



Pacific
Community
Communauté
du Pacifique

Solomon Islands Ridge to Reef Strategic Action Framework 2021-2026



Solomon Islands Ridge to Reef Strategic Action Framework 2021-2026

Prepared by Jimmy Kereseka
Telios Corporate and Consultancy Services

Produced and published by GEF Pacific International Waters Ridge to Reef Regional Project,
Pacific Community (SPC), Suva, Fiji



Suva, Fiji, 2021

© Pacific Community (SPC) 2021

All rights for commercial/for profit reproduction or translation, in any form, reserved. SPC authorises the partial reproduction or translation of this material for scientific, educational or research purposes, provided that SPC and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial/for profit or non-profit purposes, must be requested in writing. Original SPC artwork may not be altered or separately published without permission.

Original text: English

Citation: Kereseka, J. 2021. Solomon Islands Ridge to Reef Strategic Action Framework 2021-2026. Prepared for the Ministry of Environment Climate Change Disaster Management and Meteorology, Solomon Islands Government, Honiara. Produced and published by GEF Pacific International Waters Ridge to Reef Regional Project, Pacific Community (SPC), Suva, Fiji , 35 pp.

Reviewed by George Naboutuiloma, Samasoni Sauni, Fononga Vainga Mangisi-Mafileo and Aliti Vunisea.

Edited by Seema Deo (Footprints in the Sand Consulting)

Cover Photo: View over Matanikau River Honiara from American War Memorial by Andrick Lal

Layout and Design by Navneet Lal/Pacific Community (SPC)

Prepared for publication at SPC's Suva Regional Office, Private Mail Bag, Suva, Fiji, 2021

www.spc.int | spc@spc.int

Printed by Quality Print, Suva, Fiji, 2021

CONTENTS

Abbreviations	iv
List of Figures.....	vi
Acknowledgements	vii
1.0 Background.....	1
1.1 Solomon Island Ridge to Reef Context	2
1.2 Solomon Island Islands Diagnostic Analysis and State of the Environment Report 2020	5
2.0 Preamble.....	11
2.1 Vision	12
2.2 Goals	12
2.3 Key Principles for Ridge to reef Approach.....	11
2.4 Coordination at national and sub-national level.	13
3.0 Strategic Action Framework Priorities	14
3.1 Addressing Poor Solid Waste Management	14
3.2 Land Degradation	14
3.3 Deforestation and Forest Degradation.....	15
3.4 Water Pollution	15
3.5 Invasive Alien Species	16
3.6 Coral Reef.....	16
4.0 Project Case Studies – Whole Island, Community and Urban Approach.....	18
4.1 Luru Ridge to Reef Protected Area Network (LPAN) – Whole Island Approach	18
4.1.1 Description	18
4.1.2 Key Approach	19
4.1.4 Outcomes and Activities.....	20
4.1.5 Lessons learned	21
4.2 Barana Community Nature and Heritage Park – Community Approach.....	22
4.2.1 Description	22
4.2.2 Key Approach	23
4.2.3 Outcomes and Activities.....	24
4.2.4 Lessons learned	25
4.3 LEAF HCC Environment Education – Urban Environment Education.....	27
4.3.1 Description	27
4.3.2 Key Approach	27
4.3.3 Outcomes and Activities.....	29
4.3.4 Lessons learned	31
5.0 Key Recommendations for Ridge to Reef Implementation.....	33
6.0 Conclusion	35
References.....	36
Annex 1 – Implementation and Monitoring Plan	39

ABBREVIATIONS

BCNHP	Barana Community Nature and Heritage Park
CBD	Convention on Biological Diversity
CBO	Community-based Organization
EHD	Environment Heath Division
EIA	Environment Impact Assessment
ELC	Environment Learning Centers
EMP	Environment Management Plan
ESRAM	Environment and Socio-economic Resilience Analysis and Mapping
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIWA	Global International Water Assessments
GPS	Global Positioning System
HCC	Honiara City Council
IAS	Invasive Alien Species
ICM	Integrated Coastal Management
IDA	Island Diagnostic Analysis
IPAN	Isabel Protected Area Network
IWRM	Integrated Water Resources Management
JICA	Japanese International Cooperation Agency
LEAF	Learning and Education Advocacy Foundation
LLCTC	Lauru Land Conference of Tribal Community
LMMAAs	Locally Marine Managed Areas
LPAN	Lauru Protected Area Network
MECDM	Ministry of Environment Climate Change Disaster Management and Meteorology
MOFR	Ministry of Forest and Research
MOU	Memorandum of Understanding
MPAs	Marine Protected Areas
NBSAP	National Biodiversity Strategic Action Plan
NDS	National Development Strategy
NEMS	National Environment Strategy
NGO	Non-Government Organization
NISSAP	National Invasive Species Strategic Action Plan
PACCSAP	Pacific-Australia Climate Change Science and Adaptation Planning

PEBACC	Pacific Ecosystems-based Adaptation to Climate Change
PICs	Pacific Islands Countries
PoWPA	Programme of work of Protected Areas
R2R	Ridge to Reef
SAF	Strategic Action Framework
SFM	Sustainable Forest Management
SI	Solomon Islands
SIS	Smaller Island States
SINU	Solomon Islands National University
SNRAS	School of Natural Resources and Applied Science
SOE	State of Environment Report
SPC	The Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
TDA	Transboundary Diagnostic Analysis
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
WWF	World Wildlife Fund for Nature
WWII	World War 2

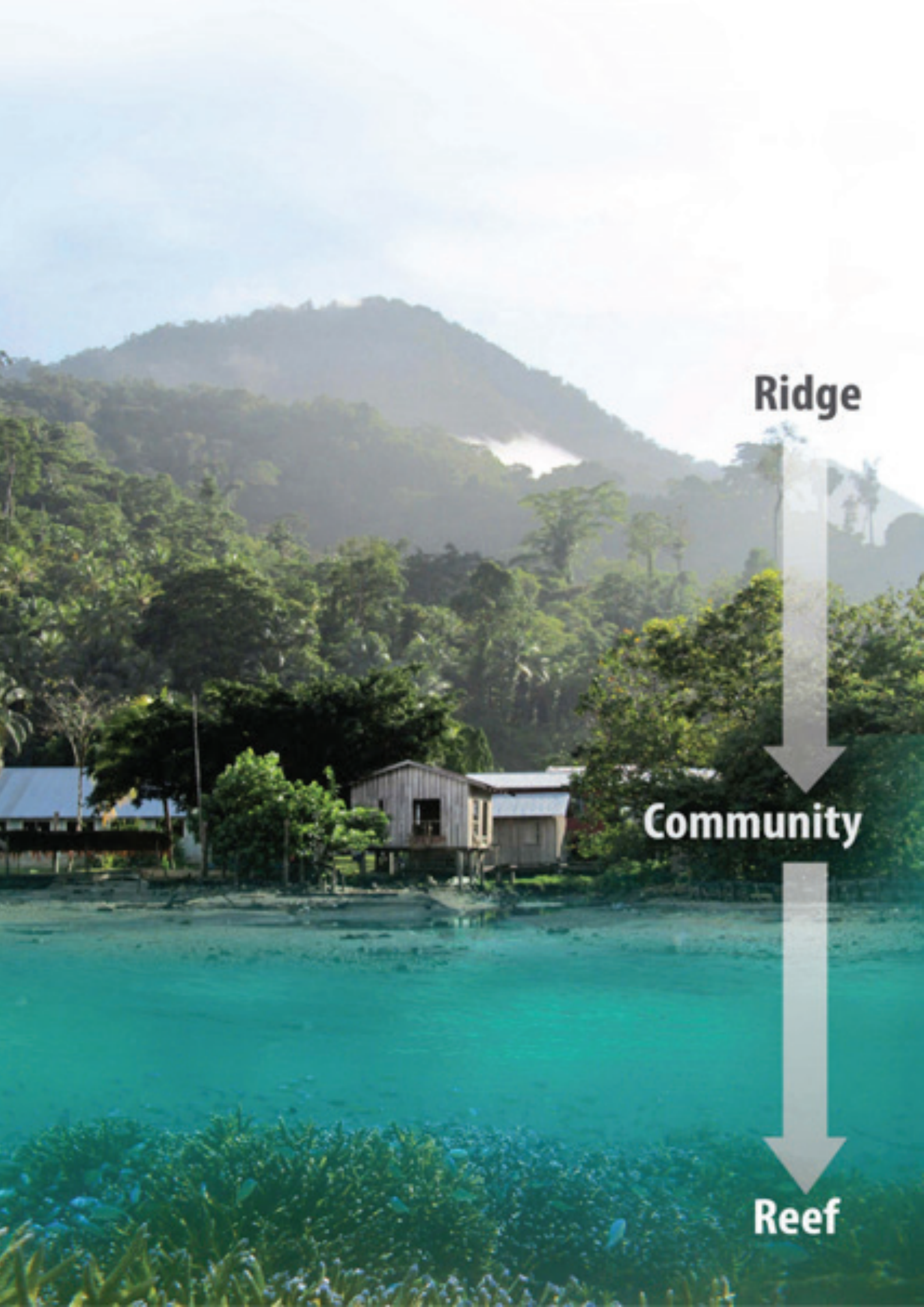
LIST OF FIGURES

Figure 1: The community at the center of the ridge to reef approach	4
Figure 2: Fisherman on Choiseul	18
Figure 3: Conservation Priority areas	19
Figure 4: Conservation priority areas: 20% option	20
Figure 5: Barana Community Consultation to establish the park in 2018	22
Figure 6: The resilient and environment centre	24
Figure 7: Park notices on waste management and cutting of trees	26
Figure 8: LEAF Project network of 3 Environmental Learning Centres and Honiara Environmental Information Centre	28
Figure 9: Flyer for young generation submitting Youth Action Plan for the decade of improving Honiara city	29
Figure 10: Honiara Nature Guidebook.....	30
Figure 11: LEAF Project investigating water quality using biological indicators	32

ACKNOWLEDGEMENTS

The development of this strategic action framework is a follow up to the Island Diagnostic Analysis (IDA) and provides the framework for ridge to reef actions. The Solomon Island Government would like to acknowledge Telios Corporate and Consultancy Services the authors of this report. The efforts made into finalizing this document is highly appreciated and commented. Special appreciation also goes to the Government and non-government stakeholders involved contributed to the strategic actions being formulated in this document. We also acknowledged the leadership of the Pacific Community (SPC) Solomon Islands International Waters Ridge to Reef Project through the Environment and Conservation Division within the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM).

The author would like to acknowledge the organizations that provided information for the three cases studies presented in this report. In particular, the Lauru Land Conference of Tribal Community (LLCTC) and the Nature Conservancy (TNC) Solomon Islands for the Lauru ridge to reef protected area network. Also critical is the Secretariat of the Pacific Regional Environment Programme (SPREP) through the Pacific Ecosystem-based Adaptation to Climate Change Project (PEBACC) that established the Barana Nature and Heritage Park. Finally, the Learning and Ecological Activities Foundation for Children (LEAF Phase II) project, a JICA Partnership program operating under Honiara City Council for “Sustainable community development through promoting environmental learning activities in cooperation with both the public and private sectors”. The lessons learned drawn from these three projects are critical to successful ridge to reef project approach and implementation.



Ridge

Community

Reef

1.0 BACKGROUND

The formulation of this strategic action framework (SAF) is a follow up to the Solomon Islands Diagnostic Analysis (IDA) which was also undertaken as part of SPC R2R project. The objective is to identify strategic policy actions and reforms that can be undertaken to address the priority national environment issues within the context of the ridge to reef approach. The IDA identified six priorities related to the ridge to reef which are solid waste management, land degradation, deforestation and forest degradation, water pollution, invasive species, and coral reef degradation.¹

The IDA recommendations are based on the current situation in the country and ongoing efforts to addressing these issues. The policy and technical actions recommended include the need for awareness raising, conducting more applied research and improved level of education amongst stakeholders and communities in the country. The formulation of the strategic actions also draws from the recommendations of the State of Environment Report (SOE) 2020 for each of the respective themes and focal areas.² There was no State of the Coast report prepared given the preference to use the SoE instead. This is relatively fine and consistent with the guidelines for implementing the R2R science to policy framework.

This strategic action framework and action plan also includes three case studies of environment and climate change related projects that any ridge to reef initiative can draw lessons from. Section 2 of this document provide further analysis of the work undertaken for Choiseul Province, Isabel Province and for Kolombangara and Gizo in the Western province. There are many other good examples of ridge to reef projects approaches in the country, however the document will draw lessons from ongoing projects that can be replicated. These projects are not full ridge to reef projects but provide good practices that can be applied in the context of this framework. For instance, the Lauru ridge to reef project is a community and island wide approach, the Barana Nature and Heritage Park is from an inland ecosystem-based adaptation approach and the LEAF project focuses on environment education within an urban environment of Honiara.

Lauru Ridge to Reef Protected Area Network (LPAN) – this project demonstrates a whole island and interconnected ridge to reef approach for Choiseul province. The implementation of this project is not without the challenges, issues, and threats from development such as logging, mining, and community practices. It is an initiative that has been continuing with the support the community through the work of LLCTC and TNC.

Barana Nature and Heritage Park – The project focuses on parts of the Mataniko and Lunga catchments. The approach was through the ecosystem-based adaptation project implemented by SPREP and involves establishing a park and community initiatives around awareness, education, nursery establishment and supporting eco-tourism activities.

Learning and Ecological – This project is a JICA Partnership program operating under Honiara City Council for “Sustainable community development through promoting environmental learning activities in cooperation with both the public and private sectors”. The project is implementing three Environmental Learning Centers (ELC) to support environmental learning activities and programs.

