



Samoa International Waters Ridge to Reef Project

By: Ministry of Natural Resources and Environment



Final Report

14th October 2016 to 30th June 2021

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Preface

There has been great efforts by the Ridge to Reef Community of Practice in promoting the significance of the interconnectivity and cross cutting nature of our hydrosphere, requiring a whole of society, whole of government and cross sectoral approach. Samoa in recognition of this complex but critically important aspect, has adopted the ridge to reef principles and components both at the national and community level.

In 2016, Samoa started its regional Ridge to Reef project within the Fagalii Watershed Area, with the goal to improve water resources quality issues affecting water supplies and the receiving coastal environment. The project was implemented parallel to Samoa's STAR Project focusing on the Economy Wide Integration of Climate Change Adaption and Disaster Risk Management to reduce vulnerabilities of Samoan communities.

In pursuit of improving water resources quality in the Fagalii catchment, many activities were implemented with some of the most significant changes achieved in the community's:

- Waste management practices,
- Riparian area and marine ecosystem rehabilitation programs, and
- Land use planning.

New partnerships were established and a significant amount of information was collected and documented through community consultations, and scientific research and monitoring.

Active community engagement was observed right from the start of the project, from the construction of a Participatory 3-Dimensional Model and formulation of the Fagalii Watershed Management Plan by all sectors of the community, to the implementation phase.

At the national level, key national plans such as the Community Integrated Management Plans and sector plans for the water and sanitation, agriculture, as well as the environment sectors, have all instilled a strong ridge to reef approach. Acknowledging the importance of nature from the highlands to the sea, on our national sustainable development agenda. These efforts to mainstream the ridge to reef approach has greatly enhanced closer and stronger collaboration and coordination across stakeholders including the communities.

This report provides a brief summary of activities and highlights of the Fagalii Ridge to Reef Project.



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Project Details

Project Name: Pacific Ridge to Reef Project
Project Location: Fagalii Watershed Area, Apia, SAMOA
Funding Source: Global Environment Facility
Focal Area: International Waters

Project Components:

1. Increasing knowledge-base and national replication of catchment management planning to strengthen management links between catchment and coastal areas;
2. Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia; and,
3. Strengthen support of the National Environment Sector Plan to enhance the mainstreaming of watershed conservation policies in national reporting.

Implementing Agency: United Nations Development Programme (UNDP)

Executing Agencies: Ministry of Natural Resources and Environment (MNRE)

Parties to the MOA: Secretariat Pacific Community and MNRE

Execution Date: 10 March 2017

Original End Date: December 2020

Extension Date: 30 June 2021

Total Cost: USD \$200,000.00

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List of Acronyms

BIORAP	Biological Rapid Surveys
CCA	Climate Change Adaptation
CDC	Cabinet Development Committee
CIMP	Community Integrated Management Plan
CSSP	Civil Society Support Programme
DEC	Division for Environment and Conservation - MNRE
DRM	Disaster Risk Management
DMO	Disaster Management Office
EU	European Union
EWACC	Economy-wide Integration of Climate Change Adaptation and Disaster Risk Management
FD	Forestry Division – MNRE
GEF	Global Environment Facility
ICM	Integrated Coastal Management
IW	International Waters
IWP	International Waters of the Pacific Small Island Developing States
IWMP	Integrated Watershed Management Plan
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
LDCF	Least Developing Countries Fund
LiDAR	Light Detection and Ranging (remote sensing method)
MAF	Ministry of Agriculture and Fisheries
MNRE	Ministry of Natural Resources and Environment
MoA	Memorandum of Agreement
MOF	Ministry of Finance
MWCSD	Ministry for Women, Communities and Social Development
NESP	National Environment Sector Plan
NESSC	National Environment Sector Steering Committee
NGOs	Non-Governmental Organizations
NUS	National University of Samoa
OAG	Office of the Attorney General
P3D	Participatory 3-Dimensional Model
PMU	Project Management Unit
QGIS	Quantum Geographic Information System
RAPCA	Rapid Coastal Assessment Survey
R2R	Ridge to Reef
SAP	Strategic Action Programme
SDG	Sustainable Development Goals
SDS	Strategy for the Development of Samoa
SIDS	Small Island Developing States
SLM	Sustainable Land Management
SMSMCL	Strengthening Multi-Sectoral Management of Critical Landscapes
SPC	Secretariat to the Pacific Community
SROS	Scientific Research Organization of Samoa
TAG	Technical Advisory Group
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
WRD	Water Resources Division – MNRE

1. Introduction

In 1997 the Head of States of 13 Pacific SIDS developed and endorsed a Global Environment Facility (GEF) International Waters Strategic Action Programme (SAP) for Pacific Island Countries. The document identified priority areas for action in the International Waters (IW) Focal Area to improve the management of ocean and coastal fisheries, integrated watershed management and coastal management, and water supply protection. In line with the SAP the GEF International Waters invested in a series of regional initiatives. The first was the UNDP implemented project titled “International Waters of the Pacific Small Island Developing States (IWP)” initiated from 2000 to 2006. For Samoa this project was implemented at Lepa and Apolima-tai to address water resources and supply issues within these communities.

Following the conclusion of the IWP Project, GEF furthered its efforts in light of the critical water resource and sanitation issues facing the region. This was through the GEF Integrated Water Resources Management (IWRM) Project targeting improved coordination and planning of water resource and wastewater management to balance overuse and conflicting uses of scarce freshwater resources. This project was funded by GEF and implemented through UNDP and UNEP and executed regionally by the Geoscience Division of the Pacific Community (SPC) in 14 countries.

The experience and successes from the IWRM Project is regionally and nationally recognised, and are regarded as appropriate entry points for testing approaches and measures to integrate land, forest, water and coastal areas. From here the multi-focal area, multi-GEF agency programme titled Pacific Islands Ridge to Reef Program was developed, to strengthen both national and regional/international coordination on natural resources management.

The goal of the Pacific Ridge to Reef Program (R2R) is to maintain and enhance Pacific Island countries’ ecosystem goods and services (provisioning, regulating, supporting and cultural) through integrated approaches to land, water, forest, biodiversity and coastal resource management that contribute to poverty reduction, sustainable livelihoods and climate resilience.

This goal was envisaged to be achieved through a series of national R2R demonstration projects addressing national priorities and development needs, complemented by IW Regional R2R projects that aimed at strengthening links between the on-going GEF-supported IWRM initiative, and emerging R2R demonstration work on integrated coastal management (ICM), thus enhancing coordination, learning, and knowledge management among the national projects and partners.

Samoa’s R2R Program invested GEF resources into a national climate change adaptation focus project looking at the “Economy Wide Integration of Climate Change Adaptation and Disaster Risk Management to Climate Vulnerability of Communities in Samoa (EWACC)” which started in 2014, complemented by an IW Regional R2R Project “Integrating IWRM and ICM for the Fagalii Catchment” which started in 2016. Preceding these two projects another project entitled, “Strengthening Multi-Sectoral Management of Critical Landscapes (SMSMCL)” was also endorsed mid-October to look at sustainable land management outcomes.

