



GEF Pacific IWRM Demonstration Project

Environmental and Socio-Economic Protection in Fiji: Integrated Flood Risk Management in the Nadi River Basin



Fiji

Final Report

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PREFACE

Fiji is a collection of over 300 islands of various geological types, sizes and topography. The islands each face different water resource issues due to these factors, the spatial temporal distribution of rain, and population size. In fact water is perhaps the major constraint to sustained habitation of the outlying islands and the reason why only a 100 or so out of the 300 islands have permanent populations.

In Fiji, the wet season from November to April is also the tropical cyclone season. Up to 80% of the annual total rainfall falls during this period. Tropical disturbances, cyclones and high intensity rainfall are frequent, causing floods ranging in magnitude from moderate to very severe. Drought conditions are exacerbated during El-Nino episodes, which lead to considerable difficulties for all sectors of the economy. Decline in agricultural production threatens food security, and poses severe health problems, whilst variable rainfall patterns disrupt hydroelectric power generation on Viti Levu. These are some of the more visible impacts of water shortage during the dry periods.

All urban centers within Fiji have reticulated water supply systems that are metered and many have wastewater treatment facilities. Over 70% of the population has access to the treated reticulated water supply although continuity of supply is not always consistent, particularly in the drier months. Rapid urbanization together with increases in requirements for industry and the tourism sector has led to demand often outstripping supply. Government's immediate to medium term strategy is to improve infrastructure such that it does not become a major impediment to economic growth in the future or adversely affect health. There has been a concerted effort at the development of Master Plans to address key areas needing additional resources but implementation is capital intensive and requires significant levels of funding.

Wastewater management and sanitation in Fiji, though not as fragmented as the management of clean water resources, is also problematic. The Water and Sewerage Section of the Public Works Department has responsibility to provide sewerage services to users, primarily in urban areas. However, only certain parts of the water supply area are connected to the centralized waste treatment plants. For example, in the capital city corridor of Suva-Nausori, which has the highest population density, only one-third of the population is connected to the centralized system, whilst others (270,000) are served by septic tanks. The topography of these areas is rugged and the soil structure is impermeable, and much effluent flows directly into streams and coastal water. Overflowing sewage from sewers, which in some localities are undersized and subject to blockages, and from poorly maintained sewage pumping stations also contribute significantly to water pollution.

Fiji does not have an overall national policy or comprehensive legislation that deals with water and its varied uses and forms in its entirety, with various aspects of their use and management falling under a number of jurisdictions. Legislation relating to water resources in Fiji are outdated, but has served well to date largely because of the non-competitive environment and generally plentiful supply. In responding to the challenges within the water sector, the Government has embarked on a water management reform program to; a) strengthen the water management capabilities that already exist; and b) introduce new water management and institutional measures where necessary.

The IWRM Project has tackled many of the issues under GEF Strategic Programmes I and II through identifying and understanding multiple stresses on fragile coastal environments and linking these to freshwater and land management, especially upstream practices. The recently completed GEF Pacific IWRM Project, tackled the risks and impacts of flooding in the Nadi Basin Catchment. The successful development of a Nadi Basin Flood Risk Management Plan and the associated Flood Early Warning System is the greatest achievement, providing the people of Nadi Town ample warning of floods and on two successful occasions preventing any lives lost. Extensive education programmes throughout the Basin's villages on agricultural best practice provided farmers with the knowledge to work in harmony with and restore the natural landscape in order to limit negative impacts on the catchment. Finally the highly valuable experience of forming and running the Nadi Basin Catchment Committee has shown Fiji how different sectors working together for a common goal and create a resilient society that is focused on improving our sustainability.

Mr Colin Simmons

National IWRM Focal Point, Ministry of Agriculture





1. Water and Sanitation Issues in the Development of the Fiji GEF Pacific IWRM National Demonstration Project

Fiji's islands exhibit considerable differences in their geographical characteristics. The large islands are mountainous and have significant permanent surface water sources, while there are many small islands, both inhabited and uninhabited, which have little or no permanent surface water and rely on groundwater and rainwater only. The water management issues for the large islands and small islands can vary significantly.

According to GEF Hotspot Analysis Diagnostic Report (May 2007) Water management in Fiji involves many types of activity and sectoral responsibilities. Hence for this reason, IWRM issues had to be broken down into readily understood categories. The two main categories suggested by this report are water resources issues and water services issues.

Water resources issues encompasses matters that deal with the availability of water in nature, its abundance and quality, extremes (flooding and drought) and its interactions with the natural environment. In the case of Fiji the impact of freshwater on the marine environment is important.

Water services looks into supplying water for all the economic and social purposes of the nation and disposing of such water safely and without unreasonably damaging the natural environment.

The report highlighted that there are overlaps between these two categories, but the major responsibilities of organizations can be assigned to one or other category.

With its vulnerability to flooding, Nadi Basin Catchment was identified as the most urgent 'hotspot', and the first priority for an integrated water resources management (IWRM) demonstration project in Fiji. Nadi Basin Catchment serves as an immensely valuable resource for Fiji. It sustains a diverse range of industries including the agricultural, drinking water, forestry, and tourism sectors, all of which are vital to Fiji's economic health. The lower catchment in particular contributes greatly to tourism and also provides for a wide range of leisure activities and an environment for all to enjoy.

The Nadi Catchment is 517 sq.km in area and has a population of roughly 65,000 found in 22 villages, numerous settlements and Nadi town, the third largest urban centre in Fiji. The catchment has hilly terrain with forest cover seen in the upper catchment (refer to figures below). Nadi

has experienced rapid urbanization and increasing population in recent years due largely to the thriving tourism industry that has seen the establishment of major international resorts and hotels in the lower catchment. There is also the agriculture sector which is dominated by sugarcane farms, the sugar belt having increased in area since the 1970s

Nadi has also experienced regular flooding events with recent catastrophic floods happening in 1999 and in 2009 where damages ran into millions of dollars with the tourism and agricultural sectors being particularly hard hit. The low resilience to flooding has been attributed to various factors including:

- Reclamation of large mangrove areas;
- Poor land use practices;
- Removal of river gravel and rock;
- Geomorphologic changes in smaller tidal river channels and
- Irregular dredging of Nadi River.

In principle, Integrated Water Resource Management concept of this project has utilized the planning and management approach which aims to manage both water and land resources through improved sectoral collaboration and partnership between government and civil society using:

- Integrated Land and Coastal use Planning (ridge to Reef concept)
- Water Resource Assessment and Quality Monitoring
- Watershed and Land use Management
- Demand Management and Water Use Efficiency
- Water Rights, Policies and Legislation
- Water Resource Information and Management Systems
- Education and Awareness Raising amongst Civil Society

2. Management of the GEF Pacific IWRM National Demonstration Project in Fiji

Currently there is no minister responsible for water resources, although ministers have responsibility for watersupply, irrigation, power generation, agriculture and environment. Coordination is provided by the national water committee, an ad hoc committee established by Cabinet in 2001 and comprising the heads of the key water resources agencies of the government. The figure below highlights the main agencies involved.

Sectoral water-related responsibilities

The organizations responsible for sectoral management are responsible for providing services or regulating activities within their sectors. The key organizations are:

Mineral Resources Department: 'effectively responsible for the groundwater resources of the nation; including its monitoring and protection from abuse and contamination' undertaking resource investigations, Borehole Drilling and Groundwater Monitoring, though monitoring is not conducted on a consistent nation-wide basis, but according to project finding from time to time

Ministry of Agriculture, Land and Water Management Division: irrigation development and operation, rural drainage, land reclamation, flood control works and flood management measures on a catchment basis, estuarine dredging and flow gauging, technical assessment for riverine excavation;

Public Works Department/Fiji Water Authority: provision of water supply and sewerage in all urban centres, river flow gauging, based on urban water supply information needs;

Department of Lands: administration of the Rivers and Streams Act, involving approval of authorizations to take water from rivers, although the function appears not to be actively exercised; approval of riverine excavation (based on technical evaluation provided by LWRM);

Ministry of Local Government: provision of rural water supply and sanitation schemes;

Fiji Energy Authority: operation and management of dams for hydropower generation, and regulation of upstream catchments.

Ministry of Environment: environmental protection and management in general, technical appraisal of EIA reports, state of environment reporting, data collection (mainly water quality and environment), wastewater discharge permits and monitoring;

DISMAC: disaster warning and response, for flood, drought and other disasters;

Fiji Meteorological Service: collection and analysis of climate and rainfall data, climatic forecasting.

Related responsibilities are:

Town and Country Planning: development plans for urban areas, approval of development proposals, which must comply with EIA guidelines;

Ministry of Agriculture: catchment management policy and programmes in rural areas;

Ministry of Health: monitoring and investigation of water quality for sources of drinking water;

Though there is no actively developed water resources management (WRM) or IWRM function in the government administration of Fiji, there are two agencies with some assigned responsibility.

A de facto water management responsibility has been assigned to the Mineral Resources Department, as the agency with expertise in groundwater, which also heads the national water committee and





was responsible for developing the national water policy draft. MRD, however, does not have resources to devote to water management and therefore its role is minimal. MRD was responsible for developing the national water policy document for the government's consideration in 2005.

The Land & Water Resources Management (LWRM) of the Ministry of Agriculture has been assigned the 'overall management of Fiji's land and water resources . . . in an environmentally sustainable manner' although it does not have the legislation to undertake that function. Its activities in surface water are more extensive in scope than those of any other agency. Land management is a focus of the Ministry which has the catchment management function.

Both groundwater and surface water need to be managed jointly and there should be a general water management responsibility covering both, assigned to a department or ministry, which could be attached to an existing agency or could form a separate administrative unit. The creation of the water management function, with water allocation as its base, is not a light matter for a government to determine, particularly in light of limits to available funds and staff in Fiji.

Given its diverse operations and responsibility LWRM was selected as the lead Agency for the Nadi IWRM Demo Project. It is one of the divisions under the Ministry of Agriculture. The role of the division is to provide engineering services to facilitate sustainable land and water resource management for agriculture development.

More specifically it looks into irrigation development and operation, rural drainage, land reclamation, flood control works and flood management measures on a catchment basis, estuarine dredging and flow gauging and technical assessment for riverine excavation.

The operational business plan of LWRM includes, land drainage network maintenance and infrastructure rehabilitation, Irrigation canal network maintenance and infrastructure rehabilitation, Construction of retention

weir, River dredging and integrated rural development and Agricultural infrastructure development – crop production.

Catchment management is also a focus of LWRM, which has been putting resources into the Nadi catchment as one of the most important watershed areas and to developed linkages between upland and estuarine areas. The key elements of the catchment plan for the Nadi River basin are (i) the design and construction of flood mitigation dams in the middle reaches which may also be used for irrigation, (ii) river channel amelioration on the floodplain and estuary, including channel clearing and dredging, and (iii) flood-related programmes which include initial flood level and flood prone area identification with a view to undertaking more extensive drainage and flood routing work in the future.

As highlighted in diagnostics report , Fiji lacks a coordinating mechanism capable of reflecting the key private and public interests in water and advising the government on important IWRM policies, plans and programmes.

Although a National Water Committee has been established, there is a need for a higher level body. It is also necessary to provide support for any national coordinating body. A deficiency in the current arrangements is the lack of dedicated support for the committee, which has limited capacity to develop strategies and proposals.

As far as Nadi basin is concerned, coordination and the application of consistent policy is important in lower floodplains where local government, national infrastructure development and nationally-controlled water schemes (irrigation, town water supply and power generation) interacts to contribute to flood impacts.

Lead Agency: Department of Agriculture, Division of Land & Water Resources Management

Memorandum of Agreement Signed 10th July 2009: Signed on behalf of DoA by Richard Beyer, Permanent Secretary for Agriculture

Signed on behalf of SOPAC by Mr Marc Wilson, IWRM Regional Project Manager



IWRM Focal Point Coordinator

Mr Collin Simmons

Division of Land & Water Resources Management, Dept. of Agriculture



National IWRM Project Manager

Mr Vinesh Kumar

Division of Land & Water Resources Management, Dept. of Agriculture

3. Establishment of a Coordinating Body for the Operation of the GEF Pacific IWRM Demonstration Project in Fiji

The Nadi Basin Catchment Committee was established in 2008 with the assistance of the Pacific IWRM Demonstration Project (the Demonstration Project), implemented by SPC/SOPAC and funded by the Global Environment Facility (GEF). The Demonstration Project was designed to “improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach,” and the NBCC was formed to oversee and coordinate the implementation of the Demonstration Project. The NBCC comprises of 24 members from government agencies, non government agencies, resource owners and communities living in the catchment.

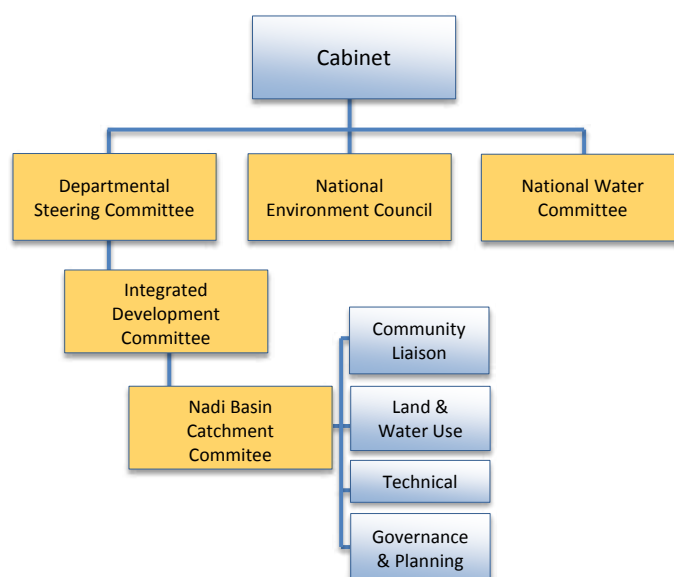
Further to ensuring the smooth implementation of activities and achievement of outputs by the Demonstration Project, the NBCC is responsible for planning and coordinating the sustainable development and management of Nadi catchment water resources, with the aim of implementing an IWRM approach. On completion of the Demonstration Project in 2013, it is envisaged that the NBCC will continue to function in this role.

The responsibility for protecting and managing the Basin’s water resources lies across multiple government agencies and communities. However, these various agencies are still in the process of developing capacity and establishing policy settings, and difficulties remain in implementation and coordination of the various efforts. In these circumstances, there is significant potential for IWRM approaches to help address these issues by encouraging collaboration between the communities who rely on fresh water and the various agencies responsible for its management.

In this regard, the establishment of the NBCC is a good first step towards implementing an IWRM approach. It is a multi-sector body, representing the key stakeholders (both land and water managers and users) within the Basin. Collectively, its members represent the strength, capacity, policies and enforcement powers of the various departments and organizations involved in the management and use of the Basin’s water resources.

Although still in its infancy, the NBCC is progressing its long-term plans for the effective management of the Nadi Basin Catchment area. Issues of interest and discussion in the NBCC’s quarterly meetings range from water issues, land use, flood mitigation and protection, water supply, development plans, policies and legislations and gravel extraction. NBCC members have supported and assisted the installation of water level recorders, a flood early-warning system, initiated proper land use practices in the upper and mid catchment areas and initiated contact with communities. The direction of the NBCC has also been sought on a number of work programs for implementation in the Nadi Basin.

To assist these efforts, subcommittees have been formed to focus specifically on the four project components: Community Liaison, Technical, Governance and Planning, and Land and Water Use. The intention of the project is to demonstrate a governance model for catchment management through the Nadi Basin Catchment Committee (NBCC) for future regional up scaling and integration into Government policy. The diagram below highlights the structure of the NBCC and it’s links to other national committees





4. Planning Stakeholder Participation in the Execution of the Fiji GEF Pacific IWRM Demonstration Project

In carrying out the Stakeholder Analysis, the project needed to identify key stakeholders that could influence prominent level decision making and drivers for effecting positive policy/institutional changes using an Integrated approach. A brief summary of the process involved is outlined below:

- Identify and list all stakeholders that would have a vested interest in the Nadi Basin (for example, Government Sectors – Tourism, Finance, etc; Nadi Chamber of Commerce – business community; Communities – residents of Nadi, villages, etc; civil societies; Non Government Organisations – Live & Learn; Land & Resource Owners – native land and Farmers).
- Carryout one on one interview with stakeholders to address their core business function, key interests, data available and specialised expertise (if any).
- Hold a workshop/meeting to listen to presentations from stakeholders on their core business function and their input/contribution or link to the IWRM Project.
- Select and rank the key stakeholders according to their power influence level and input towards the project implementation and progress.
- Detail information about the stakeholder (for eg. Level of support, influence, how the project affects the stakeholder).
- Submit Stakeholder Analysis report to Nadi Basin Catchment Committee for endorsement.
- Develop an action plan against each stakeholder on what we expect to gain from them, how we will engage with them and timeline of the engagement.