¹ Solomon Islands draft IDA report (2020). Jimmy Kereseka, Telios Corporate and Consultancy Services, Honiara, Solomon Islands

² Solomon Islands State of Environment Report 2019 (2019). Secretariat of the Pacific Regional Environment Programme (SPREP). Apia, Samoa.

The section on key lessons learned is drawn from the report of stakeholders consultations with stakeholders implementing ridge to reef related projects in the country. The lessons are also derived from the case studies presented and are meant to provide a platform for effective ridge to reef project implementation in the country. This document also includes an implementation and monitoring plan that stakeholders and responsible agencies can commit to and report against.

The SAF is a living document and intended to be implemented appropriately by the relevant agencies.. It can also use to inform future policy discussions and decisions that support mainstreaming R2R in high level policy and legislative frameworks, sustainable development, and planning. The priority actions are expected to deliver on minimizing and/or addressed priority environmental threats identified for the country.

1.1 Solomon Island Ridge to Reef Context

Generally, the ridge to reef approach has been implemented in the Solomon Islands from a conservation planning approach for some time. This was undertaken and led by NGOs/INGOs as well as line-ministries of the Solomon Islands Government who are working with communities and provincial level governments. Of particular significance to the R2R approach are the work undertaken for Choiseul Province, Isabel Province and for Kolombangara and Gizo in the Western province. The following are the summary of those initiatives.

The Choiseul Ridge to reef Conservation Plan³ - The Choiseul ridge to reef conservation plan was facilitated and compiled by The Nature Conservancy (TNC) in response to requests from the Luru Land Conference of Tribal Community (LLCTC) and the Choiseul Provincial Government. These requests came about from an understanding that the future sustainability and prosperity of the Choiseul people is integrally linked to its natural ecosystems. The development of the Choiseul conservation plan takes biodiversity, threats, and opportunities into account to enable the Luru people to make wise and informed choices about their future.

The completion of the Choiseul conservation plan provides a roadmap to guide future conservation efforts throughout Choiseul.⁴ It is hoped that it will assist in enabling the leaders of Choiseul to implement the Luru Ridge to Reef Protected Area Network (LPAN), the first such network ever proposed in the Solomon Islands.⁵ The development of Choiseul ridge to reef conservation plan also acts as a pilot study to the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) with regards to a conservation planning process and approach that could be effectively applied to the whole of the Solomon Islands.⁶ In effect, the Choiseul experience provides constructive progress regarding the Solomon Islands commitment to the Convention on Biological Diversity (CBD) and the completion of the identification of terrestrial and marine priorities as part of the Program of Work on Protected Areas (PoWPA).⁷

³ Geoff Lipsett-Moore, Richard Hamilton, Nate Peterson, Edward Game, Willie Atu, Jimmy Kereseka, John Pita, Peter Ramohia and Catherine Siota (2010). Ridge to Reefs Conservation Plan for Choiseul Province, Solomon Islands. TNC Pacific Islands Countries Report No. 2/10. 53

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

Isabel Ridge to Reef Conservation Plan⁸ - The Isabel Ridge to Reef Conservation Plan, if implemented, supports and guides future conservation and development activities throughout Isabel.⁹ With stakeholders' engagement and participation in resource and resource use planning and mapping, made it possible to discuss and agree on the location of conservation priority coast areas or sites for Isabel Province, biodiversity threats, impacts of successfully implementing a protected area network across and other important and relevant conservation and management considerations.¹⁰ The Isabel conservation plan provides an important step towards establishing an Isabel Ridge to Reef Protected Area Network (IPAN), which would support future food and freshwater security, preserve the islands remarkable biodiversity and reduce the stress on terrestrial and marine environments, hereby increasing the resilience of natural systems to external shocks such as climate change.¹¹

Stakeholders used participatory mapping to identify local features within their customarily owned lands and seas that are of high conservation value to them. These features represent important biological and cultural resources that would benefit from protection or management, such as sources of freshwater, cultural heritage sites, turtle nesting beaches, fish spawning aggregations and megapode nesting areas. Participatory mapping was also used to identify threats to biodiversity (e.g., logging, mining, and areas susceptible to climate change) and to map areas of conservation opportunity, such as sites that are proposed but not yet managed.

Gizo Kolombangara Ridge to reef Conservation Plan¹² – The development of Ridge to Reef conservation planning was developed through a participatory stakeholder's process involving key resource people of Kolombangara and Ghizo islands to provide input and impart knowledge of threats and the key ecological, biological and cultural features found on their corresponding islands.¹³ The implementation of Ridge to Reef conservation planning will protect the key ecological (marine and terrestrial habitats) and cultural features on the islands of Ghizo and Kolombangara, resulting in increased food security, income and livelihoods for communities on these islands.

Kolombangara Island, also known as the 'water king' for having more than 80 rivers, supports many different unique ecosystems and habitats, with lowland forests surrounding the entire island¹⁴. Other forest types that cover the island include, but are not limited to, mangrove and coastal forests, ridge and uphill forests, montane and cloud forests, and plantation and secondary forests.¹⁵ The island is unique also for having a forested crater with deep caverns and gulches. Many plants species such as ferns, herbaceous plants, fleshy stemmed plants that are rich in water contents, shrubs, trees, mosses, and lichens or cryptogamic¹⁶ are found to be restricted to extremely wet conditions and elevated humidity.

⁸ Peterson, N., Hamilton, R., Pita, J., Atu, W. and R. James (2012). Ridge to Reefs Conservation Plan for Isabel Province, Solomon Islands. The Nature Conservancy Indo-Pacific Division, Solomon Islands. Report No. 1/12. 61 pp.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ikuo Gumo Tigulu, Minnie Rafe Ifuto'o, Stuart Sheppard (2018). Gizo Kolombangara Ridge to reefs Conservation Plan, Solomon Islands, WWF-Pacific Solomon Islands.

¹³ Ibid.

¹⁴ Edoway, F. (2015). Kolombangara Island Profile: Kolombangara Island, Western province, Solomon Islands. Retrieved January 15, 2018, from <http://www.westpauadev.files.wordpress.com/2015/11/>

¹⁵ Ibid.

¹⁶ Pikacha, P., Sirikolo, M. (2010). Biodiversity of the Crater Area & surrounding mountain forests, Kolombangara Island. Retrieved January 15, 2018, from <http://www.ecologicalsolutions-si.com/files/7468559.pdf>

The marine ecosystem in Ghizo Island is renowned for its rich diversity of reef fish and coral species. It is recognized as one of the most biologically rich ecosystems in the Solomon Islands.¹⁷ While there is high biodiversity around Ghizo Islands, the human pressures are excessive due to various patterns of resource use, cultural and social practices owing to the residing different racial groups living on the island. A socioeconomic study reported a high dependency of marine resources for daily food and cash in both rural and urban populations on Ghizo Island¹⁸.

The ridge to reef approach aims to provide a holistic intervention for protecting the coastal areas by targeting to protect and manage environmental degradation in the uplands ("ridge") or land-based activities causing pollution and environmental degradation that negatively impacts streams, rivers, aquifers, groundwater, and coastal ecosystems. The pollution and degradation are usually the result of waste discharge, sedimentation, coastal development, overfishing, run-offs, and sedimentation from land-based activities.

The approach requires a full integrated management approach and planning to ensure that all the different activities within a specific area are effectively managed. The approach recognizes the increasing threats to the natural environment from increasing population, economic development, and climate change. Climate change is among the most pressing challenges facing communities throughout the Solomon Islands. The ridge to reef concepts is therefore an important approach to mitigating its impacts. This can be done by restoring the shoreline and protecting marine ecosystems ("reef"), thereby mitigating storm surges, indiscriminate excessive exploitation of biodiversity and degradation of coastal habitats and ecosystems.

The Solomon Islands environment and conservation efforts introduced the ridge to reef as an important approach relevant for island ecosystems. The country is an archipelago of islands and the history of logging, and any land-based development or activity are easily visible along the coastline. The island ecosystems are defined by fringing reef that protect not only the inshore environment but also provide abundant fish protein for the rural communities. Coral reef, therefore, are important ecosystems for most communities in the country.

The ridge is where land-based resources such as forests and terrestrial biodiversity are located, and they are equally important drivers to a healthy forest and landscape but also offers tangible benefits to the SI communities. For instance, the ridge provide food, water and all other basic resources needed to sustain life on these islands. The communities are geographically located between the ridge and the reef and is the epicenter of both protection and degradation. Therefore the application of ridge to reef approach will necessitate community understanding and support. The figure below illustrates the ridge to reef or land-sea continuum and relationship.

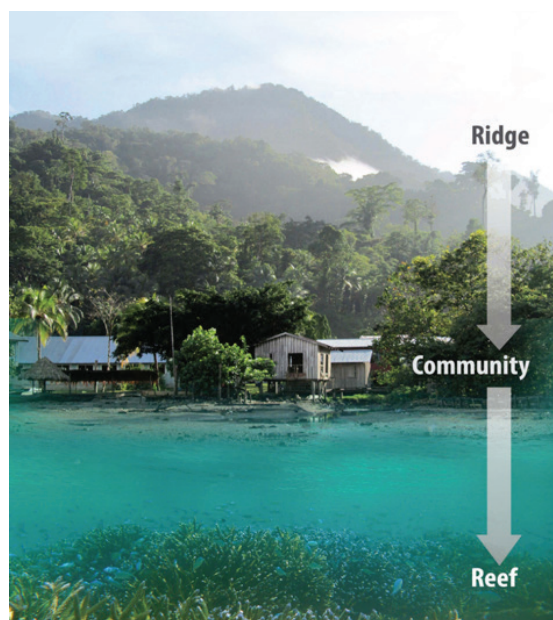


Figure 1: The community at the center of the ridge to reef approach

¹⁷ World Wide Fund for Nature. (2011). Gizo Environment Livelihood Conservation Association Management Plan. Retrieved February 19, 2018, from <http://www.mccenvironmental.org>.

¹⁸ *ibid.*

The GEF Pacific R2R IW Project was designed around this approach and aims to test the mainstreaming of 'ridge-to-reef' (R2R), and climate resilient approaches to integrate land, water, forest, and coastal management in the PICs through strategic planning, capacity building and piloted local actions to sustain livelihoods and preserve ecosystem services.¹⁹ The project is aimed at building an enabling environment at National level for linking IWRM with ICM into a new integrated R2R approach.²⁰

All GEF funded R2R projects require gender considerations and social inclusion be part of all projects, studies, and planning initiatives. This is to ensure the meaningful participation of men, women youths, and all members of the communities in all actions taken. There will also be consideration of impacts of all interventions taken on the different sectors of communities especially women, youths, and the most vulnerable members of the community. Specific activities that are gender sensitive will be considered to ensure that the different knowledge and skills of men, women, youths, and other community members are maximized. At the decision making level and national level committees, gender inclusion in all approaches used will be ensured.

1.2 Solomon Island Islands Diagnostic Analysis and State of the Environment Report 2020

The development of the R2R IDA report for the Solomon Islands was formulated with reference to its National State of Environment Report. This approach was undertaken due to the connectivity of the country's ecosystems and that the environmental issues highlighted in the IDA are reflective and correlates to the SOE report analysis. The Solomon Islands Island Diagnostic Analysis (IDA) report focuses on key national priorities based on a broad stakeholder consultation process and also the SOE outcomes.

A consultative approach was undertaken to collate existing data and information and analyze them in an interdisciplinary manner. The approach was derived and guided by the Global International Waters Assessment (GIWA), the GEF Trans boundary Diagnostic Analysis (TDA), and Pacific IWRM Diagnostic Analysis methodologies. However, this is not an exhaustive process as analysis undertaken are contextualized to reflect the dynamics and ongoing challenges in the country.

The R2R IDA stakeholder consultations and analysis highlighted six key national environmental priorities as follows;²¹

1. Poor solid waste management
2. Land degradation
3. Deforestation and forest degradation
4. Water pollution
5. Invasive alien species
6. Coral reef degradation

¹⁹ National R2R Programme Document (2014). GEF Pacific ridge to reef national programme, Secretariat of Pacific Community, Suva Fiji Islands,

²⁰ Ibid.

²¹ above n1

These six national priority issues are discussed within the context of ridge to reef for the Solomon Islands. The priorities are also discussed within the broader environmental issues and climate change impacts that cuts across these national priorities. The Solomon Islands State of Environment report 2020 stated that the country's environment and heritage is under increasing threat from a number of drivers such as population growth, economic development, and global climate change.²²

These drivers are critical to the ridge to reef approach and needs to be managed to ensure sustainability into the future. The SOE also alluded to these key drivers affecting the state of environment in the country reflected in the IDA report. These drivers include;²³

- 1. Population growth** - is a major driver of environmental change. The most recent Solomon Islands census (2019) showed a total population of approximately 721,455 people and the population has grown rapidly over recent decades.²⁴ The rate of growth peaked during 1976–1986 at 3.4% annually but has decreased to 2.3% in the most recent period.²⁵ The Solomon Islands population is predominantly young, with about 60% of the population under 25 years and a median age of 19.8 years.²⁶
- 2. Economic Development** - Economic development forms the core of the NDS vision and goals focusing on poverty alleviation and raising the standard of living.²⁷ In 2018, approximately 43% of GDP was derived from a) agriculture, forestry and fisheries, and b) industry (including mining, water etc).²⁸ Although the contribution of these sectors has decreased slightly since 2007 (43%), this shows the continuing importance of natural resources/ecosystem services in economic development. There is increasing revenue from the mining sector.²⁹
- 3. Climate Change** - The climate change projections for the Solomon Islands have sea level projected to rise 7-18 cm by 2030, and 40-89 cm by 2090 (very high confidence); annual mean temperatures and extremely high daily temperatures are projected to increase by up to 1.0 °C by 2030, and up to 4.0 °C by 2090 (very high confidence); mean annual rainfall will increase slightly (low confidence), with more extreme rain events (high confidence); decreases frequency but increased intensity of tropical cyclones (medium confidence); continued ocean acidification (very high confidence); increased coral bleaching (very high confidence) (PACCSAP 2014 report).³⁰ Climate change will influence the delivery of ecosystem functions and services, and further exacerbate the human impacts.