Table 1: Samoa’s GEF-UNDP Projects and Budgets

Project	Focal Area	Project Site	Total GEF Investment	Project Years
SMSMCL	Land Degradation	National	USD\$4,872,727.00	2013-2020 (completed)
EWACC	Climate Change	Greater Apia Catchment	USD\$12,322,936.00	2014-2022
Regional R2R	International Waters	Fagalii Watershed	USD \$200,000.00	2016-2021 (completed)

2. Samoa's Ridge to Reef Project

2.1 The "Economy-wide Integration of Climate Change Adaptation and Disaster Risk Management to Climate Vulnerability of Communities in Samoa" Project (EWACC)

The EWACC Project was developed through the Least Developing Country Fund (LDCF) in 2014, following the aftermath of the 2012 floods associated with Tropical Cyclone Evans that resulted in five casualties and the displacement of more than 7,500 people. The project targeted the fragmented policy approach to Climate Change Adaptation (CCA) and Disaster Risk Management (DRM) in the Greater Apia Catchment through an economy-wide "Ridge to Reef" concept. Table 2 below summarizes the project objectives and activities.

Table 2: EWACC Project Objectives and expected results (adapted from the EWACC Brochure, UNDP:2014)

Project Objective	Components	Expected Outcomes and Results
Establish an economy wide approach to climate change adaptation and DRM in Samoa, targeting the fragmented policy approach to CCA and DRM.	1. Strategic integration of climate change adaptation and disaster risk management in national policy frameworks and development planning through an economy wide approach	<p><i>1.1. Policy Strategies/ Institutional Strengthening: Climate change adaptation and DRM mainstreamed in relevant policies, sectorial strategies, sub-national strategies and budgeting processes through enhanced coordination of government institutions</i></p> <p>Climate Change adaptation mainstreamed into development and sectoral plans; Institutional and operational frameworks for coordination of climate changes adaptation strengthened;</p> <p><i>1.2. Public finance management at the national and village level: Capacity to access, manage, implement and monitor use of climate change funds is enhanced at the national and village level</i></p> <p>MoF and MNRE climate change units, as well as NGOs and village governance structures – have enhanced capacity to access and manage climate finance.</p>
	2. Enhanced resilience of communities as first responders of climate change induced hazards	<p><i>2.1. Protection of communities' physical assets and livelihoods: Increased resilience, and decreased exposure and susceptibility of communities to climate change and natural disasters by protection of household and community assets and promoting resilient livelihoods</i></p> <p>Integrated watershed Management Plan for Greater Apia following "Ridge-to-Reef" approach; Hard and soft measures for protection of community assets;</p> <p><i>2.2. CCA/DRM plans and implementation: Increased adaptive capacity of communities for implementation of effective risk management and protection of household and community assets</i></p> <p>Sustainable micro-enterprises for youth and women on agro-businesses with a sustainable and resilient value chain approach to promote diversified livelihoods; Building on the work of DMO, village plans designed and implemented to develop the capacities of 100 communities to prepare, respond, recover and manage CC risks.</p>
	3. Knowledge about CCA and DRM is captured and shared at the regional and global level	<p><i>3.1 Knowledge about CCA and DRM captured and shared at the regional and global level</i></p> <p>Knowledge about CCA and DRM is captured and shared at the regional and global level; Knowledge management strategy developed, including national awareness campaigns and information sharing through existing international platforms and new multimedia platforms; M&E system established to strengthen institutional coordination and enhance the effectiveness of the interventions on adaptation with an economy wide approach.</p>

The EWACC project was developed in a country-driven approach aligned to the Strategy for the Development of Samoa (SDS) 2016-2021, and meets the SDS Priority Areas 1-4:

- (i) Priority Area 1: Economic Sector. The project will promote climate-resilient livelihood options and strengthen value chains for production, thus reinvigorating business development);
- (ii) Priority Area 2: Social Sector. The project will implement community-based DRM plans and build community-level capacity for CCA and DRM, thus supporting sustainable community development;
- (iii) Priority Area 3: Infrastructure Sector. The project will reconstruct critical infrastructure damaged by Tropical Cyclone Evans, therefore enabling sustainable access to safe drinking water and basic sanitation, as well as efficient and safe transportation systems and networks;
- (iv) Priority Area 4: Environment Sector. The project will support CCA and DRM across all development sectors thus enhancing Climate and Disaster Resilience.

2.2 The Fagalii Ridge to Reef Project: Integrating Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods (Fagalii R2R Project)

On 10 March 2017, Samoa through the Ministry of Natural Resources and Environment (MNRE) signed a Memorandum of Agreement (MOA) with the SPC to carry out the Fagalii Ridge to Reef Project, which was designed to address water supply problems of sedimentation, and water shortages during the dry season.

Table 3: R2R Project Componets and expected results

Components	Expected Outcomes and Results
1. Increase knowledge base and national replications of catchment management planning to strengthen links between catchments and coastal areas	<p><i>1.1. Enhanced access to information regarding the status and locations of vulnerable coastal areas in Apia to enhance coastal zone planning.</i></p> <p>Characterization from Ridge to Reef; Research initiatives undertaken;</p> <p><i>1.2. National uptake of best practice in watershed management planning in the assessment and design of coastal zone plans</i></p> <p>Water quality assessment monitoring; Watershed rehabilitation best practices and tools implemented;</p> <p><i>1.3. Strengthened linkages between watershed management plans and coastal zone assessments to enhance Coastal Zone Management planning in Apia</i></p> <p>Finalise the Fagalii Watershed Management Plan and Coastal Plans; Support Community Integrated Management Plan for Vaimauga East District;</p>
2. Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia	<p><i>2.1. Strengthened biodiversity and sediment load reductions in protected watershed areas via inter-agency partnerships</i></p> <p>Implement the Fagalii Watershed Management Plan; Enhanced riparian zone protection (JICA Biolog technology); Fisheries Reserve and monitoring program in place;</p> <p><i>2.2. Improved sustainable watershed management through monitoring and evaluation of existing environmental protection measures</i></p> <p>Quantum Geographical Information System (QGIS) refresher training; Routine monitoring and surveillance program with M&E Framework in place;</p> <p><i>2.3. Enhanced community and national level awareness and support of best practice catchment protection models</i></p> <p>Community engagement, consultation and involvement enhanced;</p>
3. Strengthen support of the National Environment Sector Plan to enhance mainstreaming of watershed conservation policies in national reporting	<p><i>3.1 Strengthened capacity for monitoring and evaluation of the National Environment Sector Plan</i></p> <p>Quarterly sector meetings and consultations/field monitoring;</p> <p><i>3.2 Improved national results reporting through development of harmonised monitoring and evaluation frameworks for National Environment Sector Plan</i></p> <p>Sector Communication Strategy, Sector Annual Review Reports in place</p>