During the initial phase of project implementation, stakeholder engagement was animated in that all committee members or attendees at meetings, workshops and committees were enthusiastic. This was beneficial during project implementation as necessary stakeholders at directorship level were present at meetings and project information was disseminated to higher management levels in an orderly and timely manner – this was one of the strategies in place to gain high level government support.

With an operational Project Management Unit (PMU) the ambition is to build upon existing engagement mechanisms to inform, consult and engage with relevant key stakeholders to promote the IWRM project progress and its principles towards integrated management of land and water resources plus a project of national interest where Government support is essential. Though support from the necessary agencies was not always forthcoming, the PMU kept a high level presence. The

goal was to have meetings with the Prime Minister of Fiji who holds the portfolio of Finance, and Lands and Mineral Resources, as it is that highest level of influence that will gain support for IWRM at a national level.

This multi level and multi-sectoral engagement strategy has proven to be the key driver for manoeuvring through the complex issues in the catchment. The strategy also provided a platform and a basis for continuous engagement in an organized and systematic way. In a number of cases these engagements were formalized through MOU's and MOA's. The strategy has also lead to further enhancement of relationships and complemented better inter-agency collaboration amongst other partner agencies that may not have been initially engaged due to the nature of their operations, for example Library Services of Fiji, Water Authority of Fiji, Fiji Meteorological Services, and the Women's Interest Office.

Though there were a lot of positive externalities in this strategy, there is still a lot of room for improvement. These improvements which form the basis for the recommendation are:

- In order to have a continuous and improved engagement there is a need to interlink activity(s) of the project to that of the partnering agency.
- There should always be a notion of shared or common goals and objectives.
- Integrated systems and processes as opposed to stand-alone systems to enhance sustainability and continuity.
- Resources should be targeted for innovation rather than for re-invention; there is a need to complement on the existing strengths of an agency and to fill in the gaps.

4.1 Gender Mainstreaming

The inclusion of women and a gender perspective was an essential part to this project as it aimed to transform the way the catchment dealt with a major disaster. The effect of disaster especially flood cannot be assumed to be the same for women and men. As social fabric is disrupted in disaster (flood), so are gender roles: this should be taken into consideration. Gender has been a relevant dimension in disaster preparedness, response and recovery, and is an essential component in implementing the outcomes of rebuilding households and community. Women play key roles not only in disaster prevention and preparedness, but also in early warning as usually men are out at work in the catchment. Their position at the centre of the community during disaster often makes them more aware of issues and enables

them to gather information regarding impending disasters and mode of intervention in future. As disasters (floods) conclude, women often hold the family and community together, becoming in a number of cases heads of households as men are busy with other roles of community recovery. Hence during formation of Disaster Management Committees, special emphasis was given on the compositions of the committee where at least two women had to be part of a committee.

The Nadi Catchment also has a number of marginalized communities that often are not given the same space to voice their issues, especially relating to water and sanitation. The challenging issue is the fact these communities are normally living in vulnerable areas (in regards to disaster) and they are the ones that are affected first or the most during disasters. Though at times thought to be sensitive in nature, a number of times these communities also contribute to the issues themselves. For example in the catchment there are number of informal settlements

that are built across and around waterways. In most cases they do not have proper or any waste water and household solid waste disposal systems. Often they would use these waterways and this blocks the natural course of the waterways leading to other sanitation issues in the catchment. Most settlements are located above the urban & peri urban centres and their household wastes drain or overflow during floods into the main central business district.

During the implementation phase of the project, these communities were identified and training sessions were conducted to empower them. A number of times the intention was to make them aware of the issues and the complexities. The NBCC with its multi sectoral approach has been quite instrumental in dealing with the 'sensitiveness' and biasness of the issues.





5. Results Oriented Planning and Implementation of the GEF Pacific IWRM Demonstration Project in Fiji

5.1 Logframe Development

A one-day workshop was held in Suva on Tuesday 13th March, 2007 where members of the National Water Committee and individuals with expertise in water-related areas and NGOs were invited to carry out a Hotspot analysis for Fiji. Workshop participants were tasked to analyse the three most highly ranked hotspot issues and the four most highly ranked sensitive areas. Conflict over groundwater in the Yaqara valley was listed both as a hotspot and a sensitive area and was therefore added to the list of sensitive areas, making a total of seven issues for analysis. The groups scored the projects according to the analysis templates. The total number of hotspot and sensitive area proposals needed to be reduced for analysis. This was done by asking workshop participants to identify the top three hotspots and the top three sensitive area proposals. The result was that the issues of flooding, water conflict and drought featured almost exclusively in the resulting options. Water quality issues were not given priority by the workshop. Hotspots are immediate issues, where there is already a problem that may have an IWRM solution.

The Nadi catchment flooding issue was highest on the list of hotspots, meaning immediate issues. Following that a National Integrated Water Resource Management Hotspot Analysis Diagnostic was completed in May, 2007. This report identified the present status of Integrated Water Resources Management (IWRM) in the Fiji Islands and barriers to the more effective implementation of IWRM. The report highlighted that because water performs so many important functions for society, the responsibility for water is always spread among different organisations, public and private, and is located among several government ministries. Hence for this reason, IWRM issues had to be broken down into readily understood categories. The two main categories suggested by this report are water resources issues and water services issues.

According to the report Water resources issues encompasses matters that deal with the availability of water in nature, its abundance and quality, extremes (flooding and drought) and its interactions with the natural environment. In the case of Fiji the impact of freshwater on the marine environment is important. Further the report highlighted that Water services looks into supplying water for all the economic and social purposes of the nation and disposing of such water safely and without unreasonably damaging the natural environment. It was noted in the report that there are overlaps between these two categories, but the major responsibilities of organizations can be assigned to one or other category.

With its vulnerability to flooding, Nadi Basin Catchment was identified as the most urgent 'hotspot', and the first priority for an integrated water resources management (IWRM) demonstration project in Fiji.

Later in the year 2008 a project proposal was designed to assist all stakeholders within the Nadi Basin to improve the monitoring of rainfall and hydrological events to improve flood forecasting. It was anticipated the project will improve future planning and development in the Basin through the development of a Nadi Basin Catchment Committee, a multi-sectoral committee designed to improve the management of land and water resources within the Basin. The project was also to raise awareness to flooding issues throughout the Basin and to help local communities and other stakeholders to improve their resilience to flooding through an improved understanding of the river network and floodplain interactions. The project was to also source additional funding for further activities as part of its mandate.

With this objective and output the project proponents felt that it qualified for GEF funding. Under the GEF Operational Strategy for International Waters this project tackled water and environmental problems using an IWRM approach across GEF Strategic Programme III: Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater basins (with a specific focus on SIDS to protect community surface and groundwater supplies while reducing sewage releases).

The geographical nature of SIDS allows IWRM approaches to rapidly demonstrate the multiple benefits of tackling water resource management in an institutionally horizontal manner, whilst applying a ridge to reef approach, tackling technical and socio-economic issues with communities and civil society at large to demonstrate equity, efficiency and environmental sustainability. The project was tackling, through IWRM approaches, many of the issues under GEF Strategic Programmes I and II through identifying and understanding multiple stresses on fragile coastal environments and linking these to freshwater and land management, especially upstream practices; IWRM will contribute to improving coastal and marine fishstocks and biodiversity.

The project was approved in the year 2008 and an official MOA was signed between the Government of Fiji through its implementing Agency - Department of Agriculture on 14th July 2009 and later during the year funds were released. During the inception a joint effort was made by the Lead Agency (LWRM) and PCU – SOPAC to review and modify the Logframe Matrix and prioritize it into 7 components. The review of the Logframe Matrix, was then presented to Nadi Basin Catchment Committee for its comments and endorsement. After a comprehensive consultation the report logframe was finally endorsed.

5.2 Priority Areas of Work and Results

The following table summarises the priority objectives and activities of the IWRM project. The full project logframe is included with this report as Annex 4.

Project Objectives	Activity
Goal: To improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach	
Component 1:	
Development of Integrated flood management plan and mainstreaming of integrated flood management into policy, planning and legislation framework	
Output 1.1 Review legislative requirements to enable integrated flood management within national IWRM framework	Review legislative requirements for integrated flood management within IWRM Develop draft legislation and/or policies as identified in review to improve integrated flood management Develop and implement strategy for endorsement by Cabinet to mainstream integrated flood management into legislation and national policy
Output 1.2 Review institutional arrangements for government administration of water resources	Review institutional arrangements for IWRM to provide enabling environment for integrated flood management Make recommendations to the Government of Fiji on the institutional arrangements for IWRM and possible management agencies
Output 1.3: Develop Nadi Basin Flood Management Plan - An integrated flood risk management plan developed through community engagement, incorporating a flood warning system based on sound modelling of reliable data, a catchment wide planning strategy and strategies to increase technical and institutional capacity	Synergise technical, community and economic studies Define level of acceptable risk Develop Draft Basin Flood Mgmt Plan (including vision, acceptable risk, strategy etc, building on previous IWRM goals identified) Open Contents through NBCC to wider stakeholder consultation Develop Nadi Basin Flood Management Plan - An integrated flood risk management plan developed through community engagement, incorporating a flood warning system based on sound modelling of reliable data, a catchment wide planning strategy and strategies to increase technical and institutional capacity
Output 1.4: Replication Strategy - A strategic document identifying flood risk preparedness needs at a national level, identifying mechanisms for transferring learnings and tools and key policy and financial enabling factors, revised to identify lessons and tools as they become available	Develop Replication Strategy aligned with recommended institutional changes for replicating the project learnings and outcomes nationally and regionally Implement Replication strategy
Output 1.5: National IWRM Plan developed and implemented incorporating best IWRM and WUE approaches	Define best IWRM and WUE practices for Fiji Draft National IWRM Plan Consultation on National IWRM Plan Implemented National IWRM Plan National IWRM communication plan framework implemented Multi-sectoral APEX body established
Output 1.6: National Indicator framework embedded in formal national reporting incorporating PM&E	National Indicator framework embedded in formal national reporting Develop national capacity in PM&E



Component 2: Sound governance to provide confidence in the transparency, accountability and credibility of decisions	
Output 2.1: Establish and support the Nadi Basin Catchment Committee, incorporating cross-sector, government, civil organisational, private sector and community representatives responsible for delivering the integrated flood risk management plan, with public accountability	Develop governance framework for NBCC, including Terms of Reference, roles and responsibilities and legislative and institutional links
	Identify options for sustainable financing (and institutional home) of Nadi BCC, GIS Mgmt Plan, and other Project Outputs
	Develop support structure for NBCC, including an executive capacity
	Establish NBCC
	Raise awareness and develop skills of NBCC
Component 3. A stakeholder engagement strategy that raises awareness, increases participation, particularly of marginalised sectors, and builds stakeholder capacity to support a sustainable flood management plan	
Output 3.1: A Communication Strategy that facilitates increased engagement by identifying mechanisms for communicating issues, outputs and outcomes to key and vulnerable stakeholders	Develop communication strategy in consultation with key stakeholders to raise awareness and understanding of NBCC issues and uptake of flood risk management strategies
	Develop and implement strategy to communicate the concept of acceptable risk and cost-benefit tradeoffs associated with flood risk mitigation
	Implement communication strategy
Output 3.2: Participation Strategy	Develop strategy to increase stakeholder engagement in NBC activities, including strategies to engage and empower marginalised stakeholders
Output 3.3: Capacity Building	Undertake capacity needs assessment for stakeholders, governance, technical and institutional needs
	Develop capacity building strategy, incorporating awareness, partnerships and education, linked to engagement and communication strategies
	Develop capacity building toolkit
	Implement capacity building strategy through awareness raising campaigns, targeted workshops, partnerships, broad consultation, recruitment, education and use of toolkits
	Develop pilot schemes, including using local farms to demonstrate land management practices
Component 4: Flood Risk Management Tools Developed to support the Flood Management Plan	
Output 4.1: Upgrade hydro-climate monitoring network	Assess & identify equipment needs
	Source and purchase equipment
	Install equipment
Output 4.2 Climate Change Adaptation Project	Replication of Best Practice from PACC
Output 4.3: Operational rainfall event forecasting	Collect and collate rainfall and weather data
	Analyse data, including a gap analysis
	Develop rainfall predictive model
	Document processes and train users
	Maintain the system
Output 4.4: Rainfall – runoff prediction model	Source and collate data
	Develop rainfall-runoff predictive model
	Document processes and train users
	Interface with rainfall predictive model
	Maintain the system
Output 4.5: Best-practice cultivation guide	Review rainfall - runoff model Outputs
	Review land management practices
	Develop best practice guidelines
	Develop communication strategy
Output 4.6: Riparian and floodplain vegetation mapping	Survey infrastructure, ecology and channel geometry
	Develop riparian zone GIS mapping

Output 4.7: Flood warning system	Assess socio-economic benefits of flood warning system, linked to defined acceptable risk
	Develop Communication and awareness strategy with communities, including determination of best flood warning approach for the Nadi Basin based on options from socio-economic assessment
	Develop flood preparedness and response plans
	Determine most appropriate institutional setting
	Construct warning system (depending on methods construction may include tele-communications, siren warnings, etc)
Output 4.8: Floodplain inundation modelling	Assess most cost-effective means of undertaking floodplain inundation modelling (LIDAR / DEM / SAR)
	Model floodplain inundation for targeted events
	Develop model scenarios to support planning and management decisions
	Document processes and train users
Output 4.9: Riparian management guidelines	Undertake desktop study of flow and pollution mitigation strategies
	Undertake pilot studies to investigate appropriateness of mitigation strategies in NBC
	Develop riparian management guidelines
	Develop and implement awareness and education strategy
Output 4.10: Develop Sustainable Landuse Strategy of Nadi Basin	Conduct Community Consultation for SLM / SFM awareness and explore opportunities for demo site
	In partnership arrangement with Landuse Division initiate demo plots for SLM
	In partnership arrangement with Forestry Dept initiate demo plots for SFM
	Secure Funding Support for SLM / SFM Implementation





Component 5: Complete targeted scientific and technical studies to inform flood management planning	
Output 5.1: Assess the effectiveness of sediment and flow mitigation strategies including flood detention dams	Assess performance of existing infrastructure and current strategy Develop flood risk mitigation infrastructure strategy (including possible need for retro-fitting) Develop asset management plan(s) incorporating study findings
Output 5.2: Sediment flux assessment	Survey current sediment fluxes and map source areas Assess potential mitigation strategies, considering sedimentation rates, dredging frequency requirements, level of acceptable risk and costs
Output 5.3: Water quality and biological surveillance	Design water quality and biological monitoring and evaluation programme to inform guideline development Implement water quality and biological monitoring and evaluation program Develop data management and reporting system Develop strategy for stakeholder monitoring capacity building and handover of M&E program components
Output 5.4: Mangrove mapping and ecological assessment	Survey mangrove communities Undertake scientific and socio-economic study to assess the value of mangrove communities Develop strategy to incorporate the value of mangroves into flood risk management
Output 5.5: Water quality variability assessment	Collect and collate water quality data for the Nadi coastal waters and Nadi River discharges Assess the temporal and spatial variability of water quality in the coastal waters and discharging river water, particularly that associated with flooding Investigate the fate of pollutants discharged from the Nadi River in coastal waters Assess impacts of the range of flood discharges on receiving coastal environment to inform flood planning decisions
Output 5.6: Coastal water quality and biological surveillance	Establish long-term monitoring program to assess the impacts of flood flow mitigation within the catchment
Output 5.7: Assessment of impacts of flood mitigation strategies on groundwater resources	Investigate the influence of flood events and changing river regimes on groundwater recharge and water quality Review risk mitigation strategy impacts on groundwater to inform NBCC decision-making
Component 6: To Successfully commence implementation of the Nadi River Flood Management Plan	
Output 6.1: Executive and secretariat support for NBCC	Identify NBCC support requirements, roles and responsibilities and funding mechanisms Establish executive support unit
Output 6.2: Plan Implementation	Executive support unit to implement NBC Flood Management Plan under NBCC governance, including reporting and auditing
Component 7: To successfully deliver the Nadi Basin Flood Management Project	
Output 7.1: Recruit Project Manager and Project Assistant	
Output 7.2: Establish Project Management Unit office	
Output 7.3: Inception Period Activities	
Output 7.4: Identify and clarify stakeholders	
Output 7.5: Project design and PM&E Plan implemented	
Output 7.6: Re-visit project design with stakeholders and refine design and approach where necessary	
Output 7.7: Source additional funding to add value to project outcomes	
Output 7.8: Manage budgets, deliverables and timelines	
Output 7.9: Complete reporting commitments	

The following table provides a summary of key results linked to the project's goal and objectives. Progress towards the projects objectives can be found in Annex 5 and a comprehensive Results Note linked to performance indications can be found in Annex 6.