²² SPREP (2019). Solomon Islands State of Environment Report 2019, Apia, Samoa

²³ Ibid.

²⁴ National Statistics Office (2020). Population & Housing Census National Report. Ministry of Finance and Treasury, Honiara.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Solomon Island Government (2016). National Development strategy, Ministry of Planning and Aid Coordination, Honiara, Solomon Islands.

²⁸ Ibid.

²⁹ ibid.

³⁰ Australian Bureau of Meteorology and CSIRO (2014). Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation, Melbourne, Australia.

4. Traditional and contemporary values and lifestyles - Environmental change is also influenced by existing cultural norms and people's attitudes and approaches towards issues such as environment, development, and the meaning of sustainability. Some examples are:

- Land ownership and access: Customary land tenure arrangements, and the way these interact with the roles of national and provincial government, can have profound effects on the character and acceptability of environmental change and the permitting (or otherwise) of development proposals. Land ownership and access also determine gender participation in resource use and in decision making forums relating to management.
- Public attitudes to sustainability: People may be unaware of the connection between their actions and the long-term consequences, an example is the connection between waste management (litter, burning) and public health. These connections need to be recognised and absorbed into public attitudes and behaviour. This also include roles of men and women in resource use and waste disposal.
- Inclusiveness: Ensuring that relevant people are involved in decision-making can help to promote widespread support for effective environmental management. This includes involvement of women and youth, alongside other stakeholders.
- Corporate attitudes and responsibility: Businesses in the private sector must play their part by adhering to customary practices, as well as national and provincial laws and regulations, and promoting best practices for working conditions and environmental sustainability.

The above drivers underpin the challenges of environmental management and the sustainable development aspirations in the country. The environmental priorities reflected in the R2R IDA for Solomon Islands are largely driven by these factors that add to other pressures on natural resources from forestry (logging), fishing and mining and the lack of control and effective management regimes over environmental effects.

Urban development increases pressure on land use and land-use planning to manage environmental effects. Key utilities such as access to water and sanitation need to be well managed to avoid effects on water quality (freshwater and coastal) and human health.

The environmental priorities identified in the IDA are summarized below;³¹

Poor Solid Water Management³² - Managing waste and controlling pollution for the Solomon Islands will require national effort that includes high-level political leadership, effective policy and legal frameworks, development of appropriate institutional capacity and changing attitudes starting at individual to community, provincial and national level. The approach needs to be done within the Solomon Islands context where interconnectivity between different ecosystems from the upland forests to the coastal environment, rivers, lagoons, and ocean is a reality. This ecosystem connectivity is intricately linked to the livelihood of most of the country's population whose daily subsistence continues to be dependent on their natural environment and resources.

³¹ above n1

³² *ibid.*

An important factor is the need for political will and support for investment for appropriate infrastructure, sustainable financing, and innovative means for public–private partnerships in urban areas such as Honiara.

Land Degradation³³ – The Solomon Island land resources are home to its natural ecosystems and biodiversity. The country has a more unique restricted range and unique bird species by area than any other place on earth. Seventy-two of the one hundred sixty-three land birds in the Solomon Islands are endemic or found in close neighboring islands.³⁴ Most provinces hold at least one unique bird found only in that province and up to 12 unique species in the case of Makira. Many of these restricted species are also gravely threatened.³⁵

Land degradation can be reversed through restoration and rehabilitation. The restoration programme should be made part of the national economic development programme. Collaboration between the forestry sector and the Ministry of Environment should be key factors to undertake any successful restoration and rehabilitation programme. Furthermore, inter-agency cooperation and coordination must be promoted, especially between the agriculture and forest sectors to address shifting cultivation and agricultural expansion into natural forested areas.

To eliminate deforestation, illegal logging and other activities that are inconsistent with SFM principles, the country needs well-established and functional governance, monitoring, and enforcement mechanisms. Forest regrowth must also be ensured following human and natural disturbances, whether through reforestation, site rehabilitation activities or natural regeneration. Failure to regrow forests after disturbances will result in unsustainable outcomes and long-term reductions in forest area, forest cover, carbon density, forest productivity and land-based carbon sinks.

Deforestation and Forest Degradation - With over 4500 species, the Solomon Islands forests are known as one of the world’s richest sources of plant diversity with unique palms, orchids and climbing pandanus.³⁶ There are six main types of vegetation and five different types of forest types identified.³⁷ More than half of the Solomon Islands natural forests are grassland and non-forest, hill forests, freshwater swamp and riverine forests, montane forests, mangroves, and the lowland forests. The Solomon Islands has six distinct forest types and approximately 5,000 plant species.³⁸

Rural Solomon Islanders depend heavily on over 600 forest products for their subsistence livelihood and are increasingly gaining income from the sale of forest products such as rattan and ngali nuts and plantation timbers.³⁹ Forests are also important for defining and maintaining the cultural identities and cultural values of Solomon Islands peoples.

³³ *ibid.*

³⁴ Filardi, C., Boseto, D., Filardi, C (2007). A preliminary desk study identifying important bird areas (IBAs) in the Solomon Islands. Birdlife International

³⁵ *Ibid.*

³⁶ Lavery, TH, Pikacha, PG, Fisher DO (2016). Solomon Islands forest life: Information on biology and management of forest resources. The University of Queensland. Brisbane

³⁷ *Ibid.*

³⁸ *ibid.*

³⁹ *ibid.*

The dependency on round log export earnings is driving unsustainable forest degradation activities that threaten other forest resources and non-timber products necessary to community livelihoods. Commercial logging for round logs has caused extensive habitat and biodiversity loss except in the most inaccessible mountain areas. The rate of logging continues to increase, impacting sensitive ecosystems that support livelihoods such as water catchments and those areas prohibited by law such as the area above 400 meters above sea level.

Commercially viable native forests are almost exhausted, and there is an urgent need to protect and restore the remaining forest and biodiversity. Although riverine forests are legally protected, non-compliance by logging companies has led to occasional harvesting. The rapidly growing population demands more food and income, putting additional strain on land and other resources.

Water Pollution⁴⁰ - Water pollution impacts on the Solomon Islands freshwater bodies and the marine environment is significant but not fully understood. The pollution modes are both from liquid and solid wastes and mostly from land-based sources. The issues of pollution are reflective of the development challenges that the country faces in terms of capacity, isolation, and poor governance.⁴¹ Weak enforcement of existing environmental legislation and safeguards means that pollution will continue to threaten the country's pristine waters.⁴²

The impacts of logging, mining, and other land-based extractive developments on water pollution and in the coastal marine environment is a huge challenge in many rural communities.⁴³ Temporary logging wharfs built along the coastlines and in mangroves is a common sight throughout the country.⁴⁴ During heaving rains, topsoil surface run-offs and sedimentation from inland often end up in rivers and streams and make their way into the coastal marine environment and coral reef.⁴⁵ Excess nutrients may stimulate algal growth, which has a negative impact on coral reef. Nutrient-rich sediment plumes reduces water quality, which can impact coral reef by restricting the light required for coral growth and survival.

Invasive Alien Species - Invasive alien species are having significant impacts on natural ecosystems both on land and the marine environment. The ecological concerns are mirrored by the rapid increase and introduction of species that threatens the agriculture sector and thus the national economy.⁴⁶ Solomon Islands economy over the years are influenced by subsistence economy, this implies, assessing the true costs of invasive alien species is difficult and inaccurate.⁴⁷ This is because the economic cost of invasive alien species goes beyond the direct market impacts (such as those a pest may have on agricultural yields) to include indirect nonmarket impacts (such as impacts on ecosystem functions).⁴⁸

⁴⁰ *ibid.*

⁴¹ SPREP (2018). Solomon Islands Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM), Volume 3: Honiara, Secretariat of the Pacific Regional Environment Programme (SPREP), Apia, Samoa.

⁴² *Ibid.*

⁴³ *ibid.*

⁴⁴ *ibid.*

⁴⁵ *ibid.*

⁴⁶ Solomon Island Government (2019). National Invasive Species Strategic Action Plan (draft), Honiara, Solomon Islands.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

The informal economy is a significant component of all socio-economic development. Almost 80 per cent of workers in the Solomon Islands operate in the informal economy. Currently, approximately 75 percent of women who live in the Solomon Islands are employed and are involved in subsistence or informal work. Consideration therefore needs to be given to how invasive alien species influence livelihoods operating within the informal economy with invasive species damaging food gardens and crops that people's livelihood depends

Coral Reef Degradation - Coral reefs in the Solomon Islands are some of the most diverse ecosystems in the world, supporting valuable ecosystem goods including fish, shells, coral and other marine products and services such as fisheries habitat, tourism, medicine, and coastal protection. It was recognized that coral reef degradation is intensifying worldwide. Governments around the world are struggling to deal with these accelerating threats, and Solomon Islands is no exception. Majority of Solomon Islands people (80%) live in rural coastal communities. These communities rely heavily on the resources that coral reef provide for their daily subsistence and cash needs. Although coral reef plays an important role in ocean life, these habitats are also threatened.

Solomon Islands' reef, like those of many other countries, are under pressure from a combination of natural and human induced impacts such as climate change, increasing population and growing development.⁴⁹ Over the passing years, rapid harvesting of coral for the aquarium, curio, and lime trade results in the removal of specific coral types which, causes degradation and destruction of reef habitat, further reducing ecosystem resilience.

Negative socio-economic effects were expected for communities' dependent on affected reef ecosystems for food and/or cash. Women make up a large proportion of the workforce in the coastal fisheries supply chains, however there is little or no data available to measure the extent of their engagement. As a result, many initiatives including training, awareness programs, and policies are not gender-informed and as such overlook the needs of women engaged formally and informally in the fisheries sector.⁵⁰ In many rural communities in Solomon Islands there is often limited awareness of the long-term consequences of coral extraction activities. Today's unsustainable coral extraction has contributed to increased vulnerability and reduced the people of the Solomon Island's ability to benefit from coral reef.

Coral reef are unique ecosystems that not only provide habitat for other species (fish, turtle, dugong), but also provide protection and resilience against wave action, as well as supporting tourism. Each of these habitats are vulnerable to pollution, loss of water quality and sedimentation from land-based activities. They are also vulnerable to changes in sea temperature and pH, as well as extreme weather events, associated with climate change.

⁴⁹ GloCarlton, R., Dempsey, A., Lubarsky, K., Akao, I., Faisal, M., and Purkis, S. (2020). Reef Expedition: Solomon Islands. Final Report, Khaled bin Sultan Living Oceans Foundation, Annapolis, MD. Vol 11.

⁵⁰ Olha Krushelnytska (2015), Towards Gender-Equitable Fisheries Management and Development in Solomon Islands, World Bank, Solomon Islands

2.0 PREAMBULAR

2.1 Vision

To maintain the integrity and build the resilience of natural ecosystems through the ridge to reef management approach to secure community livelihood and wellbeing.

2.2 Goals

1. Promote and implement effective solid waste management practices at the household, community, provincial and national level for ridge to reef approaches.
2. Encourage and implement sustainable land use practices to address land degradation issues for ridge to reef approaches.
3. Ensure that no large-scale commercial deforestation and forest degradation activities occur within any ridge to reef geographic boundary.
4. Avoid water pollution for the ridge to reef approach and address it at the source.
5. Implement measures to mitigate the introduction and impacts of invasive alien species within ridge to reef geographic boundary.
6. Promote and implement sustainable management of coral reef such as establishment of MPAs and LMMAs.

2.3 Key Principles for Ridge to reef Approach

2.3.1 Community Participation

Community consistence participation and involvement bring in sense of ownership and belonging to the project. Their participation from project initiation, initial consultation and implementation stage is very important and paramount for project implementation.

2.3.2 Supporting R2R planning

Aligning the R2R Framework at national and regional levels to global and regional agreements and strategies – the Sustainable Development Goals, the Samoa Pathway, Smaller Island States (SIS) Regional Strategy and the Framework for Pacific Regionalism.

2.3.3 Environmental Sustainability

Environmental sustainability has been defined as meeting the needs of the present without compromising the ability of future generations to meet their needs. This definition is the guiding philosophy. Organizations operate within an environmental, social, and economic context. Environmental sustainability is a part of this operation and best achieved when integrated with other components. An environmentally sustainable organization seeks to participate within its community and seeks to balance economy, society, and environment within its operations. Through seeking balance, an organization may better steward natural and economic resources considering the needs of future generations.

2.3.4 Connectivity between land, sea, and coastal systems

Recognising the linkages and shared impacts between land, water, and coastal systems in the community environments. One of the key concepts of sustainable development is the interdependence of society, economy, and the natural environment. Early human cultures were aware from the beginning of the carrying capacity of their environments, that their existence was dependent upon utilizing the environment for resources but respecting that there are limits to what nature can provide without being damaged. Biology and ecology has revealed that all living things, including humans, depend upon each other, and are interconnected through natural cycles and ecological systems. Such cycles and systems are naturally and continually subjected to change that can harm or enhance the ability of different species to survive and flourish.