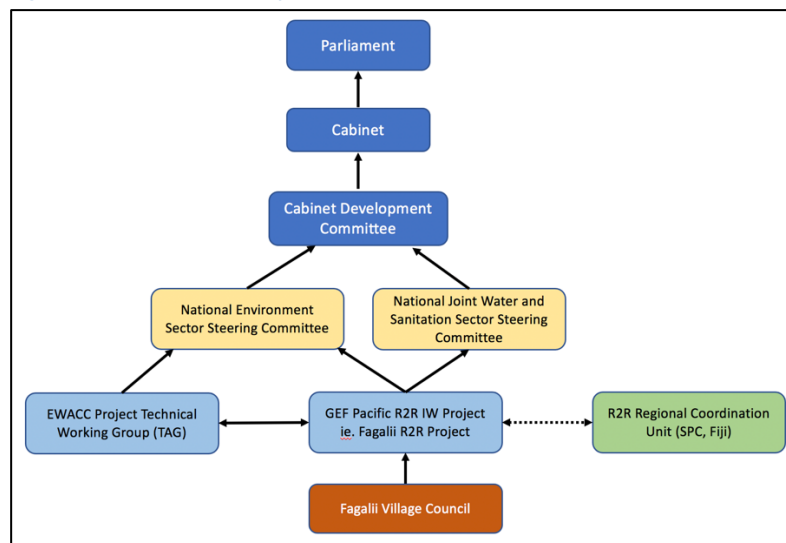
2.3 Project Organization and Management

The executing agency for the Regional R2R project is the Ministry of Natural Resources and Environment (MNRE), with responsible parties and key stakeholders being the Ministry of Agriculture and Fisheries (MAF), Ministry of Women, Culture and Social Development (MWCSO) and the Ministry of Finance (MOF). As mentioned in the previous section, the project design is based around an integrated approach to resolve water quality issues identified by the Fagalii community. As such, the MNRE as the lead agency for the implementation of the National Environment Sector Plan (NESP) and the Water For Life Sector Plan was identified as the most relevant lead for this project.

For ease of coordination and reporting, the project is managed under the auspices of the National Environment Sector Steering Committee (NESSC) which meets on a quarterly basis. This committee is co-chaired by the Chief Executive Officers of the MNRE and MOF. The technical implementation was carried out through the Water Resources Division (WRD) that housed the Project Management Unit (PMU). The PMU consisted only the Project Manager, Mr. Niuava Fata Eti Malolo.

The WRD supported project implementation with office space, a project officer, and a project vehicle as part of co-financing arrangements. Through the NESSC the R2R project was able to communicate and link directly with other relevant projects and partners in other sub-sectors, which could assist with the implementation of activities for the Fagalii watershed area. These led to effective collaborations with the EWACC Project (under the Climate Change Division), the JICA Bio-log Filter Project, the Water Sanitation and Hygiene Sector, the National University of Samoa (NUS) and the Scientific Research Organization of Samoa (SROS).

Figure 1: Structure of R2R Project Committee and links to other Committees



This particular setup for the project enabled it to be mainstreamed into existing mechanisms as opposed to creating a separate coordination body, as there were already concerns from stakeholders on the number of project steering committees taking up a lot of time and resources. As such the Fagalii R2R Project Manager was able to report to the NESCC for guidance and approval of workplans, and at the same time sit in other technical committees and lobby for collaborative efforts. This was particularly effective when requesting collaborations with the EWACC Project.

Community engagement and gender has been a priority in the implementation of the R2R project. The Village Women’s Committee, elderly and youth group were actively involved during the formulation of the Participatory 3-Dimensional Model (P3D) of the Fagalii Watershed Area, the waste collection and segregation initiative, as well as the school nursery and replanting program. During project consultations such the review of the Fagalii Watershed Management Plan and collecting views on the bio-log and vetiver technologies, women’s perspectives were effectively recorded by ensuring they form their own group and

presented on their views independently. Government promotes community engagement and gender mainstreaming in all its activities as it recognizes the importance of grassroots and women’s views and roles in ensuring sustainable projects.

3. Project Design and Relevance

The Fagalii R2R Project Design is based on efforts to reduce water quality problems. On one extreme, sedimentation impact on water quality following heavy rainfall periods was a major issue, while on the other, water shortages was common during the dry season. Poor land-use and waste management practices was also impacting on the receiving marine environment, affecting coral reef and inshore ecosystem health.

As such the project design and log-frame was simple, and targeted not only field rehabilitation works, but also governance system improvements at the national and community levels. Targeting one community for this project was ideal given the amount of funding available. Some of the ambitious targets required extensive support from the WRD workforce and co-financing programs in order to achieve. The project log-frame and end of project targets was reviewed in order to update additional community initiatives relevant to the project.

The Fagalii R2R Project has been highly relevant to Samoa’s national context, both in terms of policy frameworks and priorities and needs. Fagalii is one of four villages with the Vaimauga No.1 District, with a district level Community Integrated Management Plan (CIMP) approved in June 2018, that takes on a ridge to reef approach. The district level CIMP confirmed the need for sustainable water and natural resources management interventions for the village of Fagalii, specifically on upland watershed management, marine environment improvements, mangrove area rehabilitation, and waste management to name a few.

The implementation of the Fagalii R2R Project was very timely and ensured that key related activities within the CIMP were addressed using lessons learnt from the IWRM Project for the Greater Apia Catchment. Additionally, the project was in line with the Environment Sector Plan as well as the Water For Life Water and Sanitation Sector Plan, which both called for integrated water resources management efforts from ridge to reef in order to achieve sustainable economic, social and environmental objectives.

As such, the project was deemed highly relevant by the community and government.

In terms of alignment with GEF Programs, the Fagalii R2R Project results are relevant to all of the GEF Focal Areas: International Waters, Biodiversity Conservation, Sustainable Forest Management, Land Degradation and Climate Change.



Figure 2: Launching of the Fagalii R2R Project in 2017 during its Inception Workshop (left) to address watershed degradation issues from unsustainable watershed management practices (right).

