative isolation or have conflicting goals. For example, one goal may be to increase food stability by having more farms, while another may have the goal to recover agricultural lands to a more native forest environment in the same timeframe. This situation, as observed elsewhere in the Pacific, may ultimately result in an overall shift to degraded or low productivity lands by swapping forestland with agricultural lands, yielding a net loss of ecosystem services for a given area. Similarly, there is a need for within-government actions that affect land cover or land uses to have an open understanding of how an action – no matter how seemingly small – may result in dramatic and adverse effects elsewhere in the catchment.

Fishing boats along the Labasa river, Macuata province.

Another concern raised by stakeholders is that the sheer volume of interest in implementing projects on specific timelines has tested the government's human resources capacity. Specifically, this has happened in areas where project designs do not coordinate well with other ongoing projects (of all types), and the communities themselves have experienced confusion and general disruption in their daily lives as large projects emerge. Community members may have to spend less time and energy investing in their own resources, causing less efficient ways to meet their daily economic needs (e.g. farming styles, fishing, etc.), which can ultimately result in fewer choices for communities. Furthermore, the longevity of implemented projects tends to quickly shift to the next large project that enters the spotlight, and smaller budgeted projects tend to be overlooked.

Managing for this form of 'project disturbance' is not well understood at landscape scales and is difficult to account for. However, identifying a central process by which actions can be categorically identified, tracked and monitored beyond a project's lifetime would help to stabilise additive forces of change in a measurable, meaningful and practical way. An ideal outcome would be to increase the overall capacity of community choices available and create autonomy, where each project continues to pay dividends (economic, social, ecosystem, community) beyond the administrative lifetime. To achieve these outcomes, communities must want to make the change, must have understood the investments involved, must have directly benefitted from outcomes, and must want to continue the process of building on past successes. A NRMS that identifies and consolidates the clear goals and values of communities in connected landscapes will seek to enhance overall effectiveness and longevity of the process.

3.1.3 Approach

The working NRMS needs to be updated to reflect a reasonable administrative timeframe that is adaptable and addresses increases in supply and diversity of ecosystem services over a range of ecological, economic, social and political timeframes (e.g. 20-year period). A mechanism must be created whereby the NRMS becomes a gateway to implementation of all proposed development projects in Macuata Province by identifying resilience opportunities, and requiring their inclusion as mitigation for proposed development to provide ecosystem and socio-economic benefits.

This EbA seeks to update the NRMS to meet the following key objectives:

1. Form a multi-disciplinary task force to update the NRMS and conduct a review of the current status, trends and lessons learned to incorporate into a new plan.
2. Identify an institutional structure that supports the plan. Coordination should be directly through the office of the Commissioner Northern. This would elevate the profile and ensure that decision-making follows the NRMS, and can inform management and managers where adaptation is necessary.
3. Identify appropriate timeframes that the NRMS should function, based on the ecosystem services targeted and socio-economic, ecological and political timeframes.
4. Identify appropriate sub-catchment, coastal zone, and marine planning units that will serve as the appropriate unit for considering cumulative effects of human- and climate-related stressors.
5. Assemble relevant data sets and identify data gaps in current understanding of ecosystem services and threats at the planning unit level.
6. Assemble and collaborate with representatives of all stakeholder groups within the province and in adjacent provinces where catchments or marine units cross provincial boundaries.
7. Detail lists and costings of appropriate projects at the planning unit scale, along with identification of appropriate development activities that would fund these projects as mitigation.
8. Design and implement a framework for serving as a gateway to all development projects within the province, including potential funding mechanism(s), to ensure that activities are appropriately monitored with dedicated staffing.
9. Report outcomes and strategy updates, including mechanisms for public involvement in the development of the strategy and allocation of funds to support staff for the top administrators.

TABLE 2. Potential PEBACC support to NRMS Update.