Key Results
1. Establishment of a cross-sectoral Nadi Basin Catchment Committee with broad commerce, community and government membership. The establishment demonstrates a best practice governance model for catchment management.
2. Development of the Nadi Basin integrated Flood Management Plan and associated Flood Early Warning System that has been successfully operational through 2 significant flood events.
3. Empowered communities to become disaster resilient and independent through the formulation of twenty-seven Community Disaster Management Committees and community disaster response training.





5.2.1 Co-financing

The following tables highlight the co-financing that was realised and the additional funding that was leveraged from success of the project activities.

Source	Amount (USD)	Cash or In-kind	Description
Government	2000	In-kind	Training
Government			Infrastructure and current plan assessment
Government			Recommendations for future activities
Government	10000	In-kind	Asset maintenance plan development
Government			Develop GIS mapping for riparian zones
Government			Socio-economic assessment on benefits of flood warnings
Government	10000	In-kind	Construct warning system, include telecommunications, siren warnings
Government	2000	In-kind	Draft basin flood management plan
Government			Project Manager and Assistant
Government	5000	In-kind	Office rental, communications, utilities
Government			Redesign of project design
Government			Salaries for PM and PA
Government			Infrastructure, ecological and channel geometry survey
EU-SOPAC IWRM	2000	In-kind	Communications and awareness strategy for flood warning system
EU-SOPAC IWRM			Development of flood preparedness and response plans
EU-SOPAC IWRM			Determine most appropriate institutional setting
EU-SOPAC IWRM			Drafting ToR for the Nadi Basin Catchment Committee
EU-SOPAC IWRM			Map institutional setup and location of Nadi Basin Catchment Committee
EU-SOPAC IWRM			Identify options for sustainable financing of Basin Catchment Committee
EU-SOPAC IWRM			Develop 5, 10, and 15 year Nadi Basin Catchment Committee duties
EU-SOPAC IWRM			Open plan contents through BCC to wider stakeholder consultation
EU-SOPAC HYCOS			Assessment of equipment needs to upgrade hydro-climate monitoring network
EU-SOPAC HYCOS			Equipment sourcing and procurement for upgrade hydro-climate monitoring network
EU-SOPAC HYCOS	15000	In-kind	Installation and training for hydro-climate monitoring network
IUCN	51,331	In-kind	Establish Nadi Basin Basin Catchment Committee
IUCN			Draft contents of basin flood management plan
Live and Learn			Stakeholder engagement and consultation/awareness raising
Live and Learn			Stakeholder workshops
Live and Learn			Guidelines development and drafting
Live and Learn			Stakeholder workshops and consultations on the draft guidelines
USP			Data source and capture
USP			Model development and integration
USP			Use of local farms to pilot approaches
USP			Awareness raising for the Nadi basin catchment committee
USP			Stakeholder consultation for the Nadi basin catchment committee
USP			Basin tours for BCC
Total	97,331		

6. Strengthening National Coordination and IWRM Policy and Planning in Fiji

6.1 Linkages of Demonstration Activities with IWRM Planning

Generally IWRM requires decision-making to be consultative and where appropriate, participatory. At present the coordination of advice to the government is limited to officials in the administration who make up the national water committee. However, Fiji has well-developed consultation processes which involve district commissioners and also the bodies representing native land interests. In practice, the Cabinet will normally be consulted on any important policy issue that could affect land, and water is considered to be such an issue. Some water issues need to be resolved at a national level while others should be decided more locally. In general, the latter type of issue involves the provision of services for rural communities, whether in large island hinterlands or on small islands. The importance of ensuring the sustainability of rural schemes (water supply and sanitation) and the protection of local water bodies (such as shallow groundwater lenses) may have been underestimated. Without the agreement and support of local people, responsibility for maintaining and protecting schemes and water resources may not succeed in the long term.

For regional and urban water initiatives, apart from land ownership negotiations, there are the normal development planning procedures which allow public comment on development proposals. However, the urban population may not have other means to comment on public policy (most consultation occurs through the district and related channels).

The government has made a number of IWRM related initiatives in the past six to seven years. These are:

- Creation of the National Water Committee, a coordinating committee of officials to meet under the chairing of MRD;

- Development of a draft national water policy which has been accepted subject to consultation, which has not yet taken place;
- Commitments to consider new water resources legislation and national coordinating arrangements.
- Review of Land & Water Resource conservation act.

The major gap is the lack of an active water resources management responsibility in the government. IWRM or water resources are not assigned to a minister. A current gap is the lack of an active water allocation function. Surface water has not been the subject of major conflict, but various symptoms of likely conflict in the future are present.

Although a coordinating committee of officials has been created, it is an ad hoc committee without dedicated resources. It meets when issues arise and when reform proposals require consideration. A more active coordinating group is needed, which has representatives of the most important interest groups as well as some experts, to advise the government and comment on reform proposals, as well as to monitor the status of IWRM and the key problems and report to the government.

The Nadi Integrated Water Resource Management Demo Project intends to demonstrate a governance model for catchment management through the NBCC for future national up scaling and integration into Government policy. The NBCC comprises of 24 members from the government agencies, non government agencies, resource owners and the communities living in the catchment. Under its portfolio there are four functional subcommittees Technical, Community Liaison, Land & Water Use and Governance & Planning. The NBCC is also part of the divisional Integrated Development Committee which coordinates and implements national policies within the division and is also now a member of the National Water Council.





Significant progress has been made by the IWRM Nadi Demo project to streamline activities that would contribute towards National IWRM planning process:

- Sustainable Land use Management initiatives under the project are being implemented by the agency that was mandated to review the Land & Water Conservation Act. This policy will assist in mainstreaming land & water management issues - especially the IWRM concept, its framework and the catchment management component. It is also the Lead Agency for UNCCD SLM project implementing agency.
- Sustainable Forestry Management initiatives are being headed by the Department of Forestry that is the policy advisor for forestry management in Fiji. There is a tendency that lesson learnt from these initiatives will be incorporated into national policy.

The national environment council was established under the Environment Management Act (EMA) and membership made up of stakeholders who focused on environment issues. The key features of the EMA 2005 are:

- The setting up of a National Environment Council to coordinate the formulation of environment related policies and plans;
- The requirement for Environment Impact Assessments to be binding on all parties, including Government;
- Permits to discharge waste and pollutants into the environment;
- National Resource Inventories, National Resource Management Plan, National State of the Environment Report, and the National Environment Strategy;
- Declarations, enforcement orders, stop work notices will ensure environmental compliance according to the laws

The Department of Environment is heading the Community Liaison Sub-committee of the project which is spearheading this council. The NBCC is represented in this council through the department of Environment.

The Early warning system set-up by the project is the part of the greater national disaster risk reduction strategy and output. The Water Authority of Fiji and Fiji Meteorological Services are part of the Technical Sub-committee as well as strategic partners in the installation & maintenance of the equipment. The NDMO plays the lead role in the actual information dispersal and awareness.

6.2 Improving National Coordination for IWRM

Before the inception of this project, IWRM and its concepts were not realized in Fiji. A number of approaches existed in silos of number of institutions but were loosely tied and never been tried or demonstrated. The IWRM project demonstrated this process and documented the approach. This assisted in realizing its potentials and for the policy makers to incorporate it in their planning process. The Demo project has been instrumental in the formation of Nadi Basin Catchment Committee. This body was instrumental in driving a number of policy issues and exploring 'grey' areas. The project was also instrumental in interlinking activities of agencies which turn formed the basis for exploring the policy over laps and gaps.

6.3 National IWRM Planning

Fiji, due to a number of complexities has not been able to work through the IWRM policy implementation. One of the major reasons has been ineffectiveness of the National Water Council (Apex Body). Secondly this component was not funded through the GEF IWRM project budget but through the EU funding. Nevertheless significant progress has been made towards the planning phase. This includes Collation national information and data sources for use in outlook and IWRM planning, Assessments of national WatSan outlook and identify areas for ongoing development, and the draft of the national WatSan outlook



7. Capturing Lessons Learned for Replication and Scaling-up of IWRM Best Practice in Fiji

7.1 Lessons Learned

For replication and Scaling up of IWRM Best practices, we have chosen key Lessons learned that reflect the best strategies undertaken for project activities in ensuring the best result is achieved and benefits the project as well as nationally.

The set up of the steering committee – Nadi Basin Catchment Committee allowed its stakeholders to integrate at a common forum rather than isolated discussions being conducted over the land and water use management of the catchment. It intends to demonstrate a governance model for catchment management through the Nadi Basin Catchment Committee (NBCC) for future national up scaling and integration into Government policy. The NBCC comprises of 24 members from the government agencies, non government agencies, resource owners and

the communities living in the catchment. Under its portfolio there are four functional subcommittees Technical, Community Liaison, Land & Water Use and Governance & Planning. The NBCC is also part of the divisional Integrated Development Committee which coordinates and implements national policies within the division.

Also the forum provided a platform whereby issues could be raised in regards to water use, sanitation or tree rehabilitation to stabilise the development within Nadi and also for its sustainability in the long term.

The following table highlights moments of success in the project and areas that needed improvement.

Qtr	Success Story	Areas for Improvement Story	Improvement Story
Y1 Q4	<ul style="list-style-type: none"> Formation of Steering Committee - Nadi Basin Catchment Committee 	<ul style="list-style-type: none"> Linking with Non Government Organisations (NGO's) proved futile because of their own donor funding with specific outputs eventually creating territorial work boundaries and the less likeliness to share data/information. 	<ul style="list-style-type: none"> Proper coordination required for effective community awareness, channelled/ facilitated through relevant agencies.
Y2 Q1-4	<ul style="list-style-type: none"> Integration of stakeholders in coordinating activities and information sharing. Inter-agency collaboration/ support to successfully install hydro-climatic telemetry equipment. 	<ul style="list-style-type: none"> Logframe Revision – limited time to present to steering committee. Formal processes in place whilst working with multi agencies usually occurs at a later stage, in this instance after equipment installation. 	<ul style="list-style-type: none"> Delayed recruitment of a fully fledged Project Management Unit. Set up of subcommittees to support steering committee in project implementation. Recruitment of steering committee Chairman. Bureaucratic financial system within lead agency – hindrance in implementing activities.
Y3 Q1-2	<ul style="list-style-type: none"> Cooperation/ Integration with multi-agencies on related activities to avoid duplication and result in better utilization of resources and maximum awareness output. Outsourcing an activity to build community capacity for 10 vulnerable villages in Disaster Response Plan training and set up of Community Disaster Management Committees. 	<ul style="list-style-type: none"> Comprehensive Decisions- Site Selection for Hydrological/ Meteorological Equipment – problems encountered frequently with data transmission. Delay in house funding approval processes which can hinder an agency's commitment to a particular activity, in this case, set up of a server within the project area to decentralize data retrieval and improve flood forecasting. 	<ul style="list-style-type: none"> Securing a long –term sustainable arrangement for the use of land for the project installations. Lack of commitment from aligned agencies under a core Ministry who have technical expertise to assist the Project Management Unit in implementing a specific activity.



8. Planning the Transition from IWRM to the Regional Ridge to Reef Initiative

8.1 Scaling-Up to broader Integrated Land, Water and Coastal Management

The transition to the Regional Ridge to Reef project will be leveraged by the three outcomes of the IWRM Project:

- Establishment of a cross sectoral institution at local level aligned to national outputs - Nadi Basin Catchment Committee (best practice governance model for catchment management)
- Development of Nadi Basin Integrated Flood Management Plan
- Empowerment at community level with formal setup

-formulation and capacity building of 28 Community Disaster Management Committees and Community Disaster Response Plan in line to National Government's overarching national policy framework – "People's Charter for Change".

The current coordination arrangement for the IWRM project was under the Ministry of Agriculture (MOA), however the Department of Environment (DOE) is currently handling the STAR projects. The DOE played a strategic partnership role in the IWRM project phase and it is anticipated that during the IW phase in R2R current arrangement with the MOA will be most suitable. This is based on the fact that over the years MOA has developed the capacity in project delivery and has many developed many strategic partners.

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Annex 1: Nadi Basin Catchment Committee member list

Photo	Members	Photo	Members
	Mr Bryan Watson Chairman		Mr Meli Saukuru Ba Provincial Council Phone: 6664 344 Email: baprocounciltk@connect.com.fj
	Mr Joeli Cawaki Commissioner West Phone: 66664 946 Email: joeli.cawaki@govnet.gov.fj		Mr Inoke Wainiqolo. Forests Conservator Phone: 3312 995 Email: inoke.wainiqolo@fisheries.gov.fj
	Mr Jope Davetanivalu Department of Environment - Director Phone: 3311 699 Email: jdavetanivalu@govnet.gov.fj		Mr Colin Simmons Land and Water Resource Management Division Acting Director Phone: 3312 995 Email: colin.simmons@agriculture.gov.fj
	Dr Ram Raju Nadi Chamber of Commerce President Phone: 6700 240 Email: rāju@connect.com.fj		Mrs Prudence Rouse Pacific Dialogue Ltd Phone: 9998 591 Email: md@sigmafiji.com
	Mr Alipate Waqaicelua Fiji Meteorological Services Director Phone: 6724 888 Email: alipate.waqaicelua@met.gov.fj		Mineral Resources Department - Director Malakai Finau Phone: 3381 611 Email: malakai.finau@mrd.gov.fj

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Annex 2: Nadi Basin Catchment Committee ToR

BACKGROUND INFORMATION

The Nadi Basin Catchment is of vital importance to Fiji, and affects multiple stakeholders across society. Nadi Basin hosts Fiji's only international airport and contains Nadi, the second largest town in Fiji with a population of approximately 31,000 people. During an extensive multi-stakeholder diagnostic consultation process between 2006-2008¹, the Nadi Basin Catchment, with its vulnerability to flooding, was identified as the most urgent 'hotspot', and the first priority for a integrated water resources management (IWRM) demonstration project in Fiji². The appropriateness of this choice and the urgent need to address the problems of water resources management in the Nadi Basin Catchment have been underlined by the recent (January 2009), severe flooding. This incurred massive costs to infrastructure and livelihoods and threatens the planned developments.

The demonstration project will take an Integrated Water Resources Management (IWRM) approach, which will enable it to consider the water-related issues and concerns of all the stakeholders in the Nadi Basin. It will be funded by the GEF (Global Environment Facility) as part of the regional GEF-Pacific IWRM project that supports the use of the IWRM approach for improved water resources management in 13 Pacific Island Countries. IWRM is an approach that:

- Takes into account all the physical, social and economic linkages of water with nature and humans, along its route from ridge to reef
- Works towards balancing water demands for environment, human health and economic development, to minimise conflict and ensure optimal, equitable and sustainable use
- Brings together government and stakeholders from the different sectors and social groups, to plan and manage water in a coordinated, balanced and participatory manner

Demonstration project: Integrated Flood Risk Management in the Nadi River Basin

The overall objective of the 5-year demonstration project is to improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach. Project activities are structured under 6 themes which are the primary components for integrated flood management :

1. Rainfall
2. Run-off
3. River water quality
4. River water health
5. Coastal health
6. Flood risk management

¹ National Integrated Water Resource Management Diagnostic Report:Fiji Islands, with Report on GEF Hotspot Workshop for Fiji, 13th March 2007; with Environmental and Socio-Economic Protection in Fiji: Integrated Water Resources Management Demonstration Project Integrated Flood Risk Management in the Nadi River Basin. Draft. Draft SOPAC Miscellaneous Report 637. November 2007

² [UNDP Project Document PIMS no.3311. Implementing Sustainable Water Resources and Wastewater Management in Pacific Island Countries. 2008

Demonstration project activities include hydrological monitoring and modelling for flood prediction, improving land management to reduce flood hazards, catchment and channel mapping for flood conveyance and baseline data collection, developing a flood warning system, monitoring water resource quality and biological status, capacity development of stakeholders, establishment of a functioning and effective committee for water resources and flood management in the Nadi catchment. Table 1 presents a summary of the demonstration project and full details are given in the Demonstration Project Proposal³.

Project Management Unit (PMU)

A national Project Manager (PM) and Project Assistant (PA) will be recruited in country to manage the daily implementation of the project. With any counterparts assigned by LAWRM, the PM and PA will comprise the Project Management Unit (PMU) and will be administratively under the authority of LAWRM, the lead agency for the Nadi demonstration project. They will also provide regular reports on plans and progress to the Nadi Basin Catchment Committee.

NADI BASIN CATCHMENT COMMITTEE

The Nadi Basin Catchment Committee (NBCC) is a multi-sectoral committee that will be formed, to oversee and coordinate the implementation of the Nadi Basin demonstration project. Its members will be nominated to represent the key land and water resources stakeholders (both land and water managers and land and water users) within the Basin and will also include the IWRM Focal Point for Fiji. This committee will be responsible for ensuring the smooth implementation of activities and achievement of outputs in line with the Demonstration Project Proposal. This will include authorisation of project and PMU annual workplans, routine and special reports, sub-project proposals etc. The PMU will act as secretariat to the NBCC meetings.