4. Project Results and Achievements

4.1 Project Results and Achievements

Component 1	Increasing knowledge-base and national replication of catchment management planning to strengthen management links between catchment and coastal areas	
Outcome 1.1: Enhanced access to information regarding the status and locations of vulnerable coastal areas in Apia to enhance coastal zone planning.		
Output 1.1.1	BIORAP – Integrated Coastal Assessment Conducted	Completed
<p><i>Key Achievements:</i></p> <p>Most of the GIS/mapping needs have been completed not only through the watershed characterization works, but also during the formulation of the Integrated Water Management Plan for the Apia Catchment (IWMP), and Community Integrated Management Plans (CIMP) for the district of Vaimauga.</p> <p>Characterization Maps for Apia Catchment including Fagalii and Letogo-Vailele watershed areas have been completed;</p> <p>Hazard maps for coastal and riparian areas under CIMP are completed and with the Technical Division (Mapping Section) of MNRE;</p> <p>Drone and LiDAR images for Fagalii and Apia Catchment are available and with the Technical Division (Mapping Section) of MNRE;</p> <p>Research initiative by the Scientific Research Organization of Samoa (SROS) on water quality for the Letogo and Fagalii Rivers have been completed with findings presented at the 2021 Water and Sanitation Sector Forum. Other urban catchments have been surveyed and water quality baseline data and reports are available;</p> <p>BIORAP completed with reports available on Fagalii Baseline Biodiversity Survey, Inshore Fisheries Survey and Mangrove Audit;</p>		
Outcome 1.2: Strengthened linkage between watershed management plans and coastal zone assessments to enhance Coastal Zone Management planning in Apia.		
Output 1.2.1	Existing Management Plans reviewed/enhanced	Completed
<p><i>Key Achievements:</i></p> <p>Fagalii Watershed Management Plan updated and reviewed with revised characterization maps and an updated ridge to reef work program;</p> <p>Fagalii Water Resources Management Village Bylaw formulated;</p> <p>Integrated Water Management Plan for the Greater Apia Catchment approved by the CDC, published and launched at the World Water Day 2018 commemoration;</p> <p>Fagalii Watershed Participatory 3-Dimensional Model completed and launched;</p> <p>Review of the Community Integrated Management Plan for the Vaimauga East District completed and approved, together with hazard maps and identified ridge to reef interventions.</p>		
		
<p>Figure 3: Fagalii Women’s Committee at the launching the Fagalii Watershed Area P3D Model/Tool, and the launching of the Integrated Water Management Plan for the Greater Apia Catchment by the current Hon. Prime Minister-Afioga Fiame Naomi Mataafa when she was the Minister for Natural Resources and Environment in 2018.</p>		

Component 1	Increasing knowledge-base and national replication of catchment management planning to strengthen management links between catchment and coastal areas	
Outcome 1.3: National uptake of best practice in watershed management planning in the assessment and design of coastal zone plans.		
Output 1.3.1	Priority measures in the Integrated Water Management Plan (IWMP) for the Greater Apia Catchment implemented	Completed

Key Achievements:

The IWMP for the Greater Apia Catchment aims to manage water resources, related environmental assets and values, and disaster risk to contribute to the Government of Samoa’s environmental, social and economic sustainability objectives, and to increase the resilience of the Greater Apia community’s livelihoods and physical assets. The plan covers an area of 70km² and 7 catchments including Fagalii. Themes highlighted by the IWMP include (i) IWRM governance and enabling environment, (ii) water resources assessment and sharing, (iii) water supply and use, (iv) flooding, drainage and disaster risk management, (v) water quality, waste management and public health, (vi) watershed, coastal zone and environmental protection, and (vii) information management.


The high-level strategies highlighted within the IWMP as good practice for the Greater Apia Catchment Area, were incorporated into the activities of the Fagalii Watershed Management Plan. Some of the implemented work conducted in-line with the IWMP themes included the following:

Fagalii Waste Management Campaign:

- During the celebration of the World Water and Forest Day 2018, the R2R Project carried out a rubbish segregation workshop teaching the village leaders, women’s committee and youth of the importance of separating waste, composting and recycling;
- A cleanup campaign was also carried out for the Fagalii river channels and the mangrove/wetland area;
- Billboards promoting waste management and to enhance awareness on bylaws and regulations against pollution were installed around the catchment;
- A billboard and tv-advertisement was produced to educate and stop people from washing their cars using chemicals, at the Fagalii Ford, as this was impacting on the aquatic and marine life;
- 30 rubbish stands were fabricated and strategically placed around the coastal area and within the catchment to promote proper waste disposal and encourage people to utilize the rubbish collection system;
- The Draft Fagalii Water Resources Village Bylaws was consulted and is with the Office of the Attorney General for approval;
- Channelization works under the EWACC Project was carried out to reduce flood risk to settlements along the river and wetland/mangrove boundaries.



Figure 4: Handover ceremony for rubbish stands fabricated by the R2R Project and the waste segregation exercise with the villagers, during the 2018 World Water and Forests Day.

Component 1	Increasing knowledge-base and national replication of catchment management planning to strengthen management links between catchment and coastal areas	
Outcome 1.3: National uptake of best practice in watershed management planning in the assessment and design of coastal zone plans.		
Output 1.3.2	Priority measures in the Fagalii Watershed Management Plan supported	Ongoing
<p><i>Key Achievement:</i></p> <p>Signed a Memorandum of Understanding between the MNRE and the Fagalii village leaders; Reforestation and tree planting campaign work conducted in critical areas of the Fagalii Watershed Area; Constructed plant nurseries in Fagalii and neighboring villages Moataa and Letogo; Waste Management campaign to Support Plastic Ban and proper waste management. (Including the Greening of the Games in Outcome 2); Demarcation/fencing of boundaries of wetland area, Fagalii reserve, Fagalii mid-catchment replanted area, and Vailele reserve; Cleaning of the Fagalii Wetland/Mangrove area; School awareness campaigns conducted and presentations/products (calendar, posters, pens, writing pads, stickers etc.) formulated; Community consultations and awareness programs carried out on a quarterly basis; Radio, TV and Social Media programs carried out by the R2R Project Manager and the MNRE throughout the period of the project; Other key interventions related to this Output are detailed in achievements for Outcome 2.</p>		
Output 1.3.3	Support the implementation of the Vaimauga East District Community Integrated Management Plan	Completed
<p><i>Key Achievement:</i></p> <p>The Vaimauga East District Community Integrated Management Plan was endorsed and signed in June 2018. The CIM Plan is a partnership between the Government of Samoa and the 4 villages within the Plan area (Fagali'i, Vailele, Letogo and Lauli'i villages). The CIM Plan area starts from the ridge extending to the reef broadly covering 4 sectors (i) Infrastructure, (ii) Natural Environment and Resources, (iii) Livelihood and Food security, and (iv) Village Governance; giving an integrated approach to the provision of services and improvement of resilience now and in the future; The active participation of the MNRE-WRD ensured the integration and reflection of ridge to reef approaches within the interventions and CIM plan solutions such as soft measures to protect the catchment and coastal areas; Key achievements and activities of the Fagalii R2R Project as highlighted in the various outputs within this report are in line with the key interventions identified by the Vaimauga East District CIM Plan, and supported by funding and resources from the Fagalii R2R, EU Budget Support, GEF Small Grants and EWACC projects, as well as resources from the Government of Samoa through the MNRE-WRD.</p>		
		