Areas of Focus	Macuata Province Integrated Natural Resource Management Strategy Update
Scope	Update Natural Resource Management Strategy
Estimated budget	USD 100,000–200,000
Dependencies and engagements	Government Ministries, NGOs, IGOs, donors, community leaders, industry (tourism, agriculture, forestry, energy)
Synergies	Existing partnerships associated with current NRMS; leverage with ongoing UNDP/GEF ridge-to-reef project in Labasa and Vunavia catchments; incorporate GSR Ramsar, WWF-Pacific

3.2 RAMSAR DESIGNATION AND MANAGEMENT PLAN: QOLIQOLI COKOVATA, GREAT SEA REEF

3.2.1 Background

The Convention on Wetlands of International Importance, also referred to as the Ramsar Convention, is a 1971 treaty devoted to wetland conservation. It provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

The Ramsar Convention is the only global environmental treaty that addresses a particular ecosystem, and covers a broad spectrum of wetlands, including mangroves, rivers, tidal flats, swamp marshes or reefs.

The inclusion of a site in the Ramsar international list shows the host government's commitment to take the steps necessary to ensure that its ecological character is maintained.

Fiji entered the agreement in 2006 and fulfilled an obligation to one Ramsar-designated site, the 615 ha Upper Navua River Conservation Area on Viti Levu.

The Great Sea Reef (GSR) stretches over 200 km along the northern coast of Vanua Levu to the Yasawa Island chain, crossing four provincial boundaries and containing ten *qoliqoli*, or traditional fishing grounds.

In 2012, the entire reef, extending from the coastline to ~15–30 km seaward, was nominated by the Government of Fiji as a Ramsar site designation (Figure 2). The Fiji National Wetlands Steering Committee has agreed to designate the 1,344 km^2 Qoliqoli Cokovata, which covers traditional fishing grounds for the people of Dreketi, Macuata, Sasa and Mali, as the first Ramsar site for the GSR (Figure 3).

Ramsar designation corresponds well with EbA supported by the scope of the PEBACC project. This area was selected because NGOs and communities have been working on sustainable resource management for years, with good local partnerships and histories that provide a natural progression toward Ramsar designation.

Established relationships between WWF-Pacific and communities associated with Qoliqoli Cokovata have formed an active management committee, with sufficient data available to complete the Ramsar application.