With the close of the regional IWRM project in 2013, it is envisaged that the NBCC will continue to function as the body authorised to plan and co-ordinate the sustainable development and management of the Nadi catchment water resources.

An interim NBCC will be formed early in the inception period of the Nadi demonstration project, with its first tasks being to agree on the NBCC Terms of Reference (ToR), constitution and membership, while recognising that these may require adaptation as the demonstration project progresses. To assist the interim NBCC in these tasks, a list of some key stakeholders and some clauses for the Constitution are outlined below for consideration.

Preliminary discussions suggest that a small working group of 10-12 members will be formed from among the NBCC members to facilitate the early stages of demonstration project implementation. The working group will report back to the NBCC during each NBCC meeting.



TABLE 1 ENVIRONMENTAL & SOCIO-ECONOMIC PROTECTION IN FIJI: INTEGRATED FLOOD RISK MANAGEMENT IN THE NADI RIVER BASIN				
Themes (1-6) and Main Activities (A-D)				Rank
1	Rainfall	Lead	Funds	
A	Monitoring and modelling for flood prediction and flood warning	NDMO Fiji Met	IWRMP	1
B	Catchment rainfall modelling for whole catchment rainfall prediction	Fiji Met	?	2
2	Runoff			
A	Rainfall-runoff modelling for flood and sediment load prediction	LAWRM	IWRMP	1
B	Improved 'best-practice' land management for reduced run-off	LAWRM LRPD	?	2
C	Community awareness, engagement and capacity building of/for land management changes	LAWRM USP, NGOs	IWRMP	1
	Network w. PACC drainage/flood structure designs and design criteria	LWRM	GEF PACC	
D	Monitor water and sediment trapping by detention structures and review design criteria (national and regional benefit)	LWRM	IWRMP	1
3	River network and floodplain			
A	Survey and mapping catchment (riparian + floodplain) vegetation and infrastructure and analysing its impact on sediment and flood flow.	LAWRM Lands NLTB	IWRMP	1
	Analyse channel hydraulic geometry to determine how to improve flood conveyance	With above		
B	Design, development and implementation of a river flow based flood warning system	Fiji Met PWD, DISMAC	IWRMP	1
C	Survey sediment flow and assess mitigation potential in source areas and channel	LAWRM USP,	?	2
D	Inundation modelling of floodplain (LiDAR) for future development planning policy and technical guidelines	LAWRM Lands NLTB	?	2
4	River/water health			
A	Define riparian management guidelines to increase livelihood & water quality benefits in lower tributaries (with 3A above)	LAWRM MoEnvt	?	1
B	Design and implement water and biological quality monitoring, and develop local (community) capacity to operate and manage	LAWRM DoEnvt MamESo c	?	2
5	Coastal health			
A	Mangrove mapping+ ecological analysis to determine lagoon management and flood channel management implications	DoEnvt	?	1
B	Assess coastal water quality + variability over time + place during flood flows as baseline for longterm monitoring of effects of upstream flood mitigation activities	DoEnvt Fisheries	?	1
C	Long term monitoring of coastal water quality at key locations for assessing effects of upstream flood mitigation activities	USP	?	2
6	Nadi Basin integrated flood management plan			
A	Establish NBCC and support its development into an effective, multi-stakeholder decision making body for flood management	LAWRM MProvDv	IWRMP	1
B	Prepare the Nadi Basin Integrated Flood Risk Management Plan, as an evolving plan, that incorporates outputs from the demo project activities above, flood risk and vulnerability assessments; and the 5 principles of i) partnership;	LWRM NDMO	IWRMP	1

	ii) improved information flows; iii) capacity strengthening; iv) usage of economic + environmental tools & alternative financing; v) support to national legislation and policies.		
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DRAFT TERMS OF REFERENCE

- i. To coordinate and monitor the implementation of the IWRM Nadi River Basin Demonstration Project on Integrated Flood Risk Management
- ii. To provide a forum for discussion and action planning on the range of water resources management issues affecting the stakeholders in the Nadi River Basin Catchment, with particular attention to facilitating meaningful participation of the rural and urban stakeholders resident in the catchment
- iii. To assess and endorse the refined project logical framework.
- iv. To assess and endorse the inception period work plan and the annual work plans of the Project Management Unit (PMU)
- v. To ensure that the Project work programme is consistent with the annual work plans of the National Water Committee and other relevant agencies
- vi. To assess and endorse budget proposals made by the Project Management Unit
- vii. To monitor project activities and outputs, including activities that are to be outsourced, to evaluate project effect/impact and to make use of the feedback to improve project performance and effectiveness.
- viii. To review financial activities and monitor these against the Project work programme
- ix. To review and endorse the quarterly Progress Reports prepared by PMU before submission to LWRM, MRD and copied to SOPAC
- x. To actively promote and facilitate the application of IWRM for the Nadi River Basin
- xi. To develop short, medium and long term NB Integrated Flood Risk Management Plan
- xii. To investigate options and develop mechanisms for the financial sustainability of the functioning of the Committee and the flood risk management plan.
- xiii. To ensure timely information flow on project matters between all NBC stakeholders
- xiv. To synthesise basin management experiences and share ?network? with national / regional water resources stakeholders.
- xv. To co-opt members and non-members to form issue-based task forces to advise the NBCC as and when the need arises.
- xvi. To direct the working group on matters for their attention and to ensure full feedback to the NBCC from the working group.
- xvii. To conduct bi-monthly meetings to facilitate smooth implementation and progress of activities



DRAFT CONSTITUTION:

MEMBERSHIP

Membership nomination will aim for appropriate representation from all main stakeholder groups, professional, civic, NGOs, social (gender, livelihood resource level, age, occupation), the wards and communities etc while maintaining a manageable committee size.

- Chairman

The committee shall be chaired by the incumbent (Insert position)

- Permanent Members

The incumbents or representatives of the following offices shall be permanent members of the NBCC: **Exact posts to be defined by NBCC**

Land and Water Resources Management Division

SOPAC

Public Works Department

Fiji Meteorological Office

Mineral Resources Department (IWRM Focal Point)

National Planning

Provincial Affairs (Commissioner Westerns Office)

Nadi Town Chamber of Commerce

Native Lands Trust Board

Department of Forestry

Tui Nadi/Tui Nawaka

Nadi Provincial Council

Department of Tourism

Airports Fiji Limited

Fiji Hoteliers Association

Department of Lands

Town and Country Planning

Department of Environment

Nadi Rural local Authority

Other institutions to consider for membership nomination

Health	NGOs: Mamanuca Env't Socy	District Development Committee
Water supply dept	Other NGOs, CBOs	Nadi Municipal council

Water and Sewage	Others :Rotary, Church, LLEE	Local transport authority
Fiji Water Authority	General civic society –	Police
Fiji Energy Authority	land & water users;	
Disaster management council	urban & rural;	
Fisheries	women’s group? youth?? Others?	

- Alternatives

Members may nominate the incumbent of another post within their agency as an alternative for approval by the NBCC; and will provide the name and contact details for their alternative to the secretariat prior to the second meeting.

- Co-opted Members

As appropriate, the NBCC will provide for the participation of Co-opted Members to the NBCC to be involved in discussions and provide relevant information and advice to the Committee. However, Co-opted members assent is not prerequisite for Member consensus, nor shall Co-opted member dissent block Member consensus.

PROCEDURES

Secretariat:

All Secretariat duties in relation to the NBCC will be performed by the Project Management Unit, hereinafter referred to as the PMU. The PMU will be comprised of the GEF Pacific Program Manager and Program Assistant and nominated counterparts.

Meeting Schedule

The NBCC will meet bimonthly but may convene more frequently depending on the urgency of the matter and the volume of business to be considered.

Quorum

No NBCC meeting may be held unless a minimum of six(6) government/non government members is present including at least 50% of stakeholders

Agenda

It is the responsibility of the Secretariat (PMU) to ensure that a draft agenda is circulated for comment at least 7 days prior to the proposed meeting date. Members will have seven days to provide comment and or suggested additions or deletions.

Minutes

It is the responsibility of the Secretariat (PMU) to ensure that the minutes of every NBCC meeting accurately record the deliberations, decisions and response to actions arising from the NBCC and that these draft minutes be forwarded to members of the NBCC within five working days of the NBCC meeting for comment and or suggested additions or deletions. The corrected minutes with the required changes will be circulated with the next meeting Agenda and working papers. Minutes will be formally approved by the Chairman and members at the next meeting of the NBCC.



Annex 3: Stakeholder Analysis and Engagement Action Plan

Stakeholder Analysis		Action plan for stakeholder engagement				
Demonstration Project Component 1 / 2 / 3 / 4 / 5 / 6 / 7		[For inclusion in annual workplan (and budget) if appropriate]				
Component focus	Key interests, concerns	How does the project affect them?	How supportive will they be? ++, +, =, -, --	How much influence Very 5 - 0	Priority to engage Top 5 - 0	Who leads?
GOVERNMENT						
1. Fiji Meteorological Services (Fijimet), Nadi. Contacts: Director – Mr Alipate Waqicelua	The Fijimet serves on a regional scale. Provides weather forecasting and tropical cyclone warning services to Fiji including many other countries in the tropical South-west Pacific. Also function as a Regional Specialized Meteorological Centre (RSMC) for tropical cyclones. Fijimet has two main output divisions : i)Forecast Services and ii) Climate Services Divisions. Its objective is to satisfy Fiji's need for the supply of weather and climate data, archive and analyse this data, and based on this, issue forecasts, warnings and other information as required.	Monitoring of rainfall and hydrological events to improve flood forecasting	++	5	5	Fiji MET
2. Water Authority of Fiji (WAF) - Hydrology Section Contacts: Team Leader Hydrology – Mr Hemant Kumar	Infrastructure Development, Water Supply, Flood Forecasting and integrated Flood Early Warning System The WAF - Hydrology Section operates 56 Water Level Recording Stations and well over 100 rain gauges throughout Fiji that are complementary to the Fiji Meteorological Services rainfall stations.	Reviewing and strengthening hydrological information and telemetry of stations.	++	5	5	Hydrology Section
3. Min of Agriculture (Land & Water Resource Management Division) Contacts: Acting Director - Mr	1. Provide Quality Engineering services to enhance agricultural sector. 2. To facilitate sustainable use of agricultural land and water resource through better land drainage, efficient	Implementing river dredging and monitor retention dam construction in watershed as a flood mitigation strategy.	++	5	5	LWRM Division

Colin Simmons	irrigation services, improved flood mitigation measures, effective coastal engineering services, professional engineering advisory service, sound water resource development and management strategies, reliable mechanical support services, construction and maintenance of institutional buildings and effective regulatory service.	Linkage to SLM projects for replication in demo project The SLM Project initiative in the Nadi Basin can be used by the Landuse Division to source and secure donor funds.	+	4	5	+	4	5	Drainage Systems River Monitoring Assist in the analysis of rainfall data to develop and calibrate a rainfall – runoff model. Develop best practice cultivation guideline Monitoring to test efficiency of sediment and water trapping in the retention dams and review design inundation modelling / assessment for the floodplain to be based on the LIDAR 21 survey	technical subcommittee Co-funding	Immediately From Year 1 – Year 5	Landuse Division
4. Min of Agriculture (Land Resource Planning & Development Division) Contacts: Director – Mr Osea Bolawaqatabu Senior Research Officer (c) – Ms Maria Elder Senior Research Officer (w) – Mr Atish Prasad	Landuse, Sustainable Management, Food Security, Land zoning and planning for sustainable and integrated management. Geographical Information System unit. Focal Point for the United Nation Convention to Combat Desertification (UNCCD). Sustainable land development and management strategies for resource owners and land users. Secretariat for Land Conservation Board Rural landuse Policy	Flood plain zoning and regulation Future proposed development plan in Nadi Town	+	5	4	+	4	5	Development of pilot areas for demonstration of best use landuse and riparian management Land Development and Zoning Land Ownership Sustainable Land Management Project GIS- Landuse Mapping / Cover of Nadi Basin with Landuse survey	Sustainable Land Management and Slope Farming, piloted in the Nadi Basin. Work in partnership and in an integrated approach with the IWRM Project. There is opportunity for co-funding to be explored. At technical level mainstreaming in annual work plan Membership in Land & Water Use Subcommittee	From Year 1 – Year 5	Department of Town Country Planning
5. Department of Town Country Planning Director – Ms Loasana Rokotuibau	Approval authority for any development plan in consultation with line government ministries. Proper town planning protects the public interest and considers long-term sustainability. Manages and give advice on the location of different types of development.								Clearly demarcate boundary for the Nadi Basin Demo Project. Work in partnership and in an integrated approach for any development planning of Nadi that directly or indirectly affect the IWRM Nadi Demo Project project. Review Drainage Plan for Nadi	Membership in the NBCC Membership in Technical Subcommittee Co-funding support		



6.	Min of Provincial Development Contacts: Commissioner West – Mr Joeli Cawaki Roko Tui Ba – Mr Verenalagi Vesikula Roko Vaivuke Nadi – Mr Solomone Naisau District Officer Nadi – Mr Peni Koro	Rural Community Development Through the Provincial Office will be able to access the Fijian Community System and Structure consisting of 5 Tikina and 22 villages. Through the District Office of Nadi will be able to get through the 6 Rural Advisory Council (Indian Community) of the Nadi Basin.	Community Land & Water related issues	++	4	5	With regards to development planning in the Nadi Basin, Develop riparian zone regulations Access to Tikina level meeting of the 5 Tikina in Nadi and the 22 villagers of Nadi within the 5 Tikina. Access to the 6 Rural Advisory Council Community awareness and consultation strategy Any capital development within the Nadi Basin be done in consultation and endorsement of NBCC	Memberships in the NBCC Memberships in Technical Subcommittee Co-funding support	From Year 1 – Year 5	Commissioner West/District Officer-Nadi/Roko Tui Ba											
7.	Lands Department Director Lands - Divisional Surveyor West – Mr Taniela Waokecoke	Land Zoning, Land Owning Unit, Mangrove Management, Gravel Extraction "The Lands and Surveys will secure land rights, maximize the benefits from the utilization of State Lands and its resources, and to ensure its rational use and conservation."	Land Survey, Zoning, Sustainable Groundwater extraction	=	5	4	Coastal Monitoring Issue of License for Mangrove removal Gravel Extraction approving authority Verify Land ownership and rights Enforcement of River Bank Reserves GIS for Nadi Basin	Memberships in the NBCC Memberships in Land & Water Use Subcommittee	From Year 1 – Year 5	Lands Department/FLIS/PMU											
8.	Mineral Resources Department Director - Mr Malakai Finau	The Mineral Resources is mandated to provide geoscientific information on Fiji, developing policies on mining and providing other relevant information and assistance for investors in the mining sector; also tasked to look into Groundwater Water Resource and Aquifers. Focal Point for IWRM (Governance and Policy side) Implement Mining Act. Secretariat for the National Water Committee.	Sustainable Groundwater extraction Governance and policy side (fp)	+	5	5	Investigate the influence of flood events and changing river regimes on groundwater recharge and water quality Monitoring and Issue of license for ground water extraction	Memberships in the NBCC Memberships in Technical, Land & Water Use subcommittee Co-funding support	From Year 1 – Year 5	PMU/Mineral Resources											

9.	National Disaster Management Office (NDMO) Director- Mr Pajilali Dobui	The NDMO has four function units, namely Relief, Disaster management Planning, Information and Dissemination Training. The NDMO functions as the Secretariat of the National Disaster management Committee (NDMC) as a policy making and coordinating body and has a range of responsibilities, which include: <ul style="list-style-type: none"> Promoting coordination with ministerial focal points in disaster mitigation and preparedness activities at the local level Implementing community awareness activities Providing training, guidelines and plans to make disaster risk management more effective Establishing disaster management implementation teams at the national, provincial and district levels 	Disaster Awareness and preparedness and response plans Flood warning system	++	5	5	5	Monitor and assess disasters River Flow-based flood warning system Disaster Awareness and preparedness and response plans Flood/Disaster Warnings	Membership in the NBCC Membership in Technical subcommittee Co-funding support	From Year 1 – Year 5	PMU/NDMO
10.	Ministry of Public Enterprises, Tourism and Communication and Civil Aviation Director Tourism – Ms Fane Vave	Tourism Development and Coastal zone management for coastal development. Promotes ecotourism. Strategic Assessment of Fiji Tourism Master Plan. Environmental Accreditation and Certificate under Green Globe 21 Polluter Pay principle was streamlined into the departure tax executed by AFL Environmental user taxation was adopted by Ministry of Finance and executed by FIRCA as Bed.	Any Tourism Development Plan in terms of coastal development or promotion of ecotourism in the upper stream would be of interest	=	3	4	Tourism Development in lower and upper basin of the Nadi demo Project Nadi tourism industries disaster response plan integrated into Nadi Basin flood risk management plan. Tax benefits transfer.	Membership in the NBCC Membership in technical subcommittee	From Year 1 – Year 5	PMU/Tourism Department	
11.	Department of National Roads (DNR) Director – Mr. Sivaguru	Roading, Public Transportations To provide an innovative, integrated transportation system that is safe, efficient, affordable, accessible to all and	Road and bridge design	=	4	4	Road and bridge design/maintenance	Membership in the NBCC Membership in the technical subcommittee	From Year 1 – Year 5	PMU/LWRM/DNR	