<p>Figure 5: Demarcation/fencing of reserves, as well as scientific aquatic surveys with research institutions such as the Scientific Research Organisation of Samoa and the National University of Samoa, were some of the key activities required to be implemented within the approved Fagalii Watershed Management Plan.</p>		

Component 2	Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia	
Outcome 2. : Strengthened biodiversity and sediment load reductions in protected watershed areas via inter-agency partnerships		
Output 2.1.1	Catchment Rehabilitation (WRD, FD, DEC)	Ongoing
<p><i>Key Achievement:</i></p> <p>Reforestation and rehabilitation works within the Fagalii Watershed Area was carried out by the Water Resources Division (WRD), Forestry Division (FD) and the Division of Environment and Conservation (DEC);</p> <ul style="list-style-type: none"> - In collaboration with the Forestry Division the Fagalii R2R Project replanted the coastal area of the village with coastal species. This replanting work looked at reinforcing the 5m buffer between the rock armor seawall and the East Coast Road which runs through the village. Not only will the species strengthen the coastal area, it will also act as a wind and wave barrier during storm surges; - In collaboration with the Division of Environment and Conservation the project has been able to carry out an audit of the mangrove/wetland area biodiversity, as well as provide monitoring gears to the monitoring team in order to strengthen their monitoring program; - There were also major replanting efforts by the WRD along the riparian and hill sides at the wetland area, Fagalii Reserve area, mid-catchment area as well as in the uplands where the water intake is located; - Other degraded locations within the catchment were identified during the RAPCA survey and will be incorporated into the WRD, Forestry and DEC rehabilitation programs; - Partnerships with other projects and civil society support programs were pursued including support from the UNDP GEF Small Grants Project which funded additional 20 rubbish stands for the project site and nurseries for neighboring villages; a channelization/stabilization project for the Fagalii wetland through the Civil Society Support Program (CSSP); and a yet to be implemented Bio-Log Filter Project with JICA-Samoa. <p>The biolog filter technology is a transfer of best practice and knowledge from Okinawa-Japan and will be piloted at Fagalii. It uses readily biodegradable material such as coconut fiber to manufacture/ fabricate riverbank stabilization structures, as an alternative to rock walls and cement revetment walls which do not promote natural riparian vegetation growth. The biologs will be able to filter sediment from surface runoff, thus improving the quality of water flowing into the inshore environment. It will also be used to protect the water supply intake from sedimentation due to erosion. The project has been delayed due to the impacts of the COVID-19 border closures preventing experts and technicians to travel from Japan to Samoa. It is envisaged that this activity will resume in 2022-2023 when international travel resume.</p>		
Output 2.1.2	Sustainable Land Management Practices (SLM/MAF).	Completed
<p><i>Key Achievement:</i></p> <p>A workshop facilitated by the Fagalii R2R Project was conducted to introduce the Ministry of Agriculture and Fisheries (MAF) as a key partner for the project;</p> <p>At the end of the project the partnership with MAF has progressed well with a number of inshore activities and sustainable farming for livelihood activities being supported;</p> <p>Fencing work demarcated reserves, prevented rubbish disposal into valleys, and moved some problematic cattle farms away from critical wetlands and streams;</p> <p>Workshops and community awareness consultations promoted agroforestry and sustainable land management (SLM) practices;</p> <p>On 4-5 October 2018, a Talomua program was supported. This initiative was an agricultural show for the Fagalii village to showcase some of their agricultural products, as well as handicrafts etc. During this even the project was able to further promote SLM practices by distributing farming tools to encourage mixed cropping and agroforestry;</p> <p>Nurseries were also built in the coastal and mid-catchment sites to help provide seedlings not only for the replanting efforts but also for the farmers to use for their activities.</p>		



Figure 6: Fagalii community carrying out the rehabilitation of the riparian zone of the Catchment. This include removing of invasive species and then replanting the area with native seedlings appropriate for stabilising riverbanks.

Component 2	Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia	
Outcome 2.1: Strengthened biodiversity and sediment load reductions in protected watershed areas via inter-agency partnerships		
Output 2.1.3	Riparian zone protection	Completed
<p><i>Key Achievement:</i></p> <p>Degraded riparian areas were replanted with appropriate species in order to promote natural erosion control and water resources quality improvement. In addition to these interventions, the Fagalii R2R Project re-introduced the importance of the vetiver grass as another environmentally friendly method to stabilize and reduce sediment load.</p> <p>Vetiver was readily accepted by the Fagalii community, and was planted along the riparian areas;</p> <p>Funding support for this activity was secured from EWACC and also the EU-Budget Support program;</p> <p>Other areas were fenced and protected. The fences were important not only to keep livestock and development at bay, but also to prevent people from accessing the areas and cutting down trees for firewood and building posts/poles;</p> <p>It is envisaged that the biolog filter project supported by JICA will provide riparian area protection for close to 2km of riparian area.</p>		
Output 2.1.4	Fisheries Reserve and monitoring program	Completed
<p><i>Key Achievement:</i></p> <p>The Fagalii R2R Project was able to secure a good relationship with the Fisheries Division of MAF.</p> <p>The project was able to support the implementation of the Fisheries Reserve Management Plan and enforcement of the Fisheries Village Bylaws;</p> <p>On 28 September 2019, a joint handover ceremony for inshore monitoring equipment and tools was carried out jointly by the MNRE and MAF. These included swimming and diving gears, materials to upgrade the reserve markers, as well as an outboard motor to enable marine environment surveillance by the village committee;</p> <p>Giant clams, trochus and other inshore species were reintroduced into the fisheries reserve following a request from the village committee;</p> <p>A training workshop was facilitated by the project and MAF for the community, on how to make handicrafts using some of the seashells which can be found in the marine environment, as an alternative source of income.</p>		

Component 2	Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia	
Outcome 2.2: Improved sustainable watershed management through monitoring and evaluation of existing environmental protection measures		
Output 2.2.1	Quantum Geographic Information System (QGIS) refresher training conducted	Completed
<p><i>Key Achievement:</i></p> <p>Two QGIS trainings were carried out during the lifetime of the project for WRD, FD and DEC staff, supported by the EWACC Project in 2017 and 2021;</p> <p>This upgrade of skills and knowledge on GIS through the use of the open source QGIS software as well as the high-resolution LiDAR images/layers, has enabled staff to effectively plan/conduct monitoring works, as well as present findings and reports;</p> <p>QGIS Manuals and layers have been updated and accessed by the monitoring teams and partners.</p>		
Output 2.2.2	Monitoring and surveillance program implemented	Completed
<p><i>Key Achievement:</i></p> <p>The River Ecosystem Health Monitoring Program continues to be implemented throughout the targeted rivers. The program includes a team of Enforcement Officers that monitor activities such as waste disposal and usage of chemicals to wash cars in the river channels. The team also assess Environment Impact Assessment Reports in order to process development consents and building permits;</p> <p>Communities are also part of the surveillance program. There are already existing village bylaws for fisheries and water resources, and contact details for MNRE and MAF are publicized on billboards and TV adverts so the public can report any environment issues such as pollution and illegal deforestation/development.</p>		
Output 2.2.3	M&E Framework for watershed management developed	Completed
<p><i>Key Achievement:</i></p> <p>A M&E Framework for watershed management is given in the Fagalii Watershed Management Plan;</p>		