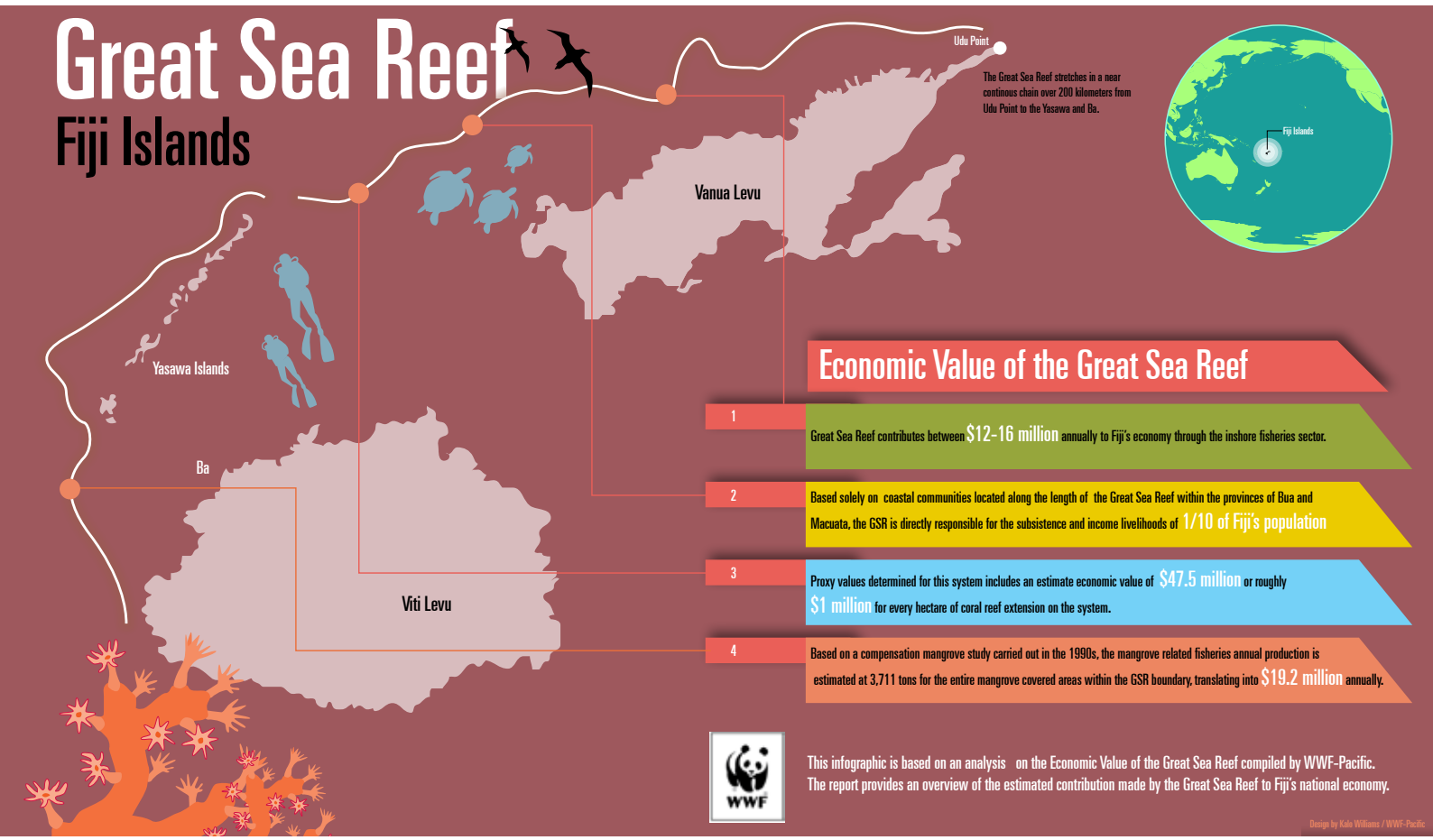


FIGURE 2. Graphic displaying the Great Sea Reef. Source: WWF-Pacific.

3.2.2 Purpose and need

Designating the Cokovata Qoliqoli as a Ramsar site holds the Fiji Government obligated to meet the treaty guidelines, and manage the site so that ecological integrity does not decline. Recommended management actions to ensure ecological integrity for coral reefs under a Ramsar designation are identical to those required to manage for long-term resilience. Following the Ramsar model for conservation is directly in line with PEBACC project desired outcomes to manage for marine ecosystem resilience, including:

- defining no-take areas;
- spatial management such as zoning;
- active management on fisheries catch;
- bans on fishing and collection;
- protection of spawning areas;
- community-based management with stakeholder engagement;
- encourage addressing land based run-off;
- establishment of large marine protected areas; and
- long-term monitoring to include fisheries catch and population health.

FIGURE 3. Map of the Qoliqoli Cokovata focus area as part of a proposed Ramsar site designation, with active tabu (no take) areas identified).

A Ramsar designation provides varied and important benefits, including increased funding opportunities, increased support for the protection of the sites and surrounding areas, and increased scientific and tourism interest. Yet the costs, both financial and in staff time, are significant. Considerable investment is required to facilitate the designation and implementation of Qoliqoli Cokovata as a Ramsar site, including coordinating with the national government, summarising information for the application process, developing a plan of action, and identifying long-term financial support. Ramsar implementation tends to work where activity has ties with multiple regional and international biodiversity efforts, leading to a cumulative implementation. Institutional and organisational complexity can provide opportunities for local actors to drive the implementation agenda through a mix of processes of coordination and facilitation of the science, social and political atmospheres. Multi-level funding sources can also ease implementation costs and ensure stability through time.

WWF-Pacific has identified the actions required to move forward to implement the GSR as a Ramsar site; these are outlined Table 3. The initial step of official Ramsar designation is under way for the Qoliqoli Cokovata sub-area of the GSR: approaching Cabinet for endorsement.

TABLE 3. Identified activities associated with Ramsar classification for Cokovata Qoliqoli and the GSR over the next two years.