2.3.5 Ecosystem-based Approach

promote an ecosystem- based adaptation and mitigation to climate change for all ridge to reef projects.

2.3.6 Promote Public and Private Partnership

building the potential partnerships with other stakeholders is crucial. Partnership with communities, NGOs, Government agencies, other regional and international agencies that exist around the project site is important. Building partnerships results in a relationship that each one can bring in their resources, expertise, and time to support the project implementation and sustainability. Building strategic partnerships between the public and private sector for integrated efforts and knowledge sharing as well as providing financial sustainability to the programme.

2.3.7 Communicate benefits and lessons learned

Effectively highlighting the benefits of integrated approaches to convince government agencies, local institutions, and community leaders to champion change and at the same time be a role model for other communities/ Provinces

2.3.8 Gender and Social Inclusion

Recognising the value in gender diversity for an integrated approach during planning and implementation processes. Both male and female inclusion in planning and implementation stage is vital and proper.

2.4 Coordination at national and sub-national level.

This ridge to reef strategic action plan is subsidiary to the National Environment Management Strategy (NEMS) in terms of policy hierarchy and is coherent with the related environment thematic policy documents such as the NBSAP, the National Waste Management and Pollution Control Strategy, National Climate Change Policy, and the Oceans Policy. There are also a number of action plans such as the coral reef action plan and National Invasive Species Strategy and Action Plan that forms the core of this plan.

Given the cross-cutting nature of this strategic action plan, it should be seen as a strategic guide for intervention and implementation of the ridge to reef approach. The Environment and Conservation Division within the Ministry of Environment, Climate Change, Disaster Management and Meteorology are the lead agency for coordination purpose. Its implementation however is a shared responsibility for most of the government agencies dealing with natural resources and environment both on land and in the marine ecosystem.

At the provincial level this document gives effect to past and ongoing efforts taking the ridge to reef approach for conservation and natural resources management purposes. Three provinces with the support of NGOs such TNC and WWF have developed ridge to reef conservation plans in collaboration with the respective provincial government and community-based organizations have been summarized in the earlier section.

3.0 STRATEGIC ACTION FRAMEWORK PRIORITIES

3.1 Addressing Poor Solid Waste Management

Strategic Action 1 – Implement relevant section within the National Waste Management and Pollution Control Strategy 2017–2026 for ridge to reef projects.

Strategic Action 2 – Formulate and innovate sustainable waste management solutions applicable for the ridge to reef context and approach.

Strategic Action 3 - Establish and support enforcement capabilities for agencies responsible for environmental ordinances or by laws within the ridge to reef context.

Strategic Action 4 - Encourage and support Public-Private Partnerships within the ridge to reef context.

Strategic Action 5 – Undertake and have in place a waste management advocacy and education programme that targets all members of the communities especially women, youths and those involved in waste disposal and management.

Strategic Action 6 - Develop and implement economic instruments/measures for sustainable solid waste management.

Strategic Action 7 – Promote the 4Rs refuse, reduce, re-use and recycle for the ridge to reef approach.

Strategic Action 8 – Undertake regular waste audit as part of waste management system for ridge to reef sites.

3.2 Land Degradation

Strategic Action 9 – Ensure that sustainable land use approaches and techniques are applied within the ridge to reef context.

Strategic Action 10 - Strengthen research and extension to support farmers on sustainable agricultural production for ridge to reef projects.

Strategic Action 11 - Undertake training and awareness programme to farmers on pesticide/chemical handling and disposal. Training and all other interventions to be gender and socially inclusive.

Strategic Action 12 - Promote crop and livestock husbandry practices that conserve natural resources, enhance soil fertility, and sustain production.

Strategic Action 13 - Undertake land zoning and prepare community land use plans to prevent land degradation, soil erosion, depletion of water resources, and encroachment on forests.

Strategic Action 14 – Promote ecosystem-based adaptation and mitigation approaches and use improved technology to address climate related impacts.

Strategic Action 15 - Promote agro-forestry with the use of intercropping to reduce soil erosion and improve productivity.

Strategic Action 16 - Promote organic farming and training farmers on adaptation techniques to climate change. Organic farmers training to be specially gender targeted to consider different areas of interest of men, women, youths, and other vulnerable community members.

Strategic Action 17 – Support land boards and lead agencies in urban areas develop policy guidelines for town expansion, coastal management, and vulnerable areas such as hillsides and riverbanks.

Strategic Action 18 – Promote and implement urban green space and conserve areas in urban and community space as part of the sustainable land use.

Strategic Action 19 – Ensure that Environment Management Plans (EMP) for large extractive industries include stringent mitigation measures for land management and rehabilitation.

3.3 Deforestation and Forest Degradation

Strategic Action 20 - Strengthen the capacity for effective enforcement of environment management plans for logging or deforestation activities.

Strategic Action 21 – Support the review of existing legislations on forest resources management to protect and promote sustainable use of forest resources.

Strategic Action 22 - Ensure that all commercial deforestation activities undertake the EIA process required under the Environment Act 1998.

Strategic Action 23 - Strengthen awareness on logging code of practice with landowners and promote community monitoring on deforestation activities. Awareness and community monitoring work to be gender and socially inclusive.

Strategic Action 24 - Formulate guidelines and impose standard fee/cost on rehabilitation of environment damages caused by deforestation or forest degradation activities.

Strategic Action 25 – Promote the use of portable sawmills for local timber needs and income generation.

Strategic Action 26 - Expand Forest rehabilitation, re-forestation, and enrichment planting to enhance forest carbon stocks using local tree species.

3.4 Water Pollution

Strategic Action 27 – Support the effective implementation and enforcement of the Environment Act 1998 section on pollution control for ridge to reef projects.

Strategic Action 28 – Support the formulation of water quality standards for Solomon Islands.

Strategic Action 29 – Undertake regular and periodic water quality assessment and monitoring for ridge to reef projects.

Strategic Action 30 – Support regular coastal water quality assessment and monitoring for the Solomon Islands.

Strategic Action 31- Promote and implement recommendation in the R-WASH Strategic Plan 2015

Strategic Action 32 – Support efforts such as the Solomon Water 30 Year Strategic Plan 2017–2047 for community access to clean and safe drinking water.

Strategic Action 33 – Support and implement watershed and water sources protection and conservation activities for all ridge to reef projects. These protection and conservation activities to consider the different participation of women, youths, and other vulnerable members of the community.

Strategic Action 34 – Undertake regular awareness and education events on water pollution issues. These awareness work will be gender and socially inclusive.

Strategic Action 35 – Support and promote technology that maintains and improve access to clean water.

3.5 Invasive Alien Species

Strategic Action 36 - Ensure there is prevention, early detection, and rapid response protocols in place to safeguard from invasive alien species impacts.

Strategic Action 37 – Implement actions in the National Invasive Strategic Action Plan (NISSAP) within the ridge to reef project sites.

Strategic Action 38 – Conduct localized research to enhance understanding of how exogenous factors (e.g., climate change, physical disturbance) exacerbate the impacts of invasive alien species.

Strategic Action 39 – Undertake regular public awareness and education on the impacts IAS and basic detection on common ones. All public awareness and education will be gender and socially inclusive.

Strategic Action 40 – Implement national safeguard systems for monitoring of ballast water from incoming foreign vessels.

Strategic Action 41 – Undertake a national level IAS baseline inventory and their impacts on biodiversity and ecosystems for ridge to reef projects.

Strategic Action 42 – Support and engage biosecurity officers and environment officials to monitor and manage invasive alien species.

Strategic Action 43 – Engage experts for IAS eradication on a regular basis for ridge to reef projects.

3.6 Coral Reef

Strategic Action 44 - Collaborate with Solomon Island Government, NGOs, and development partners to secure financial resources to support site based coral reef research.

Strategic Action 45– Engage in partnerships with fisheries officers to enforce and monitor existing fisheries regulations.

Strategic Action 46 – Invest in community capacity for coral reef management activities and management guidelines enforcement. These engagements will be participatory and gender inclusive.

Strategic Action 47 - Disseminate information on coral reef management to coastal and inland communities in the form of pamphlets, brochures, posters, and books.

Strategic Action 48 – Implement Locally Marine Managed Areas (LMMAs) and MPAs as an integral part of the ridge to reef approach.

Strategic Action 49 – Formulate community-based coral reef management guidelines as part of the MPA action plans. Community-Based management to be inclusive of women, youths, and other vulnerable members of the communities.

Strategic Action 50 – Include in management guidelines sections on mangrove and sea grass management for ridge to reef projects.

Strategic Action 51 – Undertake partnership agreements with local and international NGOs to support coral management activities.

4.0 PROJECT CASE STUDIES – WHOLE ISLAND, COMMUNITY AND URBAN APPROACH

4.1 Lauru Ridge to Reef Protected Area Network (LPAN) – Whole Island Approach

4.1.1 Description

The Lauru Ridge to Reef Protected Area Network was established through the Lauru Land Conference of Tribal Community (LLCTC) and operated in collaboration with Choiseul Provincial Government, LLCTC and The Nature Conservancy (TNC) through the LLCTC environment committee.

Back in the 1990s, LLCTC had an MOU with Choiseul Provincial Government, while in 2003 LLCTC signed an MOU with TNC to collaborate in Environmental management in Choiseul Province. Based on the MOU between LLCTC and Choiseul Provincial Government, the TNC office was established in the LLCTC headquarter on Supizae Island, Choiseul Province.

The initiative was proposed by the LLCTC environment committee and TNC to the LLCTC General Conference, that there be at least one marine and one terrestrial protected area in each ward in Choiseul Province. Thus, this was approved by LLCTC Conference and implemented by TNC, Choiseul Province and LLCTC through the LLCTC Environment Program.

With this commitment from the indigenous community and LLCTC, The Nature Conservancy in collaboration with the Choiseul Provincial Government took the initiative to establish the Choiseul Province Ridge to Reef Conservation plan. This plan will be used to guide the development and implementation of the protected area network. Thus, the document was completed in 2009 as part of conservation policy in Choiseul Province.



Figure 2: Fisherman on Choiseul – LPAN is about sustainable marine resources use.

4.1.2 Key Approach

The LLCTC environment committee that comprised of representative from conservation serving communities, LLCTC, Choiseul Province and TNC oversees the planning, development, and implementation of the R2R protected area network through the LLCTC environment program.

The development approach encourages the tribal community who are interested to set up a conservation area to manage their resources to submit a letter expressing their interest to the LLCTC environment coordinator. Once the letter is received, the coordinator must follow the due diligent process, which includes conducting an environmental awareness program that clearly outlines what the partners can do and cannot do and what the environment conservation program involves with regards to what the tribal community can do and what partners and stakeholders to play.

After this step, if the tribal community is still interested and would like to proceed with setting up the site, the TNC and LLCTC technical personnel will conduct a baseline survey on the site and advise the tribal community on the size, location, and significance of the proposed site. Once everyone agrees, GPS coordinates will be taken, and the site map will be developed and included in the Lauru Ridge to Reef Protected Area Network Overall Map.

4.1.3 Conservation Targets

Conservation targets were set according to the Conservation Criteria outlined during the development of Choiseul Ridge to Reef Conservation Plan for all conservation features (R2R conservation plan document). A simple 10% and 20% targets based on original extent were assigned to all conservation features (terrestrial, marine and community).

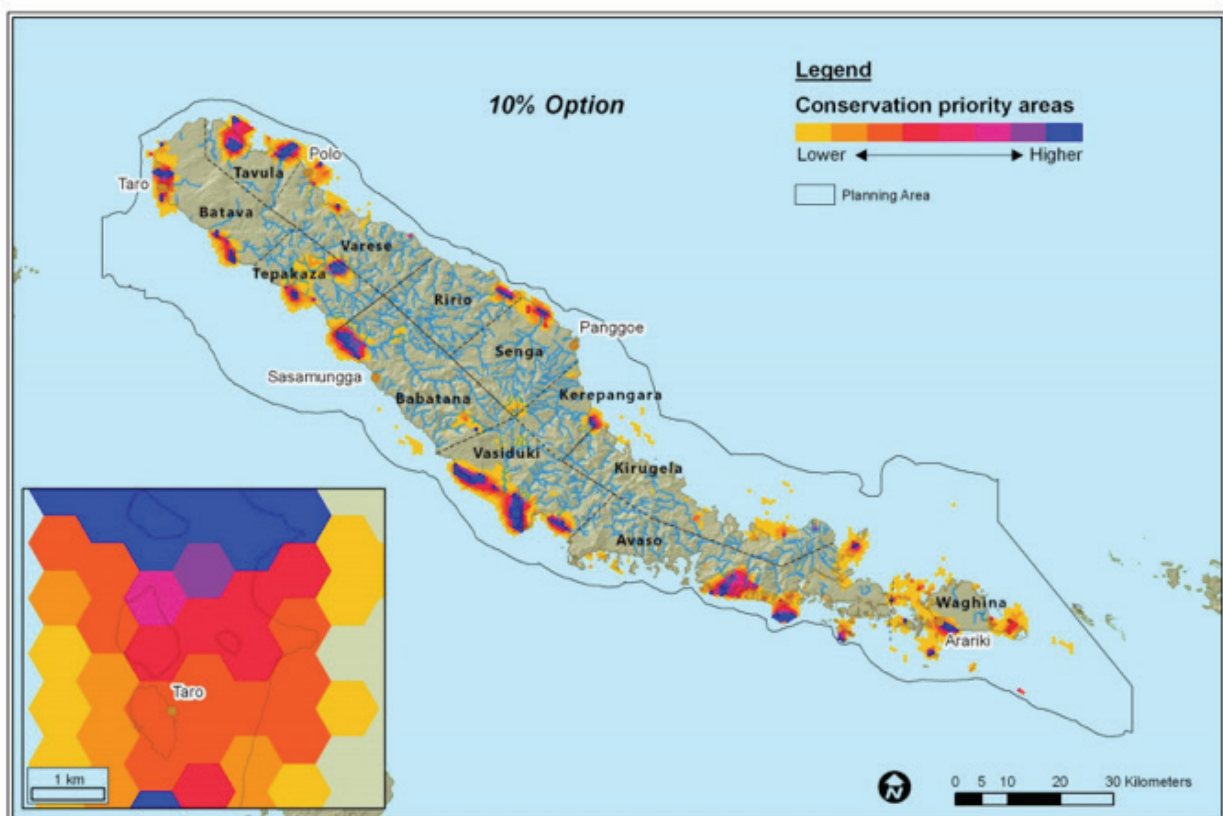


Figure 3: Conservation Priority areas – 10% option (© TNC)

The 20% scenario adopts a precautionary approach and recognises the uncertainty around the impacts of climate change and equally how biodiversity will respond to those changes. By increasing the adequacy of the protected areas network, we increase: the first lines of defence against sea level rise (mangroves, fringing reef, etc), intact catchments and freshwater ecosystems to improve freshwater security greater areas for all marine and terrestrial targets to improve food security and provides the added benefit for biodiversity by increasing the adequacy of the protected areas network for species and ecosystems (R2R Conservation plan).