Component 2	Increasing capacity for effective environmental stress reduction practices and sustainable watershed management in Apia	
Outcome 2.3: Enhanced community and national level awareness and support of best practice catchment protection models		
Output 2.3.1	Community and Stakeholder Consultative Programme supported	Completed
<p><i>Key Achievement:</i></p> <p>Public Awareness and Education is one of the key priorities for the project in order to effectively engage communities and bring about a change in mindset/attitude and behavior. The project invested a lot of its financial resources into community and stakeholder consultative processes using different mediums to target a wide range of stakeholders. The project during its short time period was able to design, publish and distribute a lot of information and education products in Samoan and English, including:</p> <ul style="list-style-type: none"> A Ridge to Reef Calendar depicting and promoting sustainable natural resources management messages. This calendar published children's posters from a project competition; Stickers, tee shirts, caps, pens, writing pads all promoting the project brand and key messages; Posters on the water cycle, R2R Approach and Vetiver Grass; Billboards on waste management, upland conservation, R2R Approach, catchment management, fisheries management, pollution notices, wetland conservation etc.; QGIS Operational Manual; Reports were also supported on fisheries resources, biodiversity and mangrove audit; Talkshows on different radio stations, national television channels and TV advertisements; School awareness programs and community consultation every year for Fagalii and the neighboring villages of Letogo and Vailele; Support to the Annual Water and Forests Day in March, as well as the Environment Week in November; R2R branding and messaging in promoting the Greening of the South Pacific Games in 2019; Presenting at Annual Environment and Water Forums to promote project implementation and progress. 		

Component 3	Strengthen support of the National Environment Sector Plan to enhance the mainstreaming of watershed conservation policies in national reporting	
Outcome 3.1: Strengthened capacity for monitoring and evaluation of the National Environment Sector Plan through targeted training		
<i>Output 3.1.1</i>	Effective Monitoring and Evaluation of the Sectoral and Subsector level implemented	Completed
<p><i>Key Achievement:</i></p> <p>The Environment Sector is one of 14 Sectors established by the Government of Samoa to coordinate the implementation of its national development agenda. The sector is responsible for coordinating efforts towards the realisation of Key Outcomes 13 and 14 on “enhanced environmental sustainability and climate and disaster resilience” in the Strategy for the Development of Samoa (SDS) 2016/17-2019/20. These efforts are defined in the National Environment Sector Plan (NESP) 2017 – 2021 under four key thematic areas, (i) natural resources and environment, (ii) built environment, (iii) climate change and disaster risk management, and (iv) environmental governance (see Annex 1b);</p> <p>The Sector's Monitoring, Evaluation and Reporting Framework, constitutes the Performance Management Framework with which to monitor progress of the NESP's implementation and identifies high level indicators measuring the impact of sector interventions. The performance of the sector is monitored and evaluated based on; (a) the level of impact on the community; (b) effectiveness of the outputs being produce against identified outcomes; and (c) efficiency of resource allocation and utilization to deliver outputs.</p> <p>NESP reporting requirements include a standardized reporting template to facilitate progress reporting on a quarterly and annual basis. Sector monitoring, reviews and reporting will be carried out through:</p> <ol style="list-style-type: none"> quarterly reporting to the National Environment Sector Steering Committee; national budget planning, mid-term and full term budget reviews facilitated by MOF; annual planning and reviews of management plans or operational plans of Implementing Agencies; and, Sector annual reviews. 		
Outcome 3.2: Improved national results reporting through development of harmonised monitoring and evaluation frameworks for National Environment Sector Plan		
<i>Output 3.2.1</i>	Natural Resources Subsector Committee established	Completed
<p><i>Key Achievement:</i></p> <p>The Sector has an extensive coordination platform consisting of several levels of committees led by various Implementing Agencies. MNRE as the lead implementing agency is responsible for sector wide coordination. It looks after twelve statutory boards and two sector steering committees including subsector committees and a number of project boards and technical advisory committees charged with project management. At the sector level, MNRE is a core member in numerous sector steering committees.</p> <p>At the subsector level, four subsector coordinating bodies have been established (including the Natural Resources Subsector Committee), to facilitate sector wide coordination on the implementation of the NESP. An Environment Sector Coordination Division is established to coordinate the sector wide programme including sector planning and monitoring and reviewing of the NESP. The Division, provides secretariat functions to the NESSC which guides/promotes coordination and engagement of sector stakeholders. In addition, the Division will promote and make use of existing forums to facilitate cross-sectoral coordination to promote streamlined reporting.</p>		
<i>Output 3.2.2</i>	Monitoring and Evaluation Framework harmonized	Completed
<p><i>Key Achievement:</i></p> <p>Mainstreaming the Fagalii R2R M&E into the EWACC Technical Advisory Group and the NESSC ensured that required reporting, resources and collaborations with other stakeholders were effectively secured; Supported the formulation of the National Environment Sector Communications Strategy 2021-2026.</p>		

4.2 Issues and Constraints

Lessons learnt and best practices which ensured the success of preceding Samoa IWRM Project for the Apia Catchment were replicated and upscaled in the implementation of the Fagalii R2R Project. Stakeholder engagement at the sector and cross sector levels, was effectively supported by existing steering committees including the Water Resources Technical Committee and the National Environment Sector Steering Committee. Community participation and public awareness activities were also actively promoted given the experience of the project team and MNRE-WRD in outreach and advocacy work.

The main issues with the project implementation were (i) the high cost of project activities, (ii) early resignation of the Project Manager, and (iii) ongoing nature of key project activities beyond the project timeframe.

As highlighted in Section 4.1 of this report, the Fagalii R2R Project implemented quite a number of activities not only looking at governance issues, but also some costly key infrastructural works in order to fully realize project outcomes as well as identified community needs and priorities. This often required the MNRE-WRD to secure co-financing and support from other key projects such as the EWACC, EU-Budget Support, local Government Budget, CCSP, GEF Small Grants and others. Securing the support of these partners was made easy with the coordination mechanisms in place especially during the NESSC meetings and the EWACC TAG where resourcing needs are often proposed and tabled.

The resignation of the Project Manager before the end of the project timeframe to run for the general elections was an issue for project implementation. There were no support staff and as such there was a gap in reporting and communication with the regional PCU. When the Project Manager resigned the MNRE-WRD continued to implement project activities being funded by co-financing sources until the end of the project, whilst regional project activities and reporting ceased. This resulted in major delays in the provision of required documentation for project closure and reporting at the project terminal stages.