Activity	Tasks
Designate Qoliqoli Cokovata as a Ramsar site (Currently underway)	▪ Finalise the Ramsar information sheet and complete the online registration form ▪ Submit the paper to Cabinet for endorsement ▪ Provide continuous support for Qoliqoli Cokovata so that the Ramsar process is implemented properly ▪ Provide documentation of the successes, lessons and challenges faced in the management of the Ramsar site ▪ Communicate these successes, lessons and challenges at all levels to gauge continuous support, advocate policy and adapt accordingly
Develop a plan of action (PoA) to draft the GSR management strategy	▪ Identify tools, activities and processes needed to develop the GSR management strategy ▪ Identify tools and a team of experts and professionals needed to facilitate activities and develop the strategy ▪ Utilise tools such as marine spatial planning, GIS mapping, EBSA process, etc. ▪ Identify important stakeholders and partners needed to help implement the PoA for the development of the strategy ▪ Identify relevant stakeholders and partners needed to help implement the PoA ▪ Identify financial needs to implement the PoA and possible sources of funding ▪ Determine the timeline for implementation of the PoA
Implementation of the GSR PoA	▪ Implement all activities within the PoA using all the identified tools and processes ▪ Document all outcomes from activities conducted
Ramsar nomination of other GSR sites	▪ Identify potential sites along the GSR that can be further designated ▪ Identify a prioritisation scheme to assess suitability for success
Draft GSR management strategy	▪ Engage and consult with stakeholders to draft the strategy ▪ Finalise the strategy with additional consultation ▪ Present the strategy to Cabinet for official endorsement ▪ Develop and implement an awareness campaign to create awareness at all levels and sectors ▪ Identify a national committee to monitor and evaluate the implementation of the GSR strategy

Rainforest, Korotari, Macuata province.

3.2.3 Approach

This project dovetails significantly with the Macuata Province NRMS EbA activity (Section 3.1), and should be closely coordinated.

Given the host of local and international participants in the process to date, PEBACC will act as a contributor to the process to work with the committee to identify specific goals and tasks where support can be given (i.e. Table 3 for Qoliqoli Cokovata) towards a managed Ramsar international site within the GSR. Contributions by PEBACC in both staff time and support funds can be made to further the plan of action and progress of the GSR management strategy through the following potential avenues.

- Support from PEBACC staff and logistical funding to create consensus-based forums for stakeholders to identify and prioritise threats to community and natural resource resilience in Qoliqoli Cokovata.
- Work with ongoing efforts by Ramsar, WWF-Pacific and local stakeholders to strengthen partnerships and advance the project.
- Fund technical support to identify and address near-shore limiting factors, baseline coral reef assessments, mapping materials, and necessary studies to fill any necessary data gaps.
- Integrate the project with the provincial update of the NRMS by managing for upstream direct impacts to the Qoliqoli Cokovata.
- Support a consensus-based process for identifying and addressing the above limiting factors, functioning with the Qoliqoli Cokovata working group.
- Support Ramsar and governmental staff logistics, meetings, and annual reporting requirements.

TABLE 4: Potential PEBACC support to the GSR Ramsar Designation.

Areas of Focus	GSR Ramsar Designation
Scope	Support 2-year strategy
Estimated budget	USD 40,000–200,000
Dependencies and engagements	Qoliqoli Cokovata working group, government
Synergies	WWF-Pacific, Ramsar organisation, local government, traditional owners

A cane truck passes through Labasa town on its way to the sugar mill.

4. PRIORITISATION FOR IMPLEMENTATION

4.1 PRIORITISATION OF PROJECTS

Both projects were developed in consultation with government and active implementing agencies in Macuata Province. The NRMS project is an over-arching management strategy that includes terrestrial, coastal, and marine ecosystems across sectors. The Qoliqoli Cokovata project is a targeted outcome that is aligned with the NRMS and involves the engagement of the same stakeholders in Dreketi, Mali, Macuata and Sasa districts, with specificity to the marine *qoliqoli* area, and additional stakeholders in connected areas outside the coastal zone (e.g. a 'direct impact zone'), where cumulative negative effects may be generated to the impact area.