Thilianiathan	is environmentally - friendly". To ensure proper roading in place that is accessible to public transportation					Review Drainage Design criteria			
12. Department of Environment Director, Mr Jope Davetanivalu Senior Environment Officer - West, Ms Senivasa Waqairamasi	Promote the sustainable use and development of Fiji's environment and efficient implementation of policies, legislation and programs. It also aims to fulfill Fiji's Obligation under regional and international environment related conventions and treaties. DOE administer the Environment Management Act, Water Regulation, Regulation on Environment Impact Assessment. It administers some policy that includes Climate Change Policy, National Biodiversity and Strategic Action Plan, National Solid Waste Strategy. The DOE is the focal point for CDM, Climate Change, Conservation and Biodiversity, Biosafety etc.	Water quality and river ecosystem health Waste Management Climate Change Adaptation Project Conservation of Biodiversity Environment Impact Assessment Wetland Conservation Environment Management Act Implementation	+	5	4	Environment Management In collaboration with LWRM - Define riparian management guidelines to maximize physical and water quality benefits for in-stream communities. In collaboration with LWRM and LLEE (Live & Learn Environment Education) – Design and implement a water quality and biological monitoring programme to specifically measure the benefits for changes inland and riparian management A Central database for quality assured results.	Membership in the NBCC Membership in Community Liaison Subcommittee Co-funding support	From Year 1 – Year 5	PMU/DOE
13. Ministry of Health Ms Una Bera Senior Health Inspector	The Central Board of Health, Rural Local Authority to implement Public Health Act.	Sanitation Health and Hygiene Community awareness program	=	5	5	Sanitation Health and Hygiene, Addresses Health Concerns and Diseases at the community level, Issue public health permit for housing. Community Health Awareness program	Membership in the NBCC Membership in Community Liaison Subcommittee Co-funding support	From Year 1 – Year 5	PMU/NRLA (Nadi Rural Local Authority)
14. Department of Forestry Conservator of Forests, Mr Inoke Wainiqolo Divisional Forestry Officer – West, Mr Tevita Evo	Land Owning Unit, Sustainable Forest Management, has Geographic Information System unit, Logging and Implement Forest Decree. Carries out a timber certification process. Fiji has a Code of Practice for logging. Implement forest certification programme. An inventory of national forests was carried out in 2007 and has just been completed that also includes the Nadi	Opportunity will be created under the IWRM Project to establish demo pilot project site for SFM.	=	5	5	Sustainable Forest Management Project. Resource Inventory of the Nadi Basin Has GIS which can provide overlay of forest cover in the Nadi Basin, protected area boundary, mangrove areas, cultural site etc.	Membership in the NBCC Membership in the thematic working group Co-funding support	From Year 1 – Year 5	PMU/DOF-W (Department of Forestry – West)

		Basin. Forestry works actively with several non-government organisations, including the Wildlife Conservation Society, World Wide Fund for Nature, Birdlife International, Conservation International, and the South Pacific Regional Herbarium.							Catchment forestation plans			
15.	Department of Fisheries Principal Fisheries Officer, Mr Aisake Batbasaga	Marine Protected Areas (MPA), Implement Fisheries Act, Aqua Tourism, Marine Conservation Is an active participant in the Fiji Locally Managed Marine Areas. Also works with the Pacific Regional Environment Programme (SPREP), the Secretariat of the Pacific Community (SPC) and other local and regional organisations in awareness raising (e.g. 'Year of the Turtle'; 'Year of the Coral Reef') and surveying (e.g. collaborating with the Society for the Conservation of Reef Fish Aggregations in conducting surveys and awareness raising in northern and eastern Fiji As part of its mandate to sustainably manage inshore fisheries resources, the Fisheries Department has been carrying out biodiversity assessments of the 410 qoliqoli in Fiji.	5	=	3	Explore opportunities for MPA be piloted in the lower stream of the Nadi Basin so to restore richness of marine biodiversity. Biodiversity assessment of qoliqoli areas		Biodiversity assessment of qoliqoli areas		From Year 1 – Year 5	PMU/DOF (Department of Fisheries)	
16.	Department of Water and Sewerage Director, Mr Sereicokoko Yanuyanura	Rural and urban Water Supply and sewerage infrastructure Water Quality and Testing, Surface Water, Water Supply They also do monitoring and evaluation of maintenances and upgrading of governmental infrastructures water reservoirs, sewerage treatment plants, sewer lines, have a major impact on the	4	=	5	Water Quality and Testing, Surface Water, Water Supply		Inventory of accessibility to safe drinking water Provides stats of current and future Water demand for Nadi.	Membership in the NBCC. Membership in the Land & Water Use subcommittee.	From Year 1 – Year 5	PMU/DWS (Department of Water & Sewerage)	



		terrestrial and marine habitats										
17. Department of Energy Director: Ms Makereta Sauturaga		The Department of Energy (DOE) focuses on four strategic areas for the development of a sustainable energy sector in Fiji namely: 1. Energy Planning; 2. Renewable energy; 3. Energy security; and 4. Power sector Energy Department is involved with CDM related programmes; it has undertaken solar and micro-hydro assessment and feasibility studies in the north (Vanualevu) installing 700 solar systems including mini Hydro using Solar, wind and diesel generator to provide electricity. Energy Department worked with FEA to implement rural electrification purposes. A biogas project from cattle and piggyery farming for cooking purposes has been carried out by the department.	Energy Planning, Rural Electrification Program Renewable Energy Project	=	4	3	Accessibility to plan for generating renewable energy for the Nadi Basin.	Membership in the NBCC Membership in Technical Subcommittee	From Year 1 – Year 5	PMU/DOEn (Department of Energy)		
18. Department of Social Welfare Director: Ms Salote Radrodoro		Poverty and Alleviation, Financial Assistance for Families, Housing Assistance	Social Development Poverty and Alleviation Financial and Housing Assistance awarded with criteria	=	4	3	Social Aspect of the IWRM Project In terms of Squatter Settlement, proper housing plans/ guidelines to be put in place with accessibility to basic needs.	Membership in Community Liaison Subcommittee.	From Year 1 – Year 5	PMU/DSoW (Department of Social Welfare)		
19. Department of National Planning Principal Planning Officer: Mr Sakiusa Tubuna Divisional Planning		National Development and Planning, Coordinate implementation of National Strategy and Action Plan within the Framework of the Charter. They are the focal point of NCSD and facilitate strategic planning on MDGs for government. The major theme, in the Plan of Implementation, contains targets and	Implementation of the National Strategic and Action Plan within the Framework of the Charter	=	5	4	Mainstreaming IWRM Concept into national policy framework Provides funding assistance through national budget Assistance in securing co-funding	Membership in the NBCC Membership in the Governance/Planning Subcommittee.	From Year 1 – Year 5	PMU/DNP (Department of National Planning)		

Officer: Mr Jiovesa Vocea	timetables to spur action on a wide range of issues, including halving the proportion of people who lack access to clean water or proper sanitation by 2015, to restoring depleted fisheries to the preserving biodiversity by 2015, and phasing out of toxic chemicals by 2005.				5	3	School Awareness on IWRM and IFRM. Development of a Flood Risk Management Plan	Through a partnership arrangement sealed with an MOU if required	From Year 1 – Year 5	PMU/MOE (Ministry of Education)
20. Min of Education (CDU) Principal Education Officer-CDU, Ms Kelera Taloga	Curriculum Review, Approving Authority for any school education awareness program.			=	5	3	Education and Awareness Programs in schools Environment related programs of relevance and in line with school curricular			
21. Ministry of I Taukei Affairs Senior Administrator, Mr Joeli Luvu	Government ministry responsible for Fiji Administration. Implement Fiji Affairs Act. An important institution that administers and governs the welfare of the indigenous people who owns majority of the land resources especially the land in Fiji. Awareness programmes to inform resource and landowners is a very important task that the government has to undertake to integrate into the economic paradigm. Coordinate Tikina meetings and Tikina reporting done by Provincial office.			=	4	3	Fijian Administration Native Land Commission (NLC)	Membership in the NBCC Membership in the thematic working group	From Year 1 – Year 5	PMU/MoTA (Ministry of I Taukei Affairs)
22. Ministry of Finance Principal Administrative Officer, Ms Eilina Volavola	Government ministry responsible for financial operation and monitoring. Provide Government Revenue Account for deposit of Project Fund to be released on RIE and DW. Monitor and control use of project fund Responsible for budgetary allocation of			=	5	5	Monitoring Project Spending Channelling funding in a timely manner to lead agency. Securing co-funding	Through monitoring and reporting mechanism	From Year 1 – Year 5	PMU/MoF (Ministry of Finance)

23.	<p>Solicitor General Office</p> <p>State Solicitor - Mr Ropate Green</p>	<p>governmental funds</p> <p>Policy Formulation, Vetting of Contract Document and Endorsement of Legal Consultant recruitment</p>	<p>Review of Legislation</p>	=	2	2	2	<p>Engaging service of SG's office in the drafting of legal documents, contract documents, endorsement and vetting of important documents.</p>	<p>From Year 1 – Year 5</p>	<p>PMU/SGO (Solicitor General Office)</p>
24.	<p>University of the South Pacific (USP) -Institute of Applied Science (IAS)</p> <p>Director IAS: Professor Bill Albersberg</p>	<p>Provides research and survey facility. Conducts laboratory testing. Offers consultancy service in the science technical areas.</p> <p>Community based closed areas in Fiji:</p> <p>Integrated coastal management (ICM): Coral Coast, 2002-ongoing; Survey of the current status of the proposed mangrove sanctuaries for three villages in Tikina Wai, Nadroga Province, 2002; Maintenance of an aquaculture farm at USP for raising reef fish post-larvae, Also supports</p> <p>Integrated Coastal Management activities, such as clean water initiatives on the Coral Coast.</p>	<p>Research and scientific studies</p>	=	4	4	4	<p>Being part of the Technical Working Group in the Scientific arena</p> <p>Community Engagement - Capacity Building – Education and Awareness</p> <p>Survey current sediment fluxes and map/assess their source areas and potential for mitigation on a catchments wide basis (including bank erosion).</p> <p>Co-funding</p>	<p>From Year 1 – Year 5</p>	<p>PMU/USP-IAS</p>
25.	<p>USP – PACE (Pacific Centre for Environment and Sustainable Development)</p> <p>Mr Leone Limalavu, Research Officer</p>	<p>The University of the South Pacific, Faculty of Islands and Oceans, developed PACE (USP/FIO/ PACE), Pacific Center for Environment and Sustainable Development established in 2001 focussing on three areas: i) training and education, ii) research consultancy and iii) publication and outreach and</p> <p>The mission of PACE is to work with all other relevant sections of the USP, regional and international organisations, regional governments and NGOs to</p>	<p>Climate Change</p> <p>Adaptation and coastal zone management</p>	=	3	2	2	<p>Be part of the Technical Working Group in the Scientific arena</p> <p>Initiate pilot climate change and adaptation projects in the affected areas of the Nadi Basin and securing co-funding.</p>	<p>From Year 1 – Year 5</p>	<p>PMU/USP-PACE</p>

		promote environmentally sustainable development			=	3	3	Communities and Coasts programme	Be part of the Community Technical Working Group.	From Year 1 – Year 5	PMUJ/FSPI
26. Foundation of the Peoples of the South Pacific International (FSPI)	FSPI manages and coordinates five regional programmes – Governance, Health, Coastal resource management, Disaster risk reduction, and Sustainable Livelihoods; also the Communities and Coasts programme. It collaborates with regional and international agencies on issues such as institutional strengthening of civil society, engagement with the Pacific Plan, and annual Forum Leaders' Summit.					3	3	Governance, Health, Coastal resource management, Disaster risk reduction, and Sustainable Livelihoods; also the Communities and Coasts programme			
27. I Taukei Land Trust Board (TLTB) General Manager – Mr Alipate Qetaki Regional Manager Southwestern Region – Mr Mesake Ledua	Statutory body responsible for Native Land Administration, Leases and Land Ownership. Implement Native Land Trust Act. Leasing of native reserve land (de-development) Conservation of natural resources Conversion of state lands					3	4	Issuance of Native Land Leases Enforcement of leasing conditions specifically on landuse	Membership in the NBCC	From Year 1 – Year 5	PMUJ/TLTB
28. Nadi Town Council Special Administrator, Mr Aisake Tuidraki	Town Council Administration, Health Inspection of Town Boundaries, Town Development					4	4	Co-funding and support Assist in development of IFRM Plan Incorporate IWRM principles in extension of town boundary to become a city.	Membership in the NBCC	From Year 1 – Year 5	PMUJ/NTC
29. Live and Learn Environment Education (LLEE) Country Manager, Ms Morena Rigamoto	Live & Learn specializes in community participatory education to promote sustainable livelihood development and conservation of environmental resources in some of the most vulnerable communities. It has innovative education and community awareness tool that can be modified to suit i.e. community needs.					4	4	Education & Awareness Program at school and at the Community Level. Sanitation Health and Hygiene	Be part of Technical Working Group	From Year 1 – Year 5	PMUJ/LEE



	<p>It has implemented some programs in Fiji that includes: HOPE (Helping Our Planet Earth) toolkit and program for primary schools, 2008; HOPE for Peace teacher training, River Care Program for secondary schools (Vodafone Fiji Foundation), Project WET Fiji (Water Education for Teachers), training workshops in environmental education topics, Advancing Water Governance, 'Keeping your drinking water safe: a community toolkit' (with SOPAC, WHO, IAS-USP), etc.</p>	Development of Disaster Risk Management Plan for schools	=	3	3	Management Plan for schools	Membership in the Community Liaison Subcommittee.	From Year 1 – Year 5	PMU/MES
<p>30. Mamanuca Environment Society (MES) Project Manager -Mr Betanti Salusalu</p>	<p>NGO formed in 2002 by the Mamanuca Fiji Islands Hotel and Tourism Association members, following a recommendation from the Coral Cay Conservation group. Main objective of the MES is to 'promote environmental awareness and protection that supports sustainable tourism and community livelihood in the Mamanuca group'. The main activities in which the MES is involved are environmental capacity awareness for resource developers, resource managers, schools and communities, management of (small) oil spills, water quality analysis projects, turtle conservation, waste management awareness raising (e.g. on problems caused by dumping of waste from the Nadi area on Viti Levu), and coral reef protection and restoration</p>	Landuse and land degradation from the upperstream of the river that affects biodiversity of marine ecosystem of which MES Projects are initiated in.	=	3	4	Waste Disposal and Management Coral reef restoration initiative	A Central database for quality assured results to be established. Coral reef restoration initiative	From Year 1 – Year 5	PMU/WWF
<p>31. World Wide Fund for Nature Director - Mrs Kesa Tabunakawai</p>	<p>WWF is a global organisation whose mission is to promote living in harmony with nature by conserving the world's biodiversity, ensuring that the use of natural resources is sustainable, and promoting reduction of pollution and</p>	Look at all environment sector from Climate Change, Land Degradation and Desertification,	=	4	4	Partnership arrangement in terms of promoting landuse, climate change adaptation, mangrove restoration Capacity building	Be part of Technical Working Group	From Year 1 – Year 5	PMU/WWF

Project Officer, Ms Akisi Bolabola	wasteful consumption. Implement local projects such as mangrove flora & fauna surveys within Lomawai Reserve, Tikina Wai, Nadroga, 2003; Inventory of wetlands, Resource management and enhancement in Ono-i-Lau for biodiversity conservation and sustainable livelihoods and Climate Change Adaptation ect.	Conservation of Biodiversity, re-forestation, wetland conservation ect.																		
32. Pacific Islands Applied Geoscience & Technology Division of the Secretariat for Pacific Community (SPC/SOPAC) Mr Marc Wilson, Mr David Duncan, Mr Chris Patterson	SOPAC is an inter-governmental, regional organisation dedicated to providing services to promote sustainable development in the countries it serves. It has three program areas: 'Ocean and Islands' (focusing on research, development and management of non-living resources in ocean and island systems, addressing matters relating to seabed resources, energy, maritime boundaries and monitoring of ocean processes), 'Community Lifelines' (strengthening local capacities in energy, water and sanitation, and communication technologies) and 'Community Risk' (aiming at reducing community vulnerability through improved hazard assessment and risk management).	Regional Project Coordinating Unit for IWRM Nadi Demo Project	++	5	5	5	Regional Project Coordinating Unit for IWRM Nadi Demo Project. Funding Agency Capacity Development and Institutional Strengthening	Project Coordination and Facilitation	From Year 1 – Year 5	PMU/SPC SOPAC										
33. Secretariat for Pacific Community/ Deutsche Gesellschaft für Internationale Zusammenarbeit (SPC Pacific German Regional) Land Use Planning and Facilitation Specialist -	GIZ (German Technical Cooperation) and the Secretariat of the Pacific Community. The GIZ is an international cooperation enterprise for sustainable development with worldwide operations that conducts a regional forestry project with the Secretariat of the Pacific Community. Forestry resources play an important economic role in Fiji and other Pacific island States. The SPC/GIZ forestry program concentrates on environmental	Sustainable Forest Management Climate Change and Adaptation	=	4	3	3	Sustainable Forest Management in partnership with Forestry Department Climate Change and Adaptation programme	Be part of the Land & Water Use Subcommittee.	From Year 1 – Year 5	PMU										