The nature of the Fagalii R2R Project requires ongoing support to some of the project activities such as the maintenance of rehabilitated areas and the implementation of the Bio-log Filter project. These activities remain as priorities under the MOU between the MNRE and the Fagalii village and have been integrated into divisional implementation plans. In addition, other actions identified in the Fagalii Watershed Management Plan and the Vaimauga East District's Community Integrated Management Plan will be implemented when resources are available.



Figure 7: The Project Manager, Mr. Niuava Fata Eti Malolo hosted a number of radio shows featuring various partners of the project and carried out school awareness campaigns. These were part of sharing lessons learnt and promoting the ridge to reef approach.

5. Financial Summary

Table 4: SPC-R2R Financial Contribution/Disbursement to the Samoa MOF.

Total Allocation	Total Disbursement	Utilization Rate
USD \$200,000	USD \$183,751.00 ¹	100%

Table 5: Materialized Co-financing

Name of Co-financer	Type of Co-financing	Amount (USD)
Government of Samoa (GOS)	In-Kind	200,775.20
GOS Budgetary Support (European Union)	Cash	126,209.00
GEF/UNDP EWACC Project	Cash	740,594.00
JICA Cooperation Agency	Cash	0
Total		USD 1,067,578.20

The JICA Bio-Filter Project for Fagalii is still on hold since the planning phase due to the many challenges with shipping and the travel of experts. As such the co-financing from this project did not materialize.

¹ Note that the allocation for Samoa IW R2R project is US\$200,000, which is earmarked to fund national project activities set out in the approved costed workplan (MYCWP). There are several Regional IW R2R project funded activities implemented nationally by the national project. This includes the RapCA/BioRAP (US\$10,500) work implemented in Samoa. Therefore, the amount disbursed to Samoa IW R2R Project as set out here in Table 4 excludes funds for RapCA/BioRAP (US\$10,500) in Samoa.

Also, note that the difference in the advance transferred to the country and SPC records is usually due to the exchange rate and the bank transfer fees. These discrepancies are not reflected in the finance section of the narrative report but are accounted for in the financial report.

Finally, the project's total spending exceeds the amount disbursed by 103%, which was covered as co-finance. According to SPC records and the financial report submitted, the total spending amounts to \$206,834.93.

6. Implementation Progress Ratings

6.1 Inputs

In line with the Memorandum of Agreement, inputs by the Government of Samoa and the SPC were fully and adequately realized. Support from the Regional PCU in Suva-Fiji was extensive in providing satisfactory support to the Project Manager in terms of administration, M&E, financial reconciliation, workplans, progress reporting etc.

Transfer to funds was satisfactory as per established processes and templates on a quarterly basis, and technical workshops were conducted when required throughout the project lifetime.

Assistance from the Regional PCU continued through online forums and meetings during the COVID pandemic despite the challenges.

6.2 Outputs

The planned outputs have been majorly achieved except for the bio-log project delayed due to COVID-19 restrictions on international travel of experts from Japan. All other local outputs have been achieved at a satisfactory level with ongoing maintenance and monitoring being incorporated into MNRE-WRD workplans. Additional outputs were identified along the way following the endorsement of IWMP and CIMP interventions. Resources to implement these were secured and were achieved within the timeframe of the Fagalii R2R Project. The stabilization and strengthening of riverbanks by channelization works and vetiver grass were amongst new outputs identified and incorporated accordingly during the review of the Multi-Year Costed Work Plan (MYCWP). This review also ensured that outputs were clearly identified and achievable.

6.3 Objectives

The achieved outputs of the project contributed significantly to the satisfactory achievement of the overall project objectives and outcomes. By the end of the project the outputs were clearly identified and mapped to the achievement of project outcomes.

6.4 Sustainability

The Fagalii Village Council has been well resourced and instilled with the knowledge and capacity to sustain the activities and interventions supported by the Fagalii R2R Project. This capacity will be further strengthened by ongoing support from the MNRE and MAF as they continue to coordinate and partner with other stakeholders in implementing interventions within the endorsed management plans for the area. The existence of these management plans play a critical role in ensuring sustainability, as the village is now able to lobby and secure funds from donors and the Government to continue their Ridge to Reef Approach.

6.5 Overall Implementation Progress Rating

The Fagalii R2R Project was able to implement nearly all of the components it originally planned, except for the bio-log filter project. The Project was able to collaborate with MAF and fully implement a Ridge to Reef approach to natural resources management.

As such, the Project is given a **Satisfactory** progress rating. This rating is further supported by the relevance of the project to key community priorities identified throughout its implementation.

7. *Lessons Learnt*

7.1 *The Ridge to Reef Approach*

Effective cross-sectoral coordination mechanisms were established following the success of the preceding Pacific GEF IWRM Project which targeted the Greater Apia Catchment. As such the introduction of the ridge to reef concept and approach was easily embraced as a strengthened community to cabinet mechanism for ensuring sustainable resource governance.

The review of the 51 district level Community Integrated Management Plan adopted the ridge to reef approach, with nation-wide consultations with each of the districts to identify sustainable development interventions to the environment, social and economic sectors. The consultations involved representatives from all the Government and State Owned Enterprises, discussing and working with communities in identifying key issues and sustainable development strategies. This enabled a cross-sectoral coordination of interventions and effective mobilization of limited resources.

Furthermore, the implementation of the ridge to reef approach has brought in other key partners in order to fully realize a whole of catchment approach, especially the Ministry of Agriculture and Fisheries. Often the MAF is regarded as a developer and engaged in order to promote sustainable land management practices. However, the ridge to reef approach has reminded resource managers of the importance of the receiving waters and the coastal environment. It has highlighted the importance of linking research and information from fisheries and coastal studies to the terrestrial and water resources studies in order to generate a full assessment of the catchments, for better policy development and decision making.

7.2 *Community Engagement Decision Support Tool-The Participatory 3-Dimensional Model*

Key to the success of the project is the effective engagement of customary land owners as custodians and site-level managers of the natural resources. Engagement processes require innovative ways to gauge the interest of communities and ensure that grassroots views are identified in a holistic manner, through equal opportunities for men and women to raise their concerns.

The project ensured that the Fagalii community were extensively engaged through the construction of a Participatory 3-Dimensional Model (P3D) by all sectors of the community including women and youth groups. The P3D Model utilizes the latest spatial information from the LiDAR imageries of Samoa, and incorporates traditional and local knowledge. It is useful as a highly participatory decision support tool to identify current land use patterns and areas of concern that will require interventions eg. where cattle farms were located and where the critical ecosystems such as mangroves existed. The P3D Model also helped inform the development of the Fagalii Watershed Management Plan which guides not only the current efforts to improve landuse planning, but also identifies future investment needs.