4.1.4 Outcomes and Activities

The over welling outcome from the start is the result of replenishment of the marine resources over a period of at least from 6 months to a year of not take to the designated site. The testimony by the conservation serving tribal communities is that the number and the size of resources increase.

As a result of this word of mouth, other nearby tribal communities proposed their tribal site as well. This resulted in the increase of interest from communities and the expression of interest to the LLCTC environment office. Thus, follow the dominion theory of fall, as more and more tribal communities express their interest when they see result from other sites.

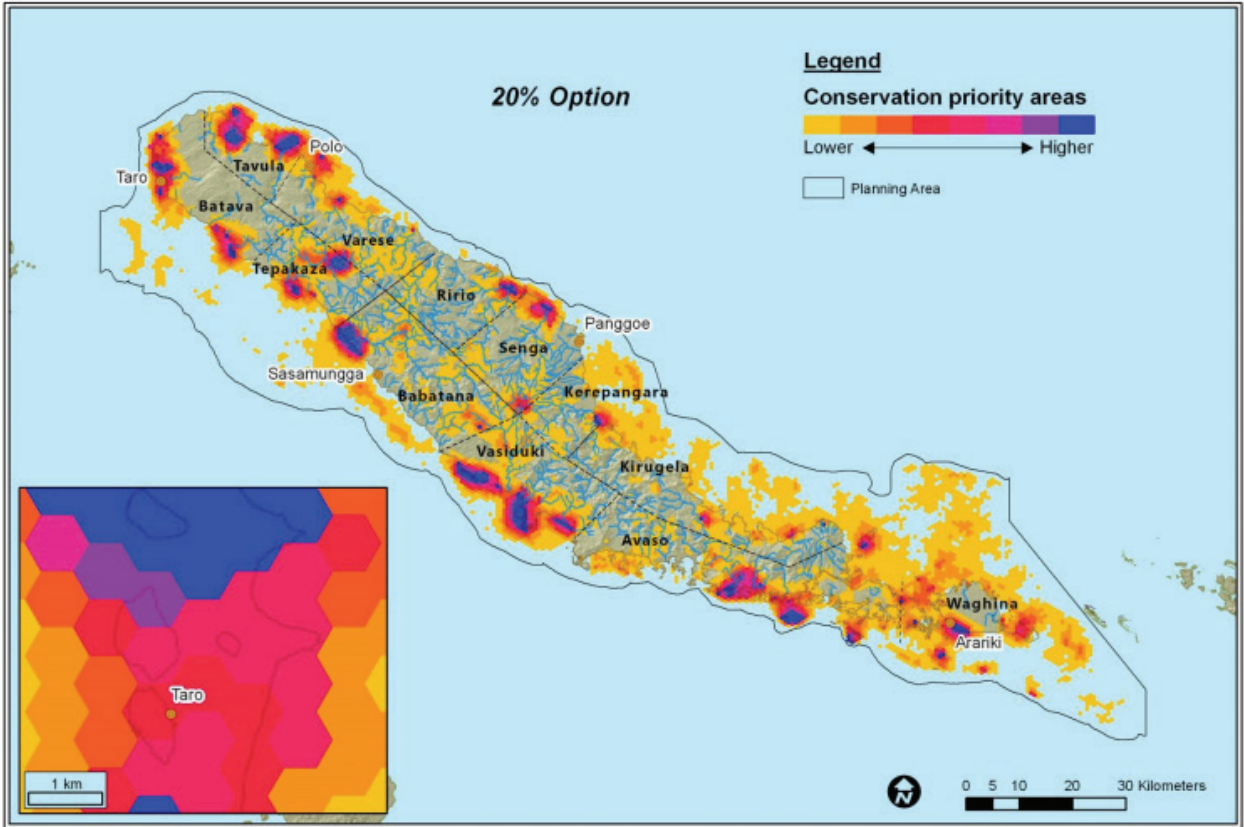


Figure 4: Conservation priority areas: 20% option (© The Nature Conservancy)

With this great interest, the environment coordinator is responsible for guiding their response and the level of commitment to the interest using the conservation plan as a science-based approach.

As the sites are established through the process, they are part of the network, thus the partners and stakeholders visited the community once or twice a month.

While the sites are established in the community, people are the center and the key to the success of the project. Thus, the program integrated livelihood activities at the community level to be able to supplement their commitment to spare the land and the sea for months and years. In all site's men, women and other members of the communities are actively engaged in all activities implemented and their participation and commitment determine the success of the interventions.

The commitment and the interest shown by the tribal communities to manage and look after their land and the sea leads to a healthy ecosystem and sustainable community living regardless of the increasing impacts of Climate Change. People are resilient and be able to adapt to the impact of climate change. Thus, a priority to emphasize the need for investment in Community sustainable development.

4.1.5 Lessons learned

There is a lot of lessons learnt from the approach regarding the way the tribal community susceptible to the initiatives and the approach in which different partners and stakeholders collaborate.

Community Time - The tribal community have their own schedules and program everyday therefore there is a need to organize meetings or workshops in the time that suits them and not stakeholders and organizations. Proper consultations with the community before organizing any community program is the key.

High community expectations that may not be met - There are always monetary expectations from communities in relation to projects (Read et al., 2010). LLCTC attempts to manage these expectations by frankly informing the community of what can be achieved, and what is outside the collaborative scope of work. LLCTC makes it clear from the start, and only when all agree will the conservation work begin.

Limited capacity for community management - Although a management committee might be set up to oversee the overall management of the conservation area and serve as point of contact for partners who worked with them, there is no guarantee the committee has the needed skills. LLCTC is able to draw upon many resources to support orientation and training for newly established committees. Also, the number of existing management committees provides a great opportunity for peer-peer exchange and learning. Furthermore, the annual meeting of the LLCTC provides a good opportunity for side-events and special sessions. Funding for management activities is generally not a major issue – aside from monitoring, most management actions become a routine part of daily activities. As such, while there is a cost, in terms of time and effort, the financial needs are minimal.

Differences over ownership of potential LMMA lands and seas - Disagreement over land ownership extending to the marine environment is a common issue in Choiseul Province. Whenever there is an incident, LLCTC deals with this according to the culture and traditional

process of Lauru. The secretary of LLCTC deals directly with the tribes involved. For example, in the Rabakela conservation area two tribes have disagreements over land which affects the coastal conservation area. This case is being dealt with by LLCTC according to the tradition and culture of Choiseul, but the resolution process is time-consuming. Therefore, once we find out that there are land disputes within the community during our early engagement process, we do not progress with the engagement process but allow them to sort the issue. In the case where we have already engaged with the community before there is a dispute over land ownership, the LLCTC deals directly with the parties involved daily activities. As such, while there is a cost, in terms of time and effort, the financial needs are minimal

Compatible livelihoods may be difficult to provide - Where feasible, LLCTC aim to support livelihoods of communities who conserve their areas, especially where there is a clear opportunity cost incurred through conservation. LLCTC are exploring options to integrate ecotourism with conservation through support to the Parama Island, Zinoa and Chivoko conservation areas to build eco-lodges to collect some income from accommodation. Additionally, Chivoko community is being supported by LLCTC and partners to develop an Eco timber operation as an alternative to industrial logging.

Disagreement within communities about conservation actions- Communities do not always agree and this can hinder the development of a plan. When communities are divided, the LLCTC does not become involved directly but helps the process by providing advice and talking with the different parties involved. The community is encouraged to solve the problem internally. In most cases it is easier to deal with community disagreements than with tribal disagreements.

4.2 Barana Community Nature and Heritage Park – Community Approach

4.2.1 Description

The Barana Community Nature and Heritage Park in the Solomon Islands is located on an upland area northeast of Guadalcanal Island. It is in the vicinity of the old Queen Elizabeth National Park, which was established in 1953 by High Commissioner Sir Robert Stanley to commemorate Queen Elizabeth II's coronation. With the support of the SPREP Pacific Ecosystem-based Adaptation to Climate Change Project, the Barana Community Nature and Heritage Park was established in 2018 on the upper ridge of Mt Austen, between the Lunga and Mataniko watersheds.

The Guadalcanal Provincial Government governs Barana village which is located outside of the HCC boundaries to the south of Mount Austen, approximately 3 km south of the Honiara CBD, and on the edge of forested lands that stretch across the Mataniko and Lunga catchments. It stretches for 23 kilometers along the lower reaches of Kongulai, Mataniko and Lunga rivers. Honiara is a highly modified landscape, with isolated patches of modified terrestrial and aquatic ecosystems. The population in 2015 was 87,000 (20% of the national population), with a population growth of 4 percent per year. 35-40 percent of the population lives in settlements, with limited access to utilities and basic services, treated drinking water, waste management, and sanitation facilities.

Key ecosystem services for Honiara are highly vulnerable to temperature rise, sea-level rise, ocean acidification and extreme weather events. Extreme rainfall events can lead to flash floods and severe riverine flooding that can have disastrous effects on ecosystem services such as drinking water for downstream communities and lowland areas across Honiara. Another climate change threat common around Barana village is grassland bushfires caused by extremely high temperatures. Extreme weather events have led to flooding in the past that threaten downstream communities along the Mataniko and Lunga Rivers.

4.2.2 Key Approach

The project undertook an Environment and Socio-economic Resilience Analysis and Mapping (ESRAM) to identify key ecosystems for management including terrestrial watersheds for the Mataniko and Lunga upper catchments, gardens and farming areas, forests, rivers, streams, riparian forests, flora, and fauna. In addition, resilience must also be built for communities that depend on these natural ecosystems.

These ecosystems provide key ecosystem services such as intact watershed for provision of food, materials, income generation (tourism), hazard reduction through storm water regulation and flood control, reduction of sedimentation into waterways; support habitats and biodiversity provisions; provisions of freshwater and recreation and water quality, land stability, erosion, and erosion control. If these ecosystems are not properly managed, it would reduce the resilience of the ecosystem and communities that depend on them at Barana and Honiara city.

Figure 5: Barana Community Consultation to establish the park in 2018



Following further discussion and consultation with the community, it was determined that a community-managed watershed area now known as the Barana Community Nature and Heritage Park (BCNHP) was required. All members of the community including men, women, youths, and other vulnerable groups, were involved in these discussions and consultations. This was immediately followed by the registration of the Barana Community Nature and Heritage Park Association. The association formed a management committee that oversees activities and work programmes of the park. The committee represents the respective men and women of the main tribes and subtribes of Tandai tribal groups. A Park Coordinator was later chosen to be assisted by an Assistant Coordinator, a Chief Ranger, Park Administrator and Treasurer. They form the executive management team of the park. As reflected in the community governance structure, the park management committee is answerable to the chair of the Barana community who are then answerable to the Barana village council of chiefs.

The Park covers an area of over 5000 hectares of forests, community gardens and other land uses. It now attracts visitors every weekend and new developments are being done with support from new partners such as the UNDP GEF Small Grants and other NGOs in the country.

4.2.3 Outcomes and Activities

The Barana Nature and Heritage Park vision, *“The Barana Community envisions building resilience by preserving and enhancing sustainable management of our natural resources, ecosystems and protection of our tradition, culture, history and livelihood. In doing so derive ecological, social, cultural, livelihood and economic benefits for our present and future generations.”*



The park's goal was to implement broad provincial and national ecosystem-based adaptation to climate change through an integrated water resource management on the upper Lunga and Mataniko watershed including the greater Honiara and Tandai catchment areas.

The Environment and Resilience Centre - The centre is a platform where community members, their partners and stakeholders can socialise ideas and approaches on natural resources and ecosystem management towards behaviour change and in turn build climate resilience. It is also a learning and training hub where knowledge can be shared, and exchange of information can occur. It is also used as the administration office and visitor's centre.

Figure 6: The resilient and environment centre – Barana community nature and heritage park

Natural Landscape - to protect mountains, valleys, and other landscapes of the park which act as buffers, protection to rivers and streams, soil stability and regrowth of forests. Also important is to protect and effectively manage all other natural landscapes and promote natural features for ecotourism as tourist vantage points.