Ms Christine Fung	policy and the conservation and sustainable use of natural resources. SPC-GIZ has now expand its scope to also look into Climate Change										
34. International Union for the Conservation of Nature (IUCN Oceania) Regional Director -Mr Taholo Kami Water & Wetlands Programme Coordinator – Dr Milika Sobey	IUCN, International Union for Conservation of Nature, helps the world find pragmatic solutions to our most pressing environment and development challenges. Increasing awareness about the importance of species and the threats they are facing is crucial. It is vital that investments in natural resources promote sustainable long-term use, management and conservation of the species we utilise in our everyday lives. IUCN is working with like-minded organizations to contribute to the conservation of species and ecosystems in the Oceania region.	+	4	4	4	Any similar project scope to WANI.	environmentally sustainable development Empowerment of youths through self-reliance, and universal brother-sisterhood capacity building.	environmentally sustainable development Empowerment of youths through self-reliance, and universal brother-sisterhood capacity building.			PMU/IUCN Oceania
35. OISCA Fiji	OISCA's mission is to 'contribute to humanity's environmentally sustainable development through a holistic approach emphasizing the interconnectedness of agriculture, ecological integrity, and the human spirit'. To accomplish this, OISCA implements and advocates hands-on skill and knowledge programs, and 'cultivating such spiritual qualities as dedication, self-reliance, and universal brother-sisterhood'. In Fiji, OISCA works mainly with communities and youth; its headquarters are in Sigatoka.	=	3	3	3						PMU
36. Taiwan Mission	Based in Sigatoka. Provides Funding assistance in terms of provision of farming tools and technical assistant to help farmers with innovative tools and skills to do slope land or sustainable land farming	=	3	3	3	Donor assistance and funding for capacity building in the area of Sustainable Land Management.					PMU
37. Airports Fiji Ltd (AFL)	A safe, affordable & viable Aviation Industry that meets International	=	4	4	3	Flooding of Nadi					PMU/AFL



41. Fiji Electricity Authority (FEA) Mr Saimone Rogoimuri	We aim to provide clean and affordable energy solutions to Fiji with at least 90% of the energy requirements through renewable sources by 2015.	Power supply to future Nadi Basin developments. Capacity to provide power supply to expansion of town boundary.	++	5	5	Provide power supply through Nadi Basin. Renewable energy projects within Nadi Basin. Technical advice and support on power supply to assist IWRM Project activity implementation.	Be part of the Technical Subcommittee.	From Yr 1 – Yr 5	PMUJFEA
42. Housing Authority of Fiji (HA) Customer Services Manager – Western, Mr Inoke Bokini	The Housing Authority is in the business of providing homes to the people of Fiji. This is achieved through the development of fully serviced residential lots and mortgage financing for residential purposes. Focus shift to more on BUILDING COMMUNITIES rather than building houses in its efforts to improve its services to meet the changing and dynamic needs of customers.	Future housing developments within the Nadi Basin – access to power, water and sanitation.	++	4	4	Provide details/maps of future housing development plans. Integrate IWRM principles into future housing projects.	Be part of the Land & Water Use Subcommittee.	From Yr 1 – Yr 5	PMUJHA
43. Fiji Islands Hotel & Tourism Association (FIHTA) President – Mr Dixon Seeto	Continue to address major issues of concern to the hotel and tourism industry in Fiji.	Downstream hotel developments.	++	4	4	Co-funding and support. Integrate hotel disaster response plans into IFRM plan.	Membership of NBCC	From Yr 1 – Yr 5	PMUJFIHTA
44. femLINK Pacific Coordinator - Ms Sharon Rolis-Bhagwan	Organisation to empower women, the disabled and the under-served communities in Fiji by creating an enabling environment for their voices to be heard. Promote change by: <ul style="list-style-type: none"> Developing appropriate media and communication materials Advocating for policy changes that reflect women's reality at all levels Enhancing a community of practice and networks 	Mobilizing rural community women and under-served communities in related IWRM project activities.	++	3	3	Co-funding and support. Capacity building expertise for rural women interests.	Be part of Community Liaison Subcommittee.	Year 1 – Year 5	PMU

Logframe Integrated Flood Risk Management in the Nadi River Basin				
Output No	Output	Key Indicators	Means of Verification	Assumptions/Risks
	Project Goal To improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach	A high level of flood risk preparedness, reflected through an integrated flood risk management plan, developed through community engagement, incorporating a flood warning system based on sound modeling of reliable data, an enabling policy and financial framework, a catchment wide planning strategy and increased technical and institutional capacity	Wide area consultation with community for better understanding of flood process and development of Integrated Flood Risk Management that integrate land and water management which can improve communities preparedness	Non Committed and wide range of participation at community level for the development of Integrated Flood Risk Management
	PURPOSE Improved catchment resilience to flood impacts and better flood preparedness and management within the Nadi Basin	Development of an integrated flood management plan and mainstreaming into policy, planning and legislation framework	Integrated flood risk management plan	Effective control and monitoring of river basin development, enabling policy and legislation
	COMPONENT 1 Development of integrated flood management plan and mainstreaming of integrated flood management into policy, planning and legislation framework	An integrated flood risk management plan within an enabling policy and financial framework	An integrated flood risk management plan developed into a policy paper	Capacity to influence political process: Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation; capacity to attract/retain suitably qualified personnel
	Output: Review legislative requirements to enable integrated flood management within national IWRM framework	Changes to national legislation and water resource policy to mainstream IWRM including integrated flood risk management	Promulgated Legislation and Policies	R reliant on co-funded activities, with associated funding, commitment, integration, resources and timing concerns; Capacity to influence political process: Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation; capacity to attract/retain suitably qualified personnel
1.1	Indicative Activities Review legislative requirements for integrated flood management within IWRM	Report recommending strategies for mainstreaming IWRM into national legislation and/or policies	Acceptance by Interim National Water Committee	EU Co-financing
1.1.1	Develop draft legislation and/or policies as identified in review to improve integrated flood management	Draft Legislation and Policies tabled in Cabinet	Cabinet Decision	SG
1.1.2	Develop and implement strategy for endorsement by Cabinet to mainstream integrated flood management into legislation and national policy	Support for draft legislation and/or policies tabled in Cabinet	Promulgated Legislation and Policies	MPI
1.1.3		Legislative support for Catchment Committees		
1.2	Output Review institutional arrangements for government administration of water resources	Clear roles and responsibilities in water resource management across government	Accepted by Interim National Water Committee	LWM MRD
1.2.1	Indicative Activities Review institutional arrangements for IWRM to provide enabling environment for integrated flood management	Report to government providing options for improving government IWRM and flood management administrative arrangements		
1.2.2	Make recommendations to the Government of Fiji on the institutional arrangements for IWRM and possible management agencies	Nadi Basin Flood Management Plan	Endorsement of NBCC on the Nadi Basin Flood Management Plan	NBCC (LWRM, NDIMO, FMS, WAF Nadi Town Council, Nadi Chamber of Commerce)
1.3	Output Develop Nadi Basin Flood Management Plan - An integrated flood risk management plan developed through community engagement, incorporating a flood warning system based on sound modeling of reliable data, a catchment wide planning strategy and strategies to increase technical and institutional capacity			Risks to various individual components do not compromise the value of the information; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation



	Indicative Activities								
1.3.1	Synergise technical, community and economic studies		Inclusion of integrated sector studies in Draft NBFMP	NBCC endorsement of Draft NBFMP for consultation	Recruitment/retention of suitably skilled personnel; risks to various individual components do not compromise the value of the information.	PMU/NDMO			
1.3.2	Define level of acceptable risk		Clearly defined acceptable level of risk for catchment flood risk management in Draft NBFMP	NBCC endorsement of Draft NBFMP for consultation	Stakeholders are able to reach agreed acceptable level of risk; There is sufficient confidence in the available data to define various levels of risk and vulnerability	NBCC (LWRM, NDMO - FMS, WAF, Nadi Town Council, Nadi Chamber of Commerce)			
1.3.3	Develop Draft Basin Flood Mgmt Plan (including vision, acceptable risk, strategy etc, building on previous WRM goals identified)		Draft Basin Flood Management Plan for consultation	NBCC endorsement of Draft NBFMP for consultation	Recruitment/retention of suitably skilled personnel; risks to various individual components do not compromise the value of the information				
1.3.4	Open Comments through NBCC to wider stakeholder consultation		Wide area consultation on the Draft Basin Flood Management Plan	Wide area consultation report that collates input and comments into the Draft Basin Flood Management Plan	Risks to various individual components do not compromise the value of the information; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation				
1.3.5	Develop Nadi Basin Flood Management Plan - An integrated flood risk management plan developed through community engagement, incorporating a flood warning system based on sound modelling of reliable data, a catchment wide planning strategy and strategies to increase technical and institutional capacity		Nadi Basin Flood Management Plan developed through proper consultation and community engagement	NBCC endorsement of NBFMP	Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation	PMU			
1.4	Output Replication Strategy - A strategic document identifying flood risk preparedness needs at a national level; identifying mechanisms for transferring learnings and tools and key policy and financial enabling factors; revised to identify lessons and tools as they become available		Replication Strategy updated on an annual basis to incorporate learnings and tools	Interim National Water Committee endorsement	Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation				
	Indicative Activities					LWRM, NBCC			
1.4.1	Develop Replication Strategy aligned with recommended institutional changes for replicating the project learnings and outcomes nationally and regionally		A strategic document identifying flood risk preparedness needs at a national level, identifying mechanisms for transferring learnings and tools and key policy and financial enabling factors	Interim National Water Committee or NBCC endorsement	Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation				
1.4.2	Implement Replication strategy		Replication Strategy updated on an annual basis to incorporate learnings and tools	NBCC endorsement	Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy; lack of development of enabling policy and legislation	NDMO			
2	Component 2 Sound governance to provide confidence in the transparency, accountability and credibility of decisions		Establishment of a Nadi Basin Catchment Committee with public accountability	Minister endorsement of NBCC	Political commitment and lack of enabling environment	NDMO			
2.1	Establish and support the Nadi Basin Catchment Committee, incorporating cross-sector, government, civil organisational, private sector and community representatives responsible for delivering the integrated flood risk management plan, with public accountability		Establishment of a Catchment Management Committee	Minister endorsement of NBCC	Political commitment to proposed governance structures; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy				
	Indicative Activities								
2.1.1	Develop governance framework for NBCC, including Terms of Reference, roles and responsibilities and legislative and institutional links		Terms of Reference Roles and Responsibilities identified, including Agency roles and responsibilities	NBCC endorsement	Political commitment to proposed governance structures; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and changes in legislation and policy				
2.1.2	Identify options for sustainable financing (and institutional home) of Nadi BCC, GIS Mgmt Plan, and other Project Outputs		To be determined - possibly through a study report	Endorsement at relevant level	Political commitment to sustainable funding options; Potential politics of Agencies	PMU, LWRM			
2.1.3	Develop support structure for NBCC, including an executive capacity		Executive support appointed and finance in place	Permanent Secretary endorsement	Capacity to attract and retain suitable candidates; Government agency politicking	LWRM			
2.1.4	Establish NBCC		Appointment of NBCC members	Permanent Secretary endorsement of NBCC	Capacity to attract and retain suitable candidates	LWRM			
2.1.5	Raise awareness and develop skills of NBCC		Capacity building for NBCC enhanced understanding on WRM	NBCC with full involvement in decision making process for WRM	NBCC members can be retained	PMU			
3	Component 3 A stakeholder engagement strategy that raises awareness, increases participation, particularly of marginalised sectors, and builds stakeholder capacity to support a sustainable flood management		Stakeholder Engagement Plan with Communication strategy in place	stakeholder engagement analysis and strategy in place	Changes in stakeholder roles, responsibility and focus; unable to obtain agreement on concept of acceptable risk and changes in enabling environment.				

Plan	Output	Indicator	Activity	Responsible Party	Timeline	Notes
3.1	Communication Strategy that facilitates increased engagement by identifying mechanisms for communicating issues, outputs and outcomes to key and vulnerable stakeholders		Communication strategy that facilitates increased engagement	Endorsement by NBCC		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment; Capacity to bring stakeholders together in defining acceptable risk
3.1.1	Develop communication strategy in consultation with key stakeholders to raise awareness and understanding of NBCC issues and uptake of flood risk management strategies		Communication strategy that accounts IWRM and IFRM awareness	NBCC endorsement		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters
3.1.2	Develop and implement strategy to communicate the concept of acceptable risk and cost-benefit tradeoffs associated with flood risk mitigation		Communication strategy in place on flood risk mitigation and its associated risk and cost benefit trade offs	NBCC endorsement		Capacity to bring stakeholders together in defining acceptable risk
3.1.3	Implement communication strategy		Commitment and involvement of stakeholders identified in the participation strategy with clearly defined role and involvement.	Clearly defined communication strategy and each stakeholder involved endorsed by NBCC		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters (particularly major flooding in the Nadi catchment - which might increase support but delay activities)
3.2	Participation Strategy		Commitment and involvement of stakeholders identified in the participation strategy with clearly defined role and involvement.	Participation strategy endorsed by NBCC		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters (particularly major flooding in the Nadi catchment - which might increase support but delay activities)
3.2.1	Develop strategy to increase stakeholder engagement in NBC activities, including strategies to engage and empower marginalised stakeholders		Clearly defined stakeholders engagement plan with capacity building component	Stakeholder engagement analysis and strategy in place		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters (particularly major flooding in the Nadi catchment - which might increase support but delay activities); Capacity to retain upskilled personnel
3.3	Capacity Building		Stakeholder capacity is developed to a level that enables sustainable flood risk management and participation from all sectors across government, non-government organisations and the community	Capacity building at all levels of capacity from individual (through awareness), at institutional level (with a defined stakeholder engagement) and at systemic level (through flood risk development plan develop into policy)		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters (particularly major flooding in the Nadi catchment - which might increase support but delay activities); Capacity to retain upskilled personnel
3.3.1	Undertake capacity needs assessment for stakeholders, governance, technical and institutional needs		Completion of technical, governance, institutional, community and managerial capacity needs assessment, identifying long-term needs and priority areas for capacity building	Capacity Assessment Report with defined capacity areas to be addressed and prioritisation of capacity areas		Assume that assessment is able to be representative of broad stakeholder interests; changing political and stakeholder focus may date the strategy rapidly
3.3.2	Develop capacity building strategy, incorporating awareness, partnerships and education, linked to engagement and communication strategies		Capacity building strategy, identifying strategies to address priority and long-term capacity needs, as well as strategies to maintain and build on existing capacity	Capacity gaps and needs identified for education awareness program with communities and stakeholders		Assume that assessment is able to be representative of broad stakeholder interests; changing political and stakeholder focus may date the assessment rapidly
3.3.3	Develop capacity building toolkit		Develop tools identified in capacity building strategy, with a focus on priority needs	Development of Capacity building Toolkit		Capacity building tools prepared in absence of initial assessment on the existing capacity and the priority needs. Capacity Tool cannot be tailor-made to suit each community
3.3.4	Implement capacity building strategy through awareness raising campaigns, targeted workshops, partnerships, broad consultation, recruitment, education and use of toolkits		Annual reporting identifying reduced needs for lower capacity development and increasingly complex capacity development needs	Awareness raising campaigns, targeted workshops, recruitment and development of toolkits envelopes around addressing capacity gaps and building capacity.		Changes in stakeholder roles, responsibilities and focus; Significant changes in enabling environment, including but not limited to political and financial stability, political commitment and natural disasters (particularly major flooding in the Nadi catchment - which might increase support but delay activities); Capacity to retain upskilled personnel
3.3.5	Develop pilot schemes, including using local farms to demonstrate land management practices		Delivery of pilot schemes, linked to toolkits and aligned with priority needs	Testing of Toolkit in pilot schemes		Representative pilot schemes can be established; land access and rights may challenge the project; financial stability and commitment of farmers
4	COMPONENT 4					
	Flood Risk Management Tools Developed to support the Flood Management Plan					
4.1	Upgrade hydro-climate monitoring network		Basin wide hydro-climate monitoring network established	Basin wide hydro-climate monitoring network		Capacity to fund equipment and retain skilled staff
4.1.1	Assess & identify equipment needs		Technical assessment identifying priority areas for upgrading	Technical assessment report		Adequate equipment can be identified within project budget
4.1.2	Source and purchase equipment		Delivery of equipment aligned with priority needs	Delivery of equipment aligned with priority needs		Financial stability, exchange rates; supplier stock
4.1.3	Install equipment		Equipment commissioned and operational	Equipment commissioned and operational		
	Output					