Figure 8: The construction of the Fagalii Catchment P3D Model was a community affair with all sectors (chiefs, women, youth, untitled men) of the community participating in mapping out their activities and issues within the watershed area from ridge to reef.

7.3 Community Driven Project, Inspires Community Driven Solutions

At the inception meeting, the Fagalii Village Council indicated strong commitment to the implementation of the project and highlighted other key needs and priorities. These new community solutions were identified and adequately addressed during the review of the MYCWP. The inclusion of these new relevant activities to the project workplan further strengthened the partnership between the village committees and the MNRE. These community driven solutions led to the implementation of a village wide waste management campaign, and the introduction of the vetiver grass as a sustainable riparian zone stabilizer. The two campaigns were regarded as stress reduction mechanisms given the reduction in the amount of solid waste and sedimentation pollution on the receiving waters.

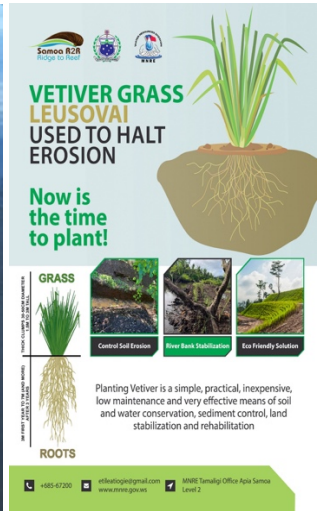


Figure 9: Fagalii community carrying out riparian area stabilisation using the vetiver grass. The grass with its extensive root structure is expected to control riverbank erosion.

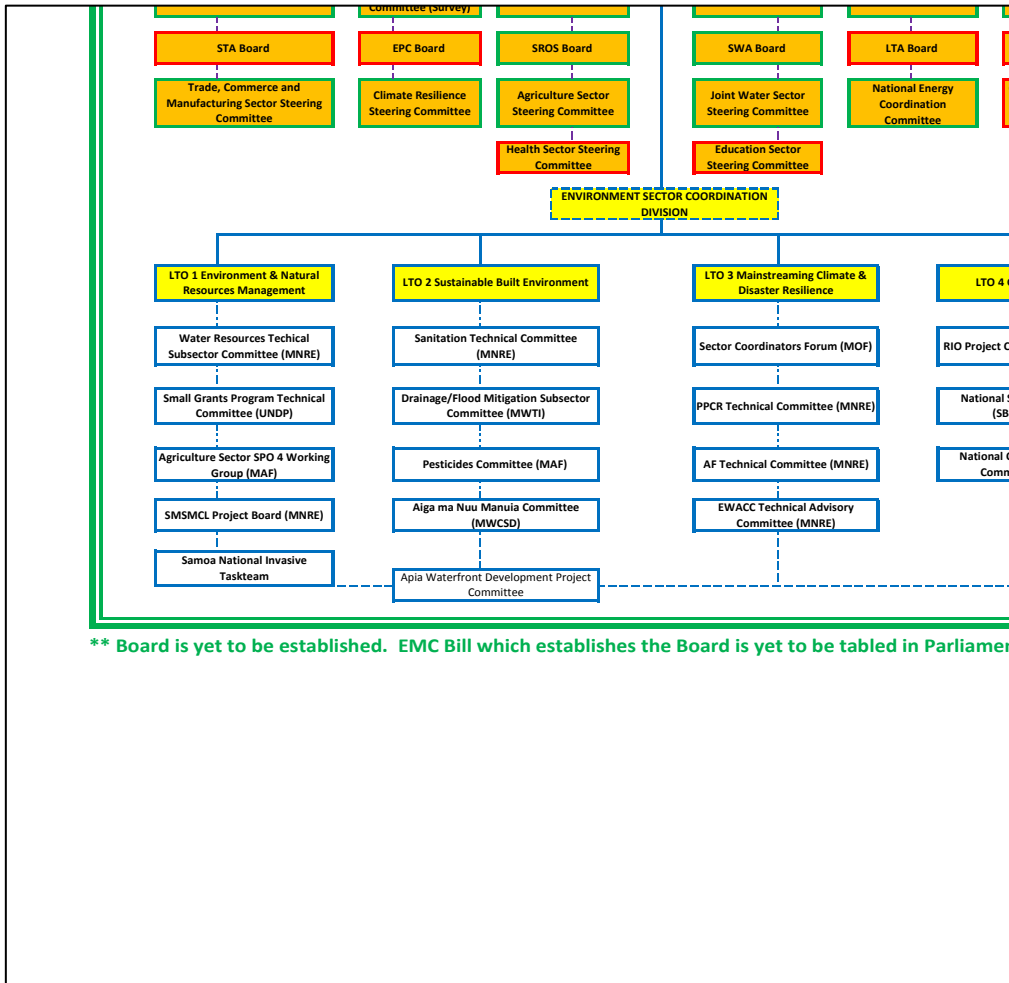
Through-out the project, capacity building work to raise the awareness on sustainable natural resources management from ridge to reef as well as provide resources for the Fagalii Village Council, strengthened the capacity of the committee to sustain project initiatives, with the support of government, non-government, business, and civil society organizations.



Figure 10: Community trainings on fisheries and coastal management as well as watershed management were ongoing processes to builder the capacity of villagers s on how to protect their environment and natural resources.

8. Annexes

1a. The Environment Sector's Coordination Framework



1b. The Environment Sector's Coordination Framework



2. The Fagalii Ridge to Reef Project Inception Workshop-1st November 2017.



3. Name and access link of publications and news articles

Fagali'i Catchment Biorap Survey Report: Rapid Assessment of Priority Coastal Areas for Fagali'i, Samoa

<https://www.pacific-r2r.org/sites/default/files/2021-10/Fagalii%20Catchment%20Biorap%20Survey%20Report.pdf>

Most Significant change Video

<https://www.youtube.com/watch?v=WeUiXjVgJZs>

Samoa IW R2R Project Page

<https://www.pacific-r2r.org/partners/member-countries/samoa>

GEF IWLEARN LME LEARN Twinning Exchange: Video

<https://www.youtube.com/watch?v=xDSsbJM4pUQ>

News articles

Rubbish stands donation strengthens waste management

<https://www.pacific-r2r.org/news/rubbish-stands-donation-strengthens-waste-management>

Samoa trials nature-based solution to protect Fagalii River Catchment

<https://www.pacific-r2r.org/news/samoa-trials-nature-based-solution-protect-fagalii-river-catchment>

MNRE Looks to Vetiver Grass as Solution to Flooding & Landslides

<https://www.pacific-r2r.org/news/mnre-looks-vetiver-grass-solution-flooding-landslides>

Vetiver grass planting starts at Fagalii river

<https://www.pacific-r2r.org/news/vetiver-grass-planting-starts-fagalii-river#https://www.pacific-r2r.org/news/vetiver-grass-planting-starts-fagalii-river>