Other Productive landscapes - to ensure that there is proper land use planning by the community, promote activities within productive areas that benefits the community, control, and limit overharvesting practices of trees on milling sites, within park and on vulnerable ecosystems such as rivers, ground wells and springs

Natural Ecosystems and Habitats - to protect watershed, streams, river systems, groundwater wells and springs within the park and protect and sustainably manage remaining forests within the park including grassland and other ecosystems. Also important is the creation of waste management and proper sanitation measures at the Barana community and further promote reforestation programme particularly for tourists or visitors into the park.

Biodiversity - to protect the park's flora and fauna and document important local plants and animals. Also important is to sustainably manage iconic plants and animals which are culturally important for the people and further address the issue of invasive species within the park.

Culture Heritage and Traditional knowledge - to protect, transfer and maintain our cultural values, for our new generations and protect cultural identity, rights, and existence on our land.

Historical WWII Heritage and Memorial Sites - to protect all historical values located within BCNHP and create local museums for tourist attraction. Furthermore, know how to communicate about WWII historical backgrounds and information.

Nature, Recreation and Leisure Activities - Identify important and potential recreational values found within the park and protect and promote important recreational values for tourist attractions.

Science, Research and Education - To promote education through research and scientific studies on important biological resources, including history, cultural values, social and economic trends at Barana village

Some of the key community support and livelihood activities include:

Ecotourism and Tourism Opportunities - promote ecotourism activities at the park and establish sustainable tourism income for the community.

Economic and Livelihoods Options - create more sustainable business and livelihood opportunities for the community and to support and better coordinate small businesses and livelihood opportunities at the park.

Learning, Empowerment and Training (capacity building) - improve community understanding, knowledge, and skills for the management of the park and educate community members in various technical areas of natural resource management and climate change adaptation.

In all these livelihood activities, a gendered approach is used where entry points for men, women, and youths are identified to enable total community participation.

4.2.4 Lessons learned

Multiple landownership issues – the issue of landownership is a challenge for the project considering different tribes own different portions of land within the park. This is further complicated by the fact that some parts of the land are fixed-term estates, while others are registered and held by trustees and then the remaining under customary land. Competing interests from these landowning groups was difficult to manage.

More community awareness and literacy related issues – Many community members require clear understanding of the project and its goals and objectives. It has been observed that low levels of literacy within community is a huge barrier to community education and awareness efforts.

Weak community governance and leadership is a challenge – weak governance mechanisms and leadership issues at the community level was a challenge and continues to be so throughout the project. Conflicts between families and individuals affects the project and with low literacy the project is sometimes personalized and thus delays in implementation of activities.

Proximity to Honiara urban area is a challenge – the impacts of the proximity of the site to Honiara as the urban center makes this project a complicated one. The threat from urban expansion, intrusion and demand for bush materials threatens the management efforts for the site. The increasing sale of land proximate to the park boundary is difficult to manage.

Livelihood options require systemic planning – developing livelihood options was a challenge although the potential is significant. The community already are involved in subsistence agriculture and sells some of their products daily at the local market. The natural attractions and WWII history has huge eco-tourism potential that will require some investment and getting the operators organized. Managing income is also a challenge as most community members are actively engaged in social events within Honiara and spending the little, they earn on alcohol and food.

Figure 7: Park notices on waste management and cutting of trees.



Need for partnership with an established NGO – the project will need have a long-term engagement with an NGO to work the community CBO. Issues around procurement and financial management requires that engagement and backstopping. The NGO can also provide technical support to ongoing activities and engagement.

Threat from logging and extensive milling – The threat from logging and milling remains an issue with extensive logging occurring on both sides of the catchment. Multiple discussion and communication have been made with the Ministry of Forests to address these threats.

4.3 LEAF HCC Environment Education – Urban Environment Education

4.3.1 Description

Honiara city is home to thousands of people, the capital and face of Solomon Islands. It is essential that it be conserved and nurtured as we want the city that nurtures its people and people nurturing the city.

Learning and Ecological Activities Foundation for Children (LEAF) (Phase II) has been implementing a Japanese Technical Cooperation under the JICA Partnership program with Honiara City Council as a counterpart for “Sustainable community development through promoting environmental learning activities in cooperation with both the public and private sectors”. It is initiated after LEAF Phase I came into completion in 2017.

LEAF Phase I project focused on waste management and identifying mainly waste collection sites in Honiara City. Seeing the need to preserve the natural environment for its children, LEAF extends the project to Phase II focus on Environmental Learning. LEAF Phase II is a 4-year 9 months project which started in August 2017 and will complete in May 2022. The project target area is Honiara City, and aim is to develop environmental education and learning activities for children.

4.3.2 Key Approach

The project recognizes the need to preserve, protect and conserve Honiara’s natural environment through promoting environmental education to children. As such, three Environmental Learning Centres (hereinafter known as “ELC”) were established to support environmental learning activities and programs. Prior to establishment of these three ELC, a committee was formed under LEAF Phase I project (in cooperation with Honiara City Council) known as Honiara Cooperation Committee comprising of both the public and private sectors.

Network of Environmental Learning Centres

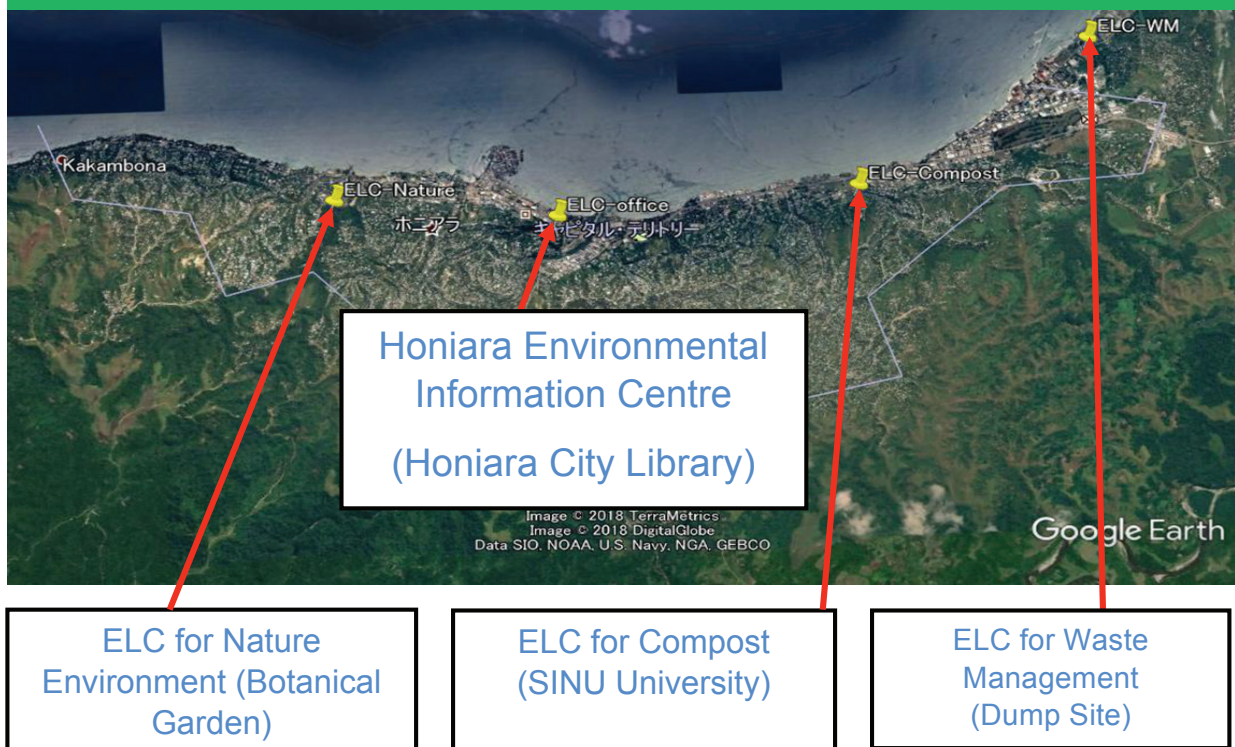


Figure 8: LEAF Project network of 3 Environmental Learning Centres and Honiara Environmental Information Centre

ELC for Waste Management was established in October 2018 with signed MOU by HCC, JICA, and LEAF and handed over to HCC, and is managed and looked after by LEAF local staff with EHD HCC Officer on site.

ELC for Compost at SINU Kukum Campus was established with signed MOU by SINU, HCC, JICA, and LEAF, and handed over to SINU in March 2019.

ELC for Nature Environment at Botanical Garden was renovated, the facility with collaborative initiative between Ministry of Forestry & Research (MoFR), HCC and LEAF (under JICA PROJECT) to promote sustainable community and develop learning activities. The parties signed MOU and now preparing for opening the centre in September 2021.

Honiara Environmental Information Centre

This is in Honiara City Library, and it will be managed by HCC and LEAF.

Now HCC has been renovating the facility and soon will be open.

4.3.3 Outcomes and Activities

A. Honiara Declared as an Environmental Learning City through promoting systematic environmental learning activities in schools and community.

On 31 October 2019, Honiara City became the first of its kind in the Pacific to declare as an Environmental Learning City. Since then, Honiara continues in its initiatives by developing community-based programs in environmental education.

B. Environmental Learning Support Centres established for citizens to learn about waste management and its impact on the natural environment.

To promote environmental learning in Honiara City, LEAF Phase II Project established three environmental learning centers and one environmental information center for Honiara citizens mainly for children who will carry the city next generation.

The environmental learning centres are as followed:

- i. **Environmental Learning Centre for Waste Management:** It is located at Honiara Ranadi Landfill and managed by the Waste Management Supervisor. This learning centre provides a visual learning venue in which children and visitors can witness the actual sorting of recyclable items and to have a clear understanding on how to separate garbage.

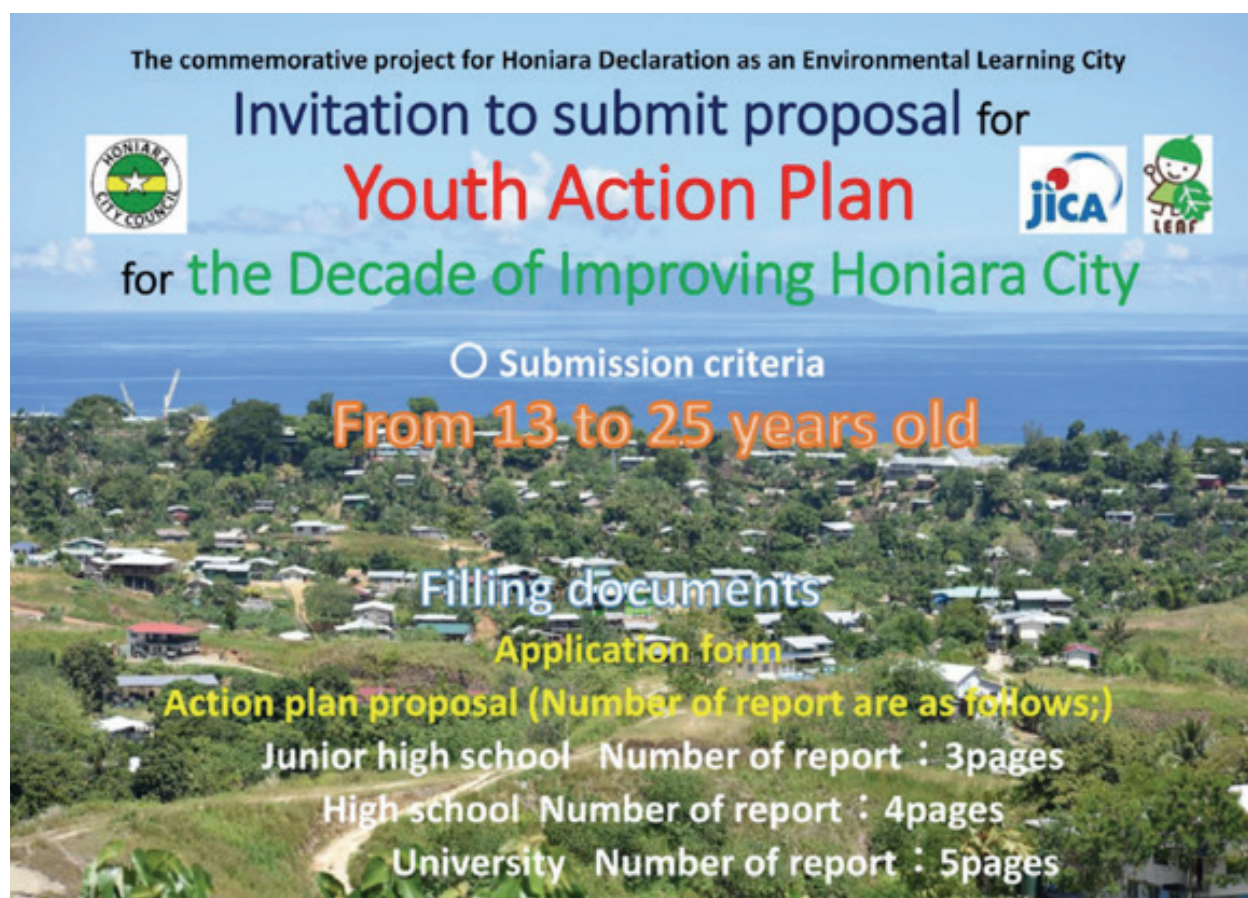


Figure 9: Flyer for young generation submitting Youth Action Plan for the decade of improving Honiara city, and 4 excellent students were invited to Study tour to Japan in 2019

- ii. **Environmental Learning Centre for Compost:** It is located at SINU Kukum Campus (School of Natural Resources and Applied Science).