4.1	Climate Change Adaptation Project	Improved technical capacity to formulate and implement national and sub-national policies, legislation, and costing/assessment exercises. Climate change risks incorporated into relevant governance policies and strategies for achieving food security, water management, and coastal development.	plot demonstration activities that deliver adaptation benefits	Co-funding (PACC Program)
4.1.1	Replication of Best Practices from PACC	Study report – replicated in this catchment	Best Practice Guide	PACC Co-ordinator / LWRM
4.1.2	Output	Operational rainfall event forecasting system established	Establishment of forecasting system	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2	Operational rainfall event forecasting	Operational rainfall event forecasting system established	Establishment of forecasting system	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2.1	Indicative Activities	Collect and collate rainfall and weather data	Data base established	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2.2	Analyse data, including a gap analysis	Data analysis and gaps identified	Report on data status	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2.3	Develop rainfall predictive model	Functioning rainfall model	Functioning rainfall model	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2.4	Document processes and train users	Operational manual developed and	Operational manual	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.2.5	Maintain the system	Budget allocation and maintenance reporting systems developed	Systems operational and maintenance manual	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3	Output	Functioning rainfall-runoff model developed that provides satisfactory level of confidence for modelling	Functioning rainfall-runoff model	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3.1	Indicative Activities	Water level records and data sets established	Data base established	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3.2	Develop rainfall-runoff predictive model	Rainfall - runoff model developed that satisfactorily generates streamflow hydrographs	Functioning rainfall model	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3.3	Document processes and train users	Operational manual developed	Operational manual	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3.4	Interface with rainfall predictive model	Interface system developed and tested for iterative runoff and stream flow routing	Functioning rainfall model	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.3.5	Maintain the system	Budget allocation and maintenance reporting systems developed	Budget secured, Reporting Mechanism in place	WAF-FMS ND/MO/LWRM (Technical Sub-committee) PMU
4.4	Output	Development of best practices guidelines that optimises resource utilisation and conservation	Best Practice Guidelines for Resource Management of the Nadi basin	PMU
4.4.1	Indicative Activities	Report on model outputs	Report Documented	LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.4.2	Review land management practices	Report on land management practices	Establishment of Land Management Practices	LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.4.3	Develop best practice guidelines	Develop communication strategy	Communication Strategy in place	LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.4.4	Output	Riparian and flood plain maps developed	Resource maps	PMU
4.5	Indicative Activities	Survey infrastructure, ecology and channel geometry	Reports and maps	NLTB, LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.5.1	Survey infrastructure, ecology and channel geometry	Survey infrastructure, ecology and channel geometry	Reports and maps	NLTB, LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.5.2	Develop riparian zone GIS mapping	GIS maps of riparian zones	GIS maps of riparian zones	NLTB, LRPD-Forestry Dept. (Land & Water Use Sub-committee)
4.6	Flood warning system	Flood warning system developed based on reliable data and community engagement	NBCC endorsement	NDMO, FMS, WAF, LWRM
4.6.1	Indicative Activities	Socio-economic assessment report	NBCC endorsement	Utr. of Fiji
4.6.2	Develop Communication and awareness strategy with communities, including determination of best flood	Communication and awareness strategy that identifies	NBCC endorsement	Utr. of Fiji



5.2	Output Sediment flux assessment	A catchment based assessment that identifies key areas for sediment control and mechanism for communicating outputs and outcomes	Study report	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption that adequate data is available or can be collected within a practical timeframe to enable useful interpretations to be made and that it is possible to simplify environmental processes to enable meaningful interpretations	IUCN
	Indicative Activities				IUCN USP
5.2.1	Survey current sediment fluxes and map source areas	Study report	Study report		
5.2.2	Assess potential mitigation strategies, considering sedimentation rates, dredging frequency requirements, level of acceptable risk and costs	Study report	Study report		
5.3	Output Water quality and biological surveillance	A water quality and biological assessment that establishes river water health qualities and mechanism for communicating outputs and outcomes	NBCC endorsement	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption that adequate data is available or can be collected within a practical timeframe to enable useful interpretations to be made and that it is possible to simplify environmental processes to enable meaningful interpretations. Failure of the agency to develop the database means that the project will require a separate task to include data management. Poor stakeholder engagement has the potential to compromise other aspects of the project	IUCN IUCN
5.3.1	Indicative Activities Design water quality and biological monitoring and evaluation programme to inform guideline development	Quality and monitoring program	Quality and monitoring program		Live & Learn
5.3.2	Implement water quality and biological monitoring and evaluation program	Budget allocation	Budget allocation		
5.3.3	Develop data management and reporting system	Data base and Reporting system	Data base and Reporting system		
5.3.4	Develop strategy for stakeholder monitoring capacity building and handover of M&E program components	Stakeholder capacity building strategy, identifying strategies to address M&E	NBCC endorsement		
5.4	Output Mangrove mapping and ecological assessment	Map that establishes current distribution of mangroves, coastal landscape and ecological services	Mangrove and ecological map	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption that adequate data is available or can be collected within a practical timeframe to enable useful interpretations to be made and that it is possible to simplify environmental processes to enable meaningful interpretations	PMU/NBCC IUCN IUCN IUCN IUCN
5.4.1	Indicative Activities Survey mangrove communities	Survey report	Survey report		
5.4.2	Undertake scientific and socio-economic study to assess the value of mangrove communities	Study report	Study report		
5.4.3	Develop strategy to incorporate the value of mangroves into flood risk management	Study report	Study report		
5.5	Output Water quality variability assessment	A water quality and variability assessment that establishes parameters for river water health and mechanism for communicating outputs and outcomes	NBCC endorsement	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption that adequate data is available or can be collected within a practical timeframe to enable useful interpretations to be made and that it is possible to simplify environmental processes to enable meaningful interpretations	IUCN
5.5.1	Indicative Activities Collect and collate water quality data for the Nadi coastal waters and Nadi River discharges	Water quality monitoring program	Water quality Data sets		
5.5.2	Assess the temporal and spatial variability of water quality in the coastal waters and discharging river water particularly that associated with flooding	Study report	Study report		
5.5.3	Investigate the fate of pollutants discharged from the Nadi River in coastal waters	Study report	Study report		
5.5.4	Assess impacts of the range of flood discharges on receiving coastal environment to inform flood planning decisions	Study report	Study report		
5.6	Output Coastal water quality and biological surveillance	A coastal water quality and biological assessment that identifies coastal water health status and mechanism for communicating outputs and outcomes	NBCC endorsement	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption is that the changes or influence can be adequately defined to be useful	IUCN
5.6.1	Indicative Activities Establish long-term monitoring program to assess the impacts of flood flow mitigation within the catchment	Monitoring program supported with identifiable parameters for impact assessment	Monitoring program		
5.7	Output Assessment of impacts of flood mitigation strategies on groundwater resources	Study report	Study report	External agency responsible for delivery; changes to funding, commitment, integration with project, resources, timing or focus. Assumption is that the influence can be adequately defined to be useful	MRD, WAF
5.7.1	Indicative Activities Investigate the influence of flood events and changing river regimes on groundwater recharge and water quality	Study report	Study report		MRD, WAF
5.7.2	Review risk mitigation strategy, impacts on groundwater to inform NBCC decision-making	Study report	Study report		MRD



Annex 5: National IWRM Results Note



GEF PACIFIC IWRM PROJECT RESULTS NOTE

<http://www.pacific-iwrn.org/results>

RSC-5 2013

Integrated Flood Risk Management in the Nadi River Basin



Top Project Results

1. Establishment of a cross-sectoral Nadi Basin Catchment Committee with broad commerce, community and government membership. The establishment demonstrates a best practice governance model for catchment management
2. Development of Nadi Basin integrated Flood Management Plan
3. Empowered communities to become disaster resilient and independent through the formulation of twenty-seven Community Disaster Management Committees and community disaster response training.

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1. PROJECT OBJECTIVE

The objective of the IWRM Nadi Demo Project is to improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach.

2. RESULTS: PROCESS

Prior to the project inception there was no existing mechanism that could embrace a holistic approach to address issues within the Nadi Basin. Though the current political climate of Fiji made some provision under R's 'people's charter', there was no basis to 'bring people to one table'. Hence, the IWRM project initiated the process of getting agencies together into a formal group. A catchment Management committee was established and endorsed by the cabinet. Through a periodic participatory consultation process the project activities were refined and a monitoring & evaluation plan was endorsed. Further the process of developing an Integrated Flood Management Plan saw a process of capacity building, development and strengthening of number of institutions. Key achievements includes the establishment of Nadi Basin Catchment Committee with its four sub-committees, development of SOP for Nadi Flood Warning, the establishment of 23 Community based Disaster Management Committees(CDMC), and development of community disaster response plans.

2(a) INDICATOR#1: Establishment of a Catchment Management Committee

During the inception of the project in year 2008 it was realized that under the principle of subsidiarity, there was an urgent need in Fiji to decentralize approaches to the lowest decision making bodies and establishment of a catchment committee would be an ideal solution. Prior to the formation of the Nadi Basin Catchment Committee, decisions within Nadi basin were made sectorally with little consultation or long-term strategic planning between the different sectors. Hence one of national targets was to demonstrate a governance model for catchment management through the Nadi Basin Catchment Committee (NBCC) for future national upscaling and integration into Government policy. In year 2008 a Nadi Basin Catchment committee was formed within an independent chair appointed in year 2010. The committee was later endorsed by the cabinet in 2011. Mid 2012 involved an independent review of the Committee governance arrangements.

In early 2013, a special task force was formed to establish an exit strategy for the project. This was imperative to make sure that the systems and processes developed / improved under the project are sustained. In late 2012 the NBCC became an integral part in the review of water resources policy, rural water policy, ground water policy and the Water management & sanitation policy



Figure 1: Quarterly meeting of the NBCC, Al Duda visits

2(b) INDICATOR #2: Project Design and PM&E Plan endorsed by the Project Steering Committee

The design of this project dictated that proposed activities would be refined during the first six months of the project in close consultation with stakeholders. A participatory approach was to be utilized to ensure that the project includes communities and wider stakeholders as part of a participatory monitoring and evaluation plan. It was targeted that the PM&E will be implemented by August, 2011. The project activities were refined by early 2010 whilst by end of 2010 the PM&E was implemented and endorsed by the Nadi Basin Catchment Committee. This was further reflected in the mid-term review of the project as well.



Figure 2: After the devastating floods of 2012, key stakeholders realigning and prioritizing some of the project activities

2(c) INDICATOR#3: Nadi Basin Integrated Flood Management Plan

In line with the objective of the project an Integrated Flood Risk Management Plan was to be developed. In order to have this plan in place a number of processes had to be initiated. Part of the process was the establishment of an early warning system and setting up of community based disaster management committee (CMDMC) by 2011. By mid of 2012, an integrated flood warning system and 28 CMDMC's were established. The first draft of the Integrated Flood Risk Management Plan has been presented to the NBCC on 28th August, 2013.

2(d) INDICATOR#4: Sectoral engagement in formal multilateral communication on water issues

The project was designed to use a key concept that is decentralization and a principle of IWRM whereby decisions was to be taken at the lowest appropriate level following full public consultation (the principle of subsidiarity). It was targeted to have an improved coordination and cross-sectoral working relationship amongst land and water management stakeholders and communities in the catchment. With the formation of the catchment committee and the initiation of number of cross sectoral activities by the project, there has been an increased interaction between institutions and agencies. Example the formation of the SOP for the flood siren has aligned a number of agencies to collaborate and work together.

The PMU continues to work in collaboration with a number of its strategic partners to communicate issues on water resources. The PMU along with The University of Fiji marked the World Water Day with creative and comprehensive programs expanding to include the whole western division of Viti Levu, Fiji. Awareness and capacity building workshops and programs were expanded across the catchment targeting marginalized and vulnerable communities. The project has presented in number of joint forums such as Disaster, Climate change and National Integrated coastal Management.



Figure 3: Sectoral engagement discussing issues related to water resources, including the Commissioner West, Police Department, Military, and Project Management Unit

2(e) INDICATORS: Proportion of community engaged in water related issues to reduce vulnerability of water resources.

During inception it was established that water resources in the catchment were vulnerable to human activities and there was an urgent need to create awareness and empower communities. The target was to have at least 30% active engagement of the community in water related issues. In early 2011, *JWFOM* water literacy program was launched in schools in the catchment which saw most of the schools actively involved in water related activities. Further there had been increase in number of communities and schools involved in the *save the tree* program.

In 2013 the Inter-Secondary Western Division *NWRM* Quiz competition was launched during the World Water Day celebration at the University of Fiji. This outreach and initiative was only possible through active collaboration between the Project with support from the University of Fiji and Ministry of Education. This quiz involved 50 secondary schools in the western division that provided a platform for young children to express their views on environmental issues, natural resources and the importance of sustainability.



Figure 4 Winners of *NWRM* Eco Quiz showing off their spoils. Courts Fiji Manager West handing over a Laptop to the winning school



Figure 5: Nadi residents from all walks of life participating in the launch of IWRM Nadi Demo/ Dept. Education Water Literacy Program

2(B) INDICATORS: Lessons learned incorporated into other project(s), catchment flood management plans and/or Regulations

The project aimed to replicate lessons learned by the end of the project. The project shared a number of lessons learnt at various levels and in varied capacity. The Project Manger attended a three-day consultation session to provide the Voh-Koné-Pouembout Water Management Committee (CGE VKP) with practical ways to move forward on its own governance and to discuss possible means of improvement for New Caledonia as a whole. The PMU-IWRM presented to the Sigatoka stakeholders on the activities carried out in the Nadi Catchment with the intention that it will be incorporated into building flood resilient communities within the Sigatoka catchment.



Figure 7: Presentation to the Sigatoka Town council stakeholders



Figure 6: Landowner posing a question on SLM activities

21st INDICATOR#7: National staff across institutions with IWRM knowledge and experience

Prior to the project, staff across the water sector had limited knowledge or practical experience of IWRM practice or concepts. The aim of the project was to increase through various activities. From inception to date, IWRM Nadi Demo Project has been instrumental in building capacity of national staff in the Fiji Meteorological Services and Water Authority of Fiji. It has also provided specific training in advance telemetry and hands-on training hydro-met station installation. In collaboration with International Union for Conservation of Nature, the project has been able to build capacity of core NCCC stakeholders in the use of key technical and management support tools developed by the global WANI and other tools, as well as to encourage the integration of the ecosystem based 'ridge-to-reef' concepts and principles in the Nadi River Catchment Management



Figure 8: Discussion of IWRM at NCCG meetings

21st INDICATOR#8: Replication strategy developed and implemented to mainstream lessons learned

To ensure the continuing success of lessons learned through the IWRM project a replication strategy was to be developed through the project. The replication strategy will need to reflect the roles and responsibilities in mainstreaming the lessons learned.

The Replication strategy has been developed and number of initiatives has been mainstreamed in the local and national level.

- i. Disaster Response Plan was developed only for one village, with success of it, it is now being replicated around the catchment – there are a total of 27 such committees. This has also been replicated in the sister catchment – Sabeto. Further this has been adopted by the National Disaster Management Committee and was also replicated in the Ba catchment.
- ii. With the lesson learnt from the previous events, a standard operating procedure for disaster response was developed and is now part of the district disaster management plan for the District Disaster Management Committee.
- iii. Water level Stations piloted by the project are now being replicated around the country by the Fiji Meteorology Services – Flood Forecasting Unit.
- iv. Establishment of IWRM Learn Corner at National Library Services of Fiji



Figure 9: IWRM Learn Corner at National Library Services of Fiji



Building Capacity , building a Disaster Management Team, Networking ,
 "being eyes ears of response agencies "



3. RESULTS: STRESS REDUCTION

The Nadi Basin has experienced rapid urbanization and increasing population in recent years. There has also been aggressive deforestation and agriculture in the upper catchment. This has led to increased stress on water resources in the catchment and in-turn increased vulnerability of the communities to natural disasters such as flooding. The aim of the NTFM Nadi Demo project is to reduce stress on the water resources and to build flood resilient communities. Key achievements of the project to date include establishment launch of 'save the tree' program , water literacy program in schools , the establishment of a landscare group, the establishment two demo plots and three nurseries. A total of 1800 coconuts plants and 554 fruits trees have been established across the catchment. Rehabilitation has now extended to the lower part of the catchment especially along the river banks.