Given the logistical value, these projects are intended to work in tandem, using a 'top down' and 'bottom up' approach for developing the NRMS via targeted tasks associated with the Qoliqoli Cokovata management plan. This is important, as synergies allow for financial resources to be used for cross purposes to meet the common objective.

The NRMS update is designed to be an encompassing document that elevates natural resource management to the divisional level, and includes all elements of a successful Qoliqoli Cokovata management strategy, but in lesser focus. An analysis of the strengths, weaknesses, opportunities and threats (SWOT) is presented in Table 5.

TABLE 5. SWOT analysis for the two options considered.

	Macuata Province NRMS Update	**Qoliqoli Cokovata Management Strategy in Support of Ramsar Designation**
Strengths	▪ Broadest group of stakeholders engaged ▪ Benefits distributed across Macuata Province and connected landscapes in other provinces ▪ Building on (extending) programme generating momentum ▪ Provides gateway to centralise projects and provide self-sustaining funding ▪ Synergies with other ongoing projects	▪ Implements a clearly-defined need with broad support that is well-understood ▪ Complements other ongoing efforts (e.g. Labasa River R2R project) ▪ Clear resource and resilience benefits to local communities, region and Fiji ▪ Provides opportunity for ridge-to-reef management unit to manage for a direct impact zone ▪ Internationally recognised and meets national goals
Weaknesses	▪ Resource and resilience benefits will take time to observe ▪ Community involvement is relatively limited ▪ More complex management and monitoring due to large size	▪ Highly complex system with challenges in developing unanimous management strategies ▪ Requires inclusion of terrestrial impact zone that exceeds just *qoliqoli* ownership
Opportunities	▪ Strengthening linkages among ministries, NGOs, landowners, and other stakeholder groups ▪ Easy to bring in multiple funders ▪ Solves lack of central authority/regulation of development projects ▪ More long-term environmental impact ▪ Widespread EbA adoption and management more likely ▪ Can influence policy at provincial and national levels	▪ Ties to national priorities on resilience, ecosystem management, tourism ▪ Allows PEBACCC clear opportunity to 'plug in' to a larger well-defined goal ▪ High profile project that has strong momentum
Threats	▪ Enforcement needed to make gateway benefits tangible ▪ Projects may respond to development threats and ignore protection of critical environments ▪ Projects spread too thin among stakeholders to realise effective benefits	▪ Larger global forces (ocean acidification, open ocean fishing pressure, sea-level rise, ocean warming, etc.) may render benefits moot ▪ Potentially less durable due to large-scale social, political, or environmental changes to meet subsistence needs

4.2 SCENARIOS CONSIDERED

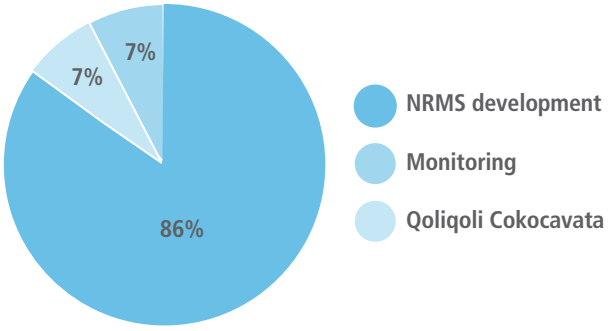
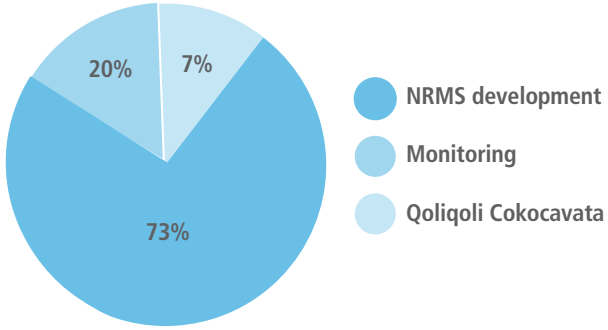
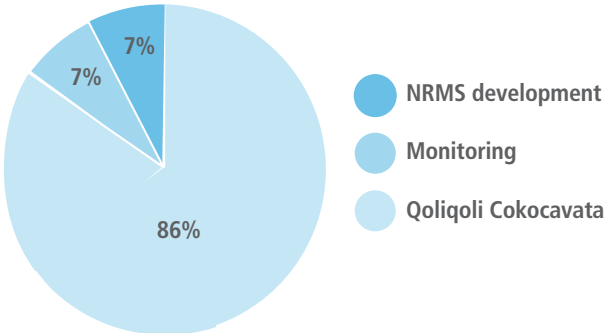
Three scenarios were considered for implementation funding, starting with a budget of USD 200,000. Overall values were determined on the basis of costs of workshops, travel, needs for external consulting or other expertise, etc. The three scenarios considered are presented below and in Table 6.