The purpose of establishing this centre are as followed:

- To teach children on the importance of separating household garbage (separating organic wastes and inorganic wastes).
 - To teach children on how to compost organic materials.
 - To enable learners, understand experimentally that organic garbage such as kitchen garbage, garden branches and other organic materials turns into good quality soil.
- iii. **Environmental Learning Centre for Nature Environment:** Established and located at Botanical Garden. Purpose of establishing this centre is to enable citizens and children to focus on the abundant Nature of Honiara City, to improve their consciousness in treating nature well and conserving the natural environment and to broaden their understanding to reduce volume of garbage and reusing of organic garbage.
 - iv. **Environmental Information Centre:** located next to the Honiara National Library. The centre hosts and provides public access to environmental learning resource materials that allows individuals to explore environmental issues and take action to improve the environment specifically environmental issues faced in Honiara.

C. Community-based learning resources developed targeting children at each of their education levels in relation to their school curriculum.

- Supplementary teaching material titled “**Our City Honiara**” has been editing by some teacher volunteers and will be completed and published in 2022.
- This will be made based on Nishinomiya city model in Japan targeting age 10 for community-based learning.

D. Nature Guidebook was published for citizen’s awareness of nature

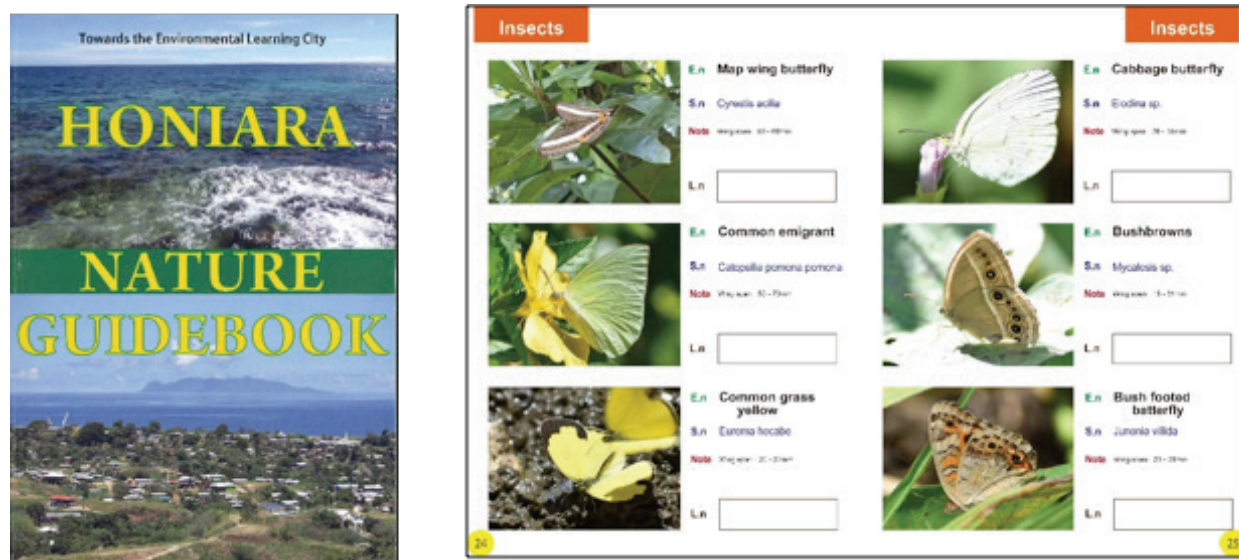


Figure 10: Honiara Nature Guidebook

This is the first time for Honiara city to publish a book related to organisms.

They have already distributed to all kindergartens, schools, universities, and the relevant organizations in Honiara city in 2020 to utilize for citizen's awareness and interest in nature.

E. Non-profit organization promoting sustainable community development in partnership with public, private and the academic sectors established.

F. Activities with the Honiara Partnership Committee established as an entity of Honiara City Council.

- Street awareness, community awareness and interview programme approach in which the committee members go out on the street doing awareness and clean-up campaign. Interview was also conducted basically to get the opinions from various Honiara citizens on their vision for the city to become a clean, green, and livable city. Interviews were also conducted with the younger generations who will carry the next Honiara community development.

4.3.4 Lessons learned

- Strengthening Partnership with key stakeholders:
 - i. Continued consultation with key partners is a way forward to gain recognition and to strengthen partnership with both the public and private sectors in addressing wastes and environmental issues.
 - ii. Attending other project programme create a platform for LEAF Local Staff to meet with other project stakeholders and conceptualize ideas on how they could work together to address environmental issues and making Honiara become a livable city for all.
 - iii. Continued collaboration with the HCC Education Authority and the Ministry of Education and Human Resources Development gives a positive direction when creating environmental program activities with schools in Honiara City.
 - iv. Making courtesy call to other key partners and stakeholders is vital as it gives the opportunity to share the project's aims and objectives.

Insect Collection & Making specimens
Aquatic life Collection
Investigate the water quality in river



Figure 11: LEAF Project investigating water quality using biological indicators

- **The need for broader participation-** Most of Honiara Partnership Committee members also have specific jobs and sometimes it is difficult to work together. This was obvious during the street awareness before the Environmental Learning City Declaration that the committee was supposed to be the driving force of this activity, however, most did not turn up. However, in order to achieve project aims and objectives, it needs everyone's cooperation, time, and effort in addressing environmental issues faced in the city.
- **More involvement with teachers** – There is a need for more schools existing in Honiara City to broaden the scope and involvement of both students and teachers.
- **Developing environmental education resource materials** – This is challenging particularly when engaging the schoolteachers. Need everyone's cooperation, time, and effort in developing these materials for students' learning.
- **Delay in implementing activities at the three ELC with students** - Due to Covid19 most of the activities remain pending since 2020 as the city is in its State of Emergency and hence, mass gatherings were being avoided. However, the activities will be in place as the project continues.

5.0 KEY RECOMMENDATIONS FOR RIDGE TO REEF IMPLEMENTATION

The following key recommendations are drawn from the case studies presented in this report and also from the stakeholder experiences presented during the consultation meetings and workshops. These recommendations are applicable to the Solomon Islands context at community, urban and at the national level. The country has over the years implemented numerous projects related to environment management, climate change, biodiversity, and natural resources management. The recommendations are drawn from the lessons learned and are critical for the successful implementation of the ridge to reef approach.

Community Consultation for their consent and understanding- It is one of the important processes not to overlook when working in community conservation projects. Proper community consultation that ensures the participation of all members of the communities including women, youths and vulnerable groups and understanding and has their consent to the project implementation is vital for long term community collaboration with any organization or Government agencies. This is the key to long term and healthy working relationship. Once all tribal members of the community group are aware and agree, it will make project activity implementation easier as everyone is on the same wavelength

Build community trust through clear communication and managing expectations - Building trust in any community in the Solomon Islands is the key to project implementation. This goes with clear communication and managing their community expectation with transparent and accountable dealings. You have to be honest with the project on what can be done and what is outside of the scope of the project. This is important to understand because the community needs, and expectations may not be in line with the project deliverables and so there is a need to clearly communicate with them when such class of expectation and issues arises.

Land and sea boundary issues – tribal ownership and access to resources - It is paramount to understand from the consultation perspective the land and sea tenure systems. One must make sure that the land and the sea is clear from disputes and important to work with traditional leaders or organization to be sure at the first with regards to tenures status and resources use relating to the tenure system

Community broad participation including women, youths, children- Participation of all community stakeholders is very important. This will keep the interest and the support for the project to be alive and active and at the same time they feel ownership of the project. Once women, youth and children don't get involved in any of the project activities or communications, there is less support for the project and less community participation

Awareness and education must be ongoing and not one-off activity - Education and awareness are one of the keys to project implementation and support. People will support or properly implement the project once they understand its importance and connections to their livelihood and the impact to their environment. Through awareness and education, the community will understand the science and the social importance of the project implementation. Continuous awareness helps keep reminding the community the importance and the connections as to why the project is implemented and continues to clear their doubts over the project implementation should they come across any internal issue

Alternative livelihood options to support daily and domestic needs - One of the key factors that

conservation projects faced challenges on, are the benefits. Alternative livelihoods projects are very important to consider while implementing Ridge to Reef projects. Once we manage the reef and the land, it is crucial to find livelihood projects to offset the project on their land and sea, thus, to support the community in their daily domestic needs. This is something that any R2R project to correlated consider when are implementing any conservation project.

Adhere to community protocols and traditional kastom - Every community in the Solomon Islands have protocols and customs that any visitor to any community should adhere to. It is important to understand and follow those protocols or custom obligations in any community. By doing, so the community will respect the project and the personnel. This is important because there are different types of people from different islands within the Solomon Islands and or from international community who will visit any community with different cultures, thus, needs to follow those. In doing so trust, respect and working in harmony will prevail throughout the project life span

Understand governance mechanisms at community level- It is always wise to understand the Governance mechanism and the way they function at the community level. This will help the project implementation not to clash in any project activity. That is to know the line of communication and the authority in command at the community level, which will help any organization or agency not confuse at any time during project implementation.

Sustainability of activities beyond project interventions - Project sustainability is one of the key factors to consider right from the start of the project. It is one of the challenges faced by many organizations that is as soon as the project lifespan ends, the community projects either stopped or struggle to continue. Thus, it is important to work closely with indigenous organizations or Government agencies through appropriate line ministries to carry on after the project period lapses.

Managing expectations from the community -This is one of the challenges that community projects came across or faced. The mentality of most of the community population is that, as soon as they heard the word project, they associate it with more money coming. However, that is why community awareness and using the right/correct word or approach is important in the beginning. That is because if we say the wrong word or take a wrong approach that will raise their expectations and later you try to manage, will need extra effort and energy to do so. Most important and wise thing to do is learn to use the correct word and the right message during and while implementing the R2R project, because the community members pick on every single word you say or single move you do.

6.0 CONCLUSION

The strategic actions realized in this document are recommended within the context of existing sectorial and thematic policy and strategies/plans. The focus of the strategic actions is for ridge to reef projects and approaches to implement cross-cutting activities both at the project site and at the national level. The national level actions will ensure that the ridge to reef projects or approaches have national level interventions to enable long term sustainable outcomes. The IDA therefore provides a cohesive platform for priority interventions for the ridge to reef approach with broader considerations to current enabling environment and related contextual issues. The implementation of the strategic actions at the national level are expected to be undertaken in collaboration with responsible provincial and national agencies.

The ridge to reef approach is critical to maintaining environmental integrity and building climate change resilience against the background of challenges such as large-scale natural resources extraction from mining which is a prelude to many decades of unsustainable deforestation from logging. The impacts of climate change exacerbated by population pressures and unsustainable natural resources extraction will require employing the ridge to reef approach as a tool for sustainability, environmental integrity, and community resilience. The strategic actions are expected to be adopted nationwide and can be applied at different scales. They will need to be implemented within the parameter of the key principles of this report and consideration to gender and the most vulnerable groups to ensure that there is broader community participation.

REFERENCES

- Australian Bureau of Meteorology and CSIRO, 2014. Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation, Melbourne, Australia.
- Barclay, K., Payne, A.M., Mauli, S. and Krushelnytska, O. 2015. Towards Gender-Equitable Fisheries Management and Development in Solomon Islands, World Bank, Solomon Islands.
- Bennett, J. 1987. Wealth of the Solomons: A History of a Pacific Archipelago, 1800-1978.
- BMT WBM. 2017. *Solomon Islands ESRAM: EbA Implementation Plans*. Prepared for the Secretariat of the Pacific Regional Environment Programme by BMT WBM, Brisbane.
- CBD, 2009. *Connecting Biodiversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change*. Convention on Biological Diversity Technical Series 41, Montreal, Canada.
- Critical Ecosystem Partnership Fund CEPF, 2015. East Melanesian Islands Ecosystem Profile Summary. Conservation International, VA, USA.
- Filardi, C., Boseto, D., Filardi, C. 2007. A preliminary desk study identifying important bird areas (IBAs) in the Solomon Islands. Birdlife International.
- Hansell, J., F and Wall J., R, D. 1976, *Land Resources of the Solomon Islands*, Land Resource Division Ministry of Overseas Development, England.
- Hipkin, S. 2018 *Ecosystem-based adaptation options assessment and masterplan for Wagina Island*, Solomon Islands. Apia, Samoa: SPREP. pp. 50
- Hipkin S, 2018. *Ecosystem-based adaptation options assessment and masterplan for Honiara*, Solomon Islands. Apia, Samoa: SPREP. pp. 65
- International Union for the Conservation of Nature (IUCN). 1994. *Guidelines for Protected Area Management Categories. CNPPA with assistance of WCMC*. IUCN, Gland, Switzerland and Cambridge, UK.
- JICA, 2006. The Study for Rehabilitation and Improvement of Solomon Islands Water Authority's Water Supply and Sewerage Systems: Final Report Main Report. Honiara, Solomon Islands
- Kirch, P.V. 2000. On the road of the winds. Berkeley, University of California Press.
- Kool, J., Brewer, T., Mills, M., and Pressey, R. 2010. Ridge to Reef Conservation Plan for
- Lavery, TH, Pikacha, PG, Fisher DO. 2016. *Solomon Islands forest life: Information on biology and management of forest resources*. The University of Queensland. Brisbane
- Lipsett-Moore G., Hamilton R.J. Peterson N., Game E., Atu W., Kereseka J., Pita J. and Ramohia
- McCoy, M. 1980. *Reptiles of the Solomon Islands-handbook 7*. WAU Ecology INSTITUTE. WAU, Papua New Guinea, pp. 80

- McDonald, J. 2006. Marine resource management and conservation in Solomon Islands:
- Menazza, S., Balasinorwala, T. 2012. *Assessing ecosystem services for Lauru Protected Area Network (LPAN), Choiseul, Solomon Islands*. The Economics of Ecosystems and Biodiversity, January 2012 (www.teebweb.org).
- Morrison, C., Pikacha, P., Pitakia, T. and Boseto, D. 2007. *Herpetofauna, community education and logging on Choiseul Island*, Solomon Islands: implications for conservation. Pacific Conservation Biology 13: pp. 250-58.
- Mueller-Dombois, D. and Fosberg, F.R. 1998. Vegetation of the tropical Pacific islands.
- NWRS (National Water Resources and Sanitations Policy). 2017. *Ministry of Mines, Energy and Rural Electrification*, Honiara, Solomon Islands
- Lipsett-Moore, G., Hamilton, R., Peterson, N., Game, E., Atu, W., Kereseke, J., Pita, J., Ramohia, J., and Siota, C (2010). Ridge to Reef Conservation Plan for Choiseul Province, Pacific Horizons/SIG. 2008. *Solomon Islands State of Environment Report*. Honiara. Solomon Islands
- Pauku, R. and Lapo, W. 2009. National Biodiversity Strategy and Action Plan for Solomon Islands. Solomon Islands Ministry of Environment, Conservation and Meteorology, Honiara.
- Pillai, G. and Sirikolo, M. (2001). Mangroves of the Solomon Islands. Institute of Marine
- PIPAP.2016. *Pacific Islands Protected Areas Portal*. Interactive online database accessed: July 2018. www.pipap.sprep.org
- SMM Solomon Limited,2012 Environmental Impact Statement, Santa Isabel Island.
- Solomon Islands Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM), Volume 3: Honiara. 2018. Secretariat of the Pacific Regional Environment Programme (SPREP). Apia, Samoa.
- Demmke, A. and Neupert, R. 2010. Solomon Islands Government. Report on 2009 Population and Housing Census- Honiara.
- Solomon Islands National R2R Programme Document. 2014. GEF Pacific Ridge to Reef National, Pacific Community, Suva Fiji Islands
- Solomon Islands Government. 2016. *National Development Strategy 2016 to 2035*. Ministry of Development Planning and Aid Coordination, Honiara, Solomon Islands
- SPREP,2018. *Planning for ecosystem-based adaptation in Honiara, Solomon Islands. A synthesis report*. Secretariat of the Pacific Regional Environment Programme, Apia, Samoa. pp. 16
- Telios Corporate and Consultancy Services, 2015. *Mataniko Baseline Environmental Report. MECDM*, Honiara, Solomon Islands
- Thomson, B. 1981. *Mt Austen Arboratum-Forestry Information. Pamphlet No.3. Forestry Division*, Ministry of Natural Resources, Honiara, Solomon Islands

- Toki, B., Leger, L., Richards, S., Hipkin, S., Lorimer, J. and Coulton, R. 2018. *Solomon Islands Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM), Volume 1: Introduction and national assessment*. Apia, Samoa: SPREP pp. 141
- Toki, B., Leger, L., Richards, S., Hipkin, S., Lorimer, J., and Coulton, R. 2018. *Solomon Islands Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM), Volume 2: Wagina Island (Choiseul Province)*. Apia, Samoa: SPREP pp. 162
- Toki, B., Leger, L., Richards, S., Hipkin, S., Lorimer, J., and Coulton, R, 2018. *Solomon Islands Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM), Volume 3: Honiara*. Apia, Samoa: SPREP pp. 109
- UN-Habitat, 2012. *Solomon Islands: Honiara Urban Profile*. United Nations Human Settlements Programme (UN-Habitat), Nairobi, Kenya.
- Wickham, F., Clarke, J., Yee, D. and Pauku, R. 2012. *National Climate Change Policy 2012-2017*. Prepared for the Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM).
- World Fish, 2013. *Community-based marine resource management in Solomon Islands: A facilitator's guide*. Based on lessons from implementing CBRM with rural coastal communities in Solomon Islands (2005-2013). CGIAR Research Program on Aquatic agricultural Systems. Penang, Malaysia. Manual: AAS-2013-17.

ANNEX 1 – IMPLEMENTATION AND MONITORING PLAN

IDA Priority Focus Area	Strategic Actions	Priority level H- High, Medium- M, Low - L	Timeframe Short term - S Medium term - M Long term - L	Lead agency
3.1 Addressing Poor Solid Waste Management	Strategic Action 1 – Implement relevant section within the National Waste Management and Pollution Control Strategy 2017–2026 for ridge to reef projects.	H	M	MECDM HCC Provincial Government
	Strategic Action 2 – Formulate and innovate sustainable waste management solutions applicable for the ridge to reef context and approach.	M	L	MECDM HCC Provincial Government
	Strategic Action 3 - Establish and support enforcement capabilities for agencies responsible for environmental ordinances or by laws within the ridge to reef context.	M	M	MECDM HCC Provincial Government
	Strategic Action 4 - Encourage and support Public-Private Partnerships within the ridge to reef context.	M	M	MECDM HCC Provincial Government Private sector
	Strategic Action 5 – Undertake and have in place a waste management advocacy and education programme that targets all members of the communities especially women, youths and those involved in waste disposal and management.	H	S	MECDM HCC Provincial Government

3.1 Addressing Poor Solid Waste Management	Strategic Action 6 - Develop and implement economic instruments/measures for sustainable solid waste management.	M	M	MECDM HCC Provincial Government
	Strategic Action 7 – Promote the 4Rs refuse, reduce, re-use and recycle for the ridge to reef approach.	H	S	MECDM HCC Provincial Government
	Strategic Action 8 – Undertake regular waste audit as part of waste management system for ridge to reef sites.	H	S	MECDM HCC Provincial Government
3.2 Land Degradation	Strategic Action 9 – Ensure that sustainable land use approaches and techniques are applied within the ridge to reef context.	H	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 10 - Strengthen research and extension to support farmers on sustainable agricultural production for ridge to reef projects.	M	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 11 - Undertake training and awareness programme to farmers on pesticide/chemical handling and disposal. Training and all other interventions to be gender and socially inclusive.	H	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 12 - Promote crop and livestock husbandry practices that conserve natural resources, enhance soil fertility, and sustain production.	M	L	MECDM Ministry of Agriculture Provincial Government

3.2 Land Degradation	Strategic Action 13 - Undertake land zoning and prepare community land use plans to prevent land degradation, soil erosion, depletion of water resources, and encroachment on forests.	H	S	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 14 – Promote ecosystem-based adaptation and mitigation approaches and use improved technology to address climate related impacts.	H	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 15 - Promote agro-forestry with the use of intercropping to reduce soil erosion and improve productivity.	H	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 16 - Promote organic farming and training farmers on adaptation techniques to climate change. Organic farmers training to be specially gender targeted to consider different areas of interest of men, women, youths, and other vulnerable community members.	H	M	MECDM Ministry of Agriculture Provincial Government
	Strategic Action 17 – Support land boards and lead agencies in urban areas develop policy guidelines for town expansion, coastal management, and vulnerable areas such as hillsides and riverbanks.	H	M	MECDM Ministry of Lands and Housing Provincial Government HCC
	Strategic Action 18 – Promote and implement urban green space and conserve areas in urban and community space as part of the sustainable land use.	H	S	MECDM Ministry of Lands and Housing Provincial Government HCC

3.2 Land Degradation	Strategic Action 19 – Ensure that Environment Management Plans (EMP) for large extractive industries include stringent mitigation measures for land management and rehabilitation.	H	S	MECDM Ministry of Mines, Energy and Rural Electrification Ministry of Forestry and Research Provincial Government
3.3 Deforestation and Forest Degradation	Strategic Action 20 - Strengthen the capacity for effective enforcement of environment management plans for logging or deforestation activities.	H	M	MECDM Ministry of Forests Provincial Government
	Strategic Action 21 – Support the review of existing legislations on forest resources management to protect and promote sustainable use of forest resources.	H	S	MECDM Ministry of Forest Provincial Government
	Strategic Action 22 - Ensure that all commercial deforestation activities undertake the EIA process required under the Environment Act 1998.	H	S	MECDM Ministry of Forestry Provincial Government
	Strategic Action 23 - Strengthen awareness on logging code of practice with landowners and promote community monitoring on deforestation activities. Awareness and community monitoring work to be gender and socially inclusive.	H	S	MECDM Ministry of Forestry Provincial Government
	Strategic Action 24 - Formulate guidelines and impose standard fee/cost on rehabilitation of environment damages caused by deforestation or forest degradation activities.	M	L	MECDM Ministry of Forestry Provincial Government
	Strategic Action 25 – Promote the use of portable sawmills for local timber needs and income generation.	H	S	MECDM Ministry of Forestry Provincial Government

3.3 Deforestation and Forest Degradation	Strategic Action 26 - Expand Forest rehabilitation, re-afforestation, and enrichment planting to enhance forest carbon stocks using local tree species.	H	M	MECDM Ministry of Forestry Provincial Government
3.4 Water Pollution	Strategic Action 27 – Support the effective implementation and enforcement of the Environment Act 1998 section on pollution control for ridge to reef projects.	H	M	MECDM Water Resources Division Provincial Government
	Strategic Action 28 – Support the formulation of water quality standards for Solomon Islands.	M	M	MECDM Water Resources Division Provincial Government
	Strategic Action 29 – Undertake regular and periodic water quality assessment and monitoring for ridge to reef projects.	M	M	MECDM Water Resources Division Provincial Government
	Strategic Action 30 – Support regular coastal water quality assessment and monitoring for the Solomon Islands.	M	M	MECDM Water Resources Division Provincial Government
	Strategic Action 31 - Promote and implement recommendation in the R-WASH Strategic Plan 2015	H	M	MECDM Water Resources Division Provincial Government RWASH
	Strategic Action 32 – Support efforts such as the Solomon Water 30 Year Strategic Plan 2017–2047 for community access to clean and safe drinking water.	M	M	MECDM Water Resources Division Solomon Water Provincial Government

3.4 Water Pollution	Strategic Action 33 – Support and implement watershed and water sources protection and conservation activities for all ridge to reef projects. These protection and conservation activities to consider the different participation of women, youths, and other vulnerable members of the community.	H	S	MECDM Water Resources Division Provincial Government
	Strategic Action 34 – Undertake regular awareness and education events on water pollution issues.	H	S	MECDM Water Resources Division Provincial Government
	Strategic Action 35 – Support and promote technology that maintains and improve access to clean water.	M	M	MECDM Water Resources Division Provincial Government
3.5 Invasive Alien Species	Strategic Action 36 - Ensure there is prevention, early detection, and rapid response protocols in place to safeguard from invasive alien species impacts.	M	M	MECDM Biosecurity Division Provincial Government
	Strategic Action 37 – Implement actions in the National Invasive Strategic Action Plan (NISSAP) within the ridge to reef project sites.	H	M	MECDM Biosecurity Division Provincial Government
	Strategic Action 38 – Conduct localized research to enhance understanding of how exogenous factors (e.g., climate change, physical disturbance) exacerbate the impacts of invasive alien species.	M	M	MECDM Biosecurity Division Provincial Government
	Strategic Action 39 – Undertake regular public awareness and education on the impacts IAS and basic detection on common ones. All public awareness and education will be gender and socially inclusive.	H	S	MECDM Biosecurity Division Provincial Government

3.5 Invasive Alien Species	Strategic Action 40 – Implement national safeguard systems for monitoring of ballast water from incoming foreign vessels.	M	M	MECDM Biosecurity Division Provincial Government
	Strategic Action 41 – Undertake a national level IAS baseline inventory and their impacts on biodiversity and ecosystems for ridge to reef projects.	H	S	MECDM Biosecurity Division Provincial Government
	Strategic Action 42 – Support and engage biosecurity officers and environment officials to monitor and manage invasive alien species.	H	S	MECDM Biosecurity Division Provincial Government
	Strategic Action 43 – Engage experts for IAS eradication on a regular basis for ridge to reef projects.	M	M	MECDM Biosecurity Division Provincial Government
3.6 Coral Reef	Strategic Action 44 - Collaborate with Solomon Island Government, NGOs, and development partners to secure financial resources to support site based coral reef research.	H	S	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 45 – Engage in partnerships with fisheries officers to enforce and monitor existing fisheries regulations.	H	M	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 46 – vest in community capacity for coral reef management activities and management guidelines enforcement. These engagements will be participatory and gender inclusive.	M	M	MECDM Ministry of Fisheries Provincial Government NGOs

3.6 Coral Reef	Strategic Action 47 - Disseminate information on coral reef management to coastal and inland communities in the form of pamphlets, brochures, posters, and books.	H	S	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 48 – Implement Locally Marine Managed Areas (LMMAs) and MPAs as an integral part of the ridge to reef approach.	H	S	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 49 – Formulate community-based coral reef management guidelines as part of the MPA action plans. Community-Based management to be inclusive of women, youths, and other vulnerable members of the communities.	H	M	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 50 – Include in management guidelines sections on mangrove and sea grass management for ridge to reef projects.	H	M	MECDM Ministry of Fisheries Provincial Government NGOs
	Strategic Action 51 – Undertake partnership agreements with local and international NGOs to support coral management activities.	M	M	MECDM Ministry of Fisheries Provincial Government NGOs