Emphasise the NRMS development for Macuata Province. This would provide most of the funds towards the development of the NRMS, bearing in mind opportunities for collaboration and co-support with the management strategy in the Qoliqoli Cokovata as they arise.

Emphasise the NRMS development, highlighting the Qoliqoli Cokovata as a management unit pilot strategy. This allows for more comprehensive involvement with the Cokovata management strategy, using it as a pilot to inform ridge-to-reef management that can be applied to the remainder of Macuata Province.

Emphasise the Qoliqoli Cokovata process. This option provides funding for the development of the Qoliqoli Cokovata to advance the project along, as well as support GSR designation activities. As part of this process, it will be important to identify key considerations that may be included as part of the NRMS update. However, this scenario will not involve direct assistance with the update.

TABLE 6. Scenarios of resource allocation for PEBACC implementation of EbAs considered.

Objective	Scenario Description	Budget Allocation
Scenario 1: **Emphasise the NRMS for Macuata Province**	Emphasises the broadest reach to stakeholders in developing a NRMS for Macuata Province. Minor support for Cokovata Strategy or via NRMS development only.	
Scenario 2: **Develop NRMS using the Qoliqoli Cokovata strategy as a pilot management unit.**	Emphasises a province-wide NRMS, using the Qoliqoli Cokovata as a pilot to test management strategies for a direct impact zone unit, then identifies several other units to complete the NRMS strategy.	
Scenario 3: **Emphasise support for the Qoliqoli Cokovata process**	Focus on the Qoliqoli Cokovata process toward an implemented plan, informing government of needs to incorporate into NRMS update.	

4.3 SELECTED SCENARIO

Overall, both EbA options aim to manage for similar goals and have different achievable outcomes. Scenario 2 for implementation funding is deemed the most utilitarian. It minimises potential gaps or disconnects and provides for funds to conduct a full NRMS for the province. It places special emphasis on the development of a strategy for the Qoliqoli Cokovata that meets the NRMS design criteria, especially those for connected landscapes, and will involve inclusion of *tikina* in other provinces in order to be most effective. This scenario will serve as a pilot for developing the NRMS for other mapped units (assume 3–5 mapped units in Macuata Province as aggregates).

Scenario 1 (NRMS only) provides for a provincial NRMS but does not provide the opportunity to link with the development of the Ramsar designation site, which carries a high profile and would help to review and build a sound strategy that incorporates true ridge-to-reef management objectives. There is a risk that an NRMS alone could result in disconnects between the Qoliqoli Cokovata strategy and the greater Macuata-based strategy. This would result in confusion, gaps or conflicting objectives.

Scenario 3 was not selected for similar reasons as Scenario 1, except that the timeline to bring advancement may exceed the timeframe of PEBACC beyond a Qoliqoli Cokovata management strategy. Further, the value to the German Federal Ministry for the Environment may be diluted as the project will likely not show PEBACC's central leadership in the advancement of the plan due to the many actors that have been participating in the process over time.

Given these outcomes, Scenario 2 is determined to be the highest value for pursuing action in the Macuata Province implementation plan.

SPREP

Secretariat of the Pacific Regional Environment Programme