3(a) INDICATOR#1: Sustainable forest & land management practices established and trialed with landowners to reduce runoffs and sediment loads

A bio-physical survey of the Nadi Basin catchment was conducted mid 2010 and it established that majority areas of the upper catchment are of grasslands. It was further determined that landuse practices in the upper catchment, mid catchment and riparian zones contributed to heavy runoff and sediment pollution. It was targeted to establish demonstration plots and to train farmers in best agricultural practices. Three demonstration sites were established with the formation of a Landscare group in the upper catchment. Unfortunately in 2013 rehabilitation work had to be carried out to the nursery in Navunitawa that was destroyed in the cyclone Evans.



Figure 10: A housewife from Nausori Highlands Village receiving her certificate from a Forestry Dept. Official after successfully completing training on nursery establishment and plant care

3b) INDICATOR#2: Rehabilitation of degraded areas, two 'hotspots' in the catchment

In line to its objective of using an integrated flood risk management approach to improve flood preparedness and management within the Nadi Basin, the project has identified two 'hot spots' covering an area of approximately 80 hectares. These areas were once covered with native forests however over the years some areas have been commercially forested, removed for personal use by the communities and destroyed by uncontrolled burning. The target was to rehabilitate these areas. In early 2011 two incentive based tree planting initiatives were launched – "growing money on trees" and "we got it from trees" were conceptualized for schools and communities respectively. To date about 80 hectares of the area has been rehabilitated with fruit trees and staple food trees- coconut and breadfruit trees.

'growing money on trees'

Child Plants a tree → Inspected / GPS plotted → Bank Account Opened for the child - \$5 deposited for each plant planted → 1 year later - Inspected again / OK - \$5, \$2 for the next year

Figure 11: A hotspot area in Nadi being re-vegetated.

3(c) INDICATOR83: Construction of Flood mitigation structures

Prior to the project flood mitigation infrastructure was insufficient. A target of the project was to establish flood management Structures to reduce the impact of flooding. With the effort of ridge to reef, a holistic catchment management technique, technical solutions are also part of the integrated approach. A total of three retention dams were constructed to assist in managing flood waters



Figure 12: Retention Dam in the Upper Catchment – there are two more of the similar design

3(d) INDICATOR84: Integrate health issues into catchment management- healthy community, safer community

The aim was to bring out most of the senior members of the NBCC (PS, Directors, Divisional Heads), and its partners out of their 'business as usual' to have time to reflect on their personal health. – promote healthy life style.

Result: Vital resource component for any institution or management process is the human interaction/capital. Hence it was imperative that we need to invest and manage human capital well to have a vibrant workforce and healthy community. According to the Ministry of Health's Non-Communicable Diseases (NCDs) Prevention and Control Strategic Plan 2010-2014, NCDs are casting deadly shadows on Fiji's population dubbed as the "silent killers" are preying on our working population and our children. Put simply, they cause 82 percent of deaths in the country each year. Nadi Basin Catchment Committee along with its strategic partner Ministry of Health Nadi organized an NWRM NCD Health Trek on the 8th of December, 2012. The mountain trek was very successful with an active participation of around 100 senior executives.



Figure 13: Stakeholders at the Toko Plateau "warming up"

INDICATOR 5: Contribution to increased mobility thus increasing interactions 'to outside world'

Toko is one of the very remote communities in the upper catchment. The only mode of transportation is horse or about 2 hour walk. The project also has a hydro met station in Toko which constantly needs maintenance and upgrading. A thoroughbred horse and a riding saddle were provided to this village to increase mobility and access for the village.



Figure 14: Chris Paterson from PCU handing over the horse to the Village headman of Toko.



Annex 6: Awareness Materials Developed and Media Coverage



Togitogiga falls, Samoa. ©SOPAC

WANI strengthens water management in Fiji and Samoa

Pacific Islands are experiencing increasing pressures on water resources due to growing populations, infrastructure development, and climatic fluctuations. The International Union for Conservation of Nature (IUCN), member and partner organisations are strengthening forces to support Integrated Water Resource Management in Oceania region.

Through four demonstration projects, IUCN's Water and Nature Initiative (WANI) focuses on good governance, payments for ecosystem services, and learning and leadership, with the aim to improve the quality and sustainability of water resources in the region.

The initiative started in the Pacific in 2008 with the establishment and initial development of WANI projects in Kadavu and the Nadi Basin in Fiji, and the Togitogiga Watershed in Samoa. Complementing the three WANI projects, is the Pacific Learning and Leadership project in collaboration with SOPAC (Pacific Islands Applied Geoscience Commission) Regional Pacific IWRM projects.

IUCN aims to support the management of Fiji's water resources and watershed ecosystem services, currently in decline due to land use changes, altered river flow patterns and degraded ecosystem services. These problems are compounded by effects, like altered rainfall patterns, of climate change.

Water management in Fiji, including tourism and forestry projects, has generally followed a 'top-down' approach. WANI's Kadavu and Nadi watershed projects aim to demonstrate a watershed management model based upon participatory community approaches, sound economic valuation and ecosystem management benefitting biodiversity and the livelihoods that depend on them.

For the Nadi project, WANI helped establish the Nadi Basin Catchment Committee to provide appropriate stakeholder engagement in the development of a Flood Risk Management Plan and complements the Regional GEF Pacific IWRM's Nadi Catchment Project.

In Kadavu, three Locally Managed Marine Area Networks (LMMA) sites provided the location for work to begin on up-scaling the participatory model to include ridge-to-reef management. This bottom-up model will provide a cost-effective and integrated sustainable water resource management approach that can be replicated to other sites in Fiji, and the Pacific.



Villages on Nakata waterfall, Kadavu, Fiji. ©IUCN

The Togitogiga Catchment is WANI's selected demonstration project in Samoa. Located on the eastern Upolu Island, Togitogiga is the main source of water supply for downstream communities and has a unique biodiversity. It is also well known for recreational purposes as part of the 'Togitogiga National Park'. This catchment area has become significantly degraded due to increasing population and development pressures, soil erosion, sedimentation, and water pollution. The project also aims to develop and implement a watershed management plan that creates a balance between anthropogenic demands on the catchment and biodiversity conservation.

Experiences and lessons learnt from Nadi, Kadavu and Samoa will influence WANI's 4th project in the region, the Pacific Learning and Leadership Programme. This project aims to address the shortfall in awareness and knowledge within Pacific Island countries, advocate the WANI principles and support SOPAC's Regional Pacific IWRM projects.

WANI in Oceania works in partnership with the University of the South Pacific, Samoa - Ministry of Natural Resources and Environment, Fiji - Land and Water Resources Ministry (LWRM), and SOPAC.



Village elders in Kadavu, Fiji. © IUCN



For more information on the WANI Toolkits, visit:
<http://www.iucn.org/about/work/programmes/water/resources/toolkits/>

Project photos are available upon request. Bios and contacts of IUCN water experts are available online: http://cms.iucn.org/about/work/programmes/water/wp_contacts/index.cfm



Nadi Basin Catchment Committee meeting March 24, 2010. ©SQFAC

The Nadi Basin Catchment Committee

An integral part of the IWRM Nadi Demonstration Project was to put in place a proper governance structure that would oversee and coordinate the project's implementation. This was done through the establishment of the Nadi Basin Catchment Committee (NBCC).

Main purpose and role

The NBCC is tasked to guide the Project Management Unit (PMU) and the Land and Water Resource Management (LAWRM) Division through the planning and decision making process for the IWRM Nadi Demo Project and to oversee its implementation. The first tasks of the NBCC were to agree on the NBCC Terms of Reference (TOR), constitution and membership and the formation of the subcommittee. On completion of the project in 2013, it is envisaged that the NBCC will continue to function as the body authorised to plan and co-ordinate the sustainable development and management of the Nadi catchment water resources.

Strength and decision making powers

The NBCC benefits from being a multisectoral body at management level, which represents the strength, capacity, policies and enforcement powers of the departments and organizations involved. The NBCC is yet to be formally mandated under the reviewed Land and Water Conservation Improvement Act, which still awaits proper cabinet endorsement. However, in July 2009, the LAWRM Division secured cabinet endorsement of the IWRM Nadi Demo Project, which permitted the formation of the NBCC and the appointment of 23 interim NBCC members.



A woman wades through floodwaters during the catastrophic floods in Nadi, January, 2009
©SQFAC

NBCC Members

Nominated interim members represent the key land and water resources stakeholders (both land and water managers and land and water users) within the Nadi Basin, including the IWRM Focal Point for Fiji. The Project Management Unit under the LAWRM Division acts as the secretariat for the NBCC. The 23 interim members include government representatives, statutory bodies, provincial offices and community representatives, academia, NGOs and regional organization reps.

Progress of the NBCC

From its inception in 2008, the NBCC has come a long way. It started initially as a working group. On August 20, 2009, interim appointments were issued to relevant key stakeholders to become members of NBCC. To date the NBCC has held four quarterly meetings. Issues of interest and discussion in meetings range from water issues, land use, flood mitigation and protection, water supply, development plans, policies and legislations, gravel extraction, etc. All of which pertain to the Nadi Basin situation. A Terms of Reference for the NBCC has been developed with collective input of members.

Currently the NBCC is working on establishing subcommittees to focus specifically on the four project components: Community Liason, Technical, Governance and Planning, Land and Water Use. The direction and decision of the NBCC has also been sought on proposed work programs for implementation in the Nadi Basin. NBCC members have supported and assisted the installation of water level recorders, a flood early-warning system, initiated proper land use practices in the upper and mid catchment areas and initiated contact with communities.

What is envisioned for the NBCC

The NBCC may still be in its infancy but it is moving forward with long term plans for the effective management of the Nadi Basin Catchment area. Its future aims are to:

- Formulate and finalize a Stakeholder Engagement Plan, with clearly defined participation, contribution and responsibilities for key players and stakeholders.
- Complete the formation of the four subcommittees, which should result in more proactive participation of NBCC members in the planning and decision making process.
- Ensure that Cabinet recognizes, strengthens and mandates the NBCC's role by endorsing the Land and Water Conservation Improvement Act.
- Oversee the smooth implementation of activities, and achieve outputs, which are in line with the IWRM Demonstration Project Proposal. This will include the authorizing, vetting and endorsing of project and PMU annual work plans, writing routine and special reports, and sub-project proposals etc.

On completion of the IWRM Nadi Demo Project in 2013, the aim is for the NBCC to continue its function as the body authorised to plan and co-ordinate the monitoring of IWRM in the Nadi Demo Project area and participate in initiatives such as the development of Integrated Water Resources Management policies.



A representative from the Fiji Trade and Investment Board addresses the NBCC. ©SOPAC



Hydrologists measure floodwater levels after the January 2009 floods. ©SOPAC

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Draft flood plan in the pipeline

Repeka Naisiko (Thursday, January 05, 2012)

FLOODING has always been a growing problem for Nadi Town especially during cyclone season. However, every possible effort is being put to reduce flooding at the tourist town starting with the drafting of a Nadi flood management plan.

"We are working to draw up a flood management plan for Nadi town and we are closely collaborating with all the relevant stakeholders," says Nadi Town Council special administrator Aisees Tuidraki. "The draft plan will include inputs from government, Water Authority of Fiji, the Nadi weather office, businesses, members of the community and of course those of the Nadi Basin Catchment Committee."

Mr Tuidraki said the Nadi Basin Catchment Committee was spearheading the initiative to draw up the flood management plan that they hope would outline areas that needed more focus when it came to flooding in Nadi.

"In the draft we want to address the water catchment area in Nadi and also in areas in Sabero which are currently bare."

Mr Tuidraki said these bare areas were one of the reasons there was a lot of flooding in Nadi.

"There are a lot of bare areas in Nadi and that's one of our major problems. So we're focusing on planting more trees on these bare areas," said Mr Tuidraki.

"Reforestation and replanting will be one of our key focuses because there is currently not enough trees to shoulder the pressure from the increasing rainy weather."

He said another issue was the quality of water that was mainly affected when there was a flood.

"The water quality is another area we'll be addressing and for that we're working closely with the Water Authority who are also doing their own research to help come up with a solution to this problem."

He added that one of the important stakeholders in their efforts to reduce flooding is the involvement of community members and educating them about reforestation.

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Balancing act

A need for compatible systems

By FELIX CHADOMAY
THE NADI BASIN CATCHMENT COMMITTEE (NBCC) has a plan to balance economic survival and environmental sustainability in the Nadi Basin. The committee, which was set up in 2007, is currently drafting a flood management plan for the basin. The plan is expected to be completed by the end of the year. The committee is also working on a water quality improvement plan. The plan is expected to be completed by the end of the year. The committee is also working on a water quality improvement plan. The plan is expected to be completed by the end of the year.



A Nadi resident stands over the Nadi River.

Nadi bay and rivers improved, says global water expert

By FELIX CHADOMAY
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Decree to aid water management

By FELIX CHADOMAY
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Integration is key to Nadi basin woes

By FELIX CHADOMAY
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IWRM to work with Nadi Town Council
WATER SUPPLY MINISTRY OF RESOURCES INDUSTRIES
8/11/2011

The Department of Agriculture (DOA) and Nadi Town Council (NTC) signed a memorandum of agreement yesterday.

The agreement was to see the council provide office space to the Integrated Water Resource Management (IWRM) team.

During the signing of MoA, Permanent Secretary for Agriculture Colonel Mason Smith said it was another step in the partnership project.

"IWRM project is to improve flood preparedness and integrate land and water management planning within the Nadi Basin using an integrated flood risk management approach", Colonel Smith said.

IWRM manager Vinosh Kumar said it was a two-year agreement between DOA and NTC for the IWRM team to use the office and the office amenities for free of charge.

"The office is on a good location and it would be easy to work closely with the town council to mitigate flooding in Nadi," Mr Kumar said.

The IWRM project is funded by Global Environment Facility and is being implemented by United Nations Development Programme (UNDP), South Pacific Applied Geosciences Commission (SPAGC) and the Fiji Government.

The IWRM of the Department of Agriculture is the local implementing agency. Nadi special administration, Asaa Tuiwaii, thanked Government for taking the initiative to minimize flooding in Nadi.

"We will work together with IWRM to save the people, their properties and businesses in Nadi which has been affected by flood every year.

This will save the tourism industry and businesses in Nadi.

"Integrated approach is very important where all can work together and understand what they should do when disaster happens.

"The IWRM is not only involved with ground work but has involved the community of Nadi by providing training to people on how to prepare and respond to flooding," Mr Tuiwaii said.

He said recently Nadi had joined the 2010 - 2011 World Disaster Reduction Campaign for "Making Cities Resilient: My City is Getting Ready", to commit to the "Ten Checklist: Essentials for making Resilient".

The checklist is as follows:

- 1 Put in place organization and co-ordination to understand and reduce disaster risk, based on participation of citizens groups and civil society. Build local alliances. Ensure that all departments understand their roles in disaster risk reduction and preparedness.
- 2 Assign a budget for disaster risk reduction and provide incentives for homeowners, low-income families, communities, businesses and the public sector to invest in reducing the risks they face.
- 3 Maintain up-to-date data on hazards and vulnerabilities, prepare risk assessments and use these as the basis for urban development plans and decisions. Ensure that this information and the plans for your city's resilience are readily available to the public and fully discussed with them.
- 4 Invest in and maintain critical infrastructure that reduces risk, like flood drainage, adjusted where needed to cope with climate change.
- 5 Assess the safety of all schools and health facilities and upgrade them as necessary.
- 6 Apply and enforce realistic, risk-compliant building regulations and land-use planning principles.
- 7 Identify safe land for low-income citizens and develop upgrading of informal settlements, wherever feasible.
- 8 Ensure that education programmes and training on disaster risk reduction are in place in schools and local communities.
- 9 Protect ecosystems and natural buffers to mitigate floods, storm surges and other hazards to which your city may be vulnerable. Adapt to climate change by building on good risk reduction practices.
- 10 Install early warning systems and emergency management capacities in your city and hold regular public preparedness drills.
- 11 After any disaster, ensure that the needs of the survivors are placed at the centre of reconstruction with support for them and their community organisations to design and help implement responses, including rebuilding homes and livelihoods.

Mr Tuiwaii said the 10 point checklist was addressed by the IWRM Project.

"There are 700 cities around the world that has joined the Campaign and Lamu Town was first from Fiji and now Nadi Town is also part of the campaign since it works together with the IWRM.

"The integrated approach is the best approach and globally recognised and by working closely with IWRM, Nadi Town Council will be able to address these activities under the "Making Cities Resilient Campaign" during the current and future expansion of the Nadi Town Boundary," he said.

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Annex 7: Participatory Monitoring and Evaluation Plan

Participatory Planning, Monitoring, and Reporting Plan for the GEF Pacific IWRM Demonstration Project Entitled: “Integrated Water Resource Management Nadi Demonstration Project” [FIJI ISLANDS]

1. INTRODUCTION

There are multiple and varied planning, monitoring and reporting requirements as part of the GEF Pacific IWRM Project. These were discussed and agreed during the project's Inception Workshop in September 2009 and were adopted as part of the operation of Fiji Islands's national IWRM demonstration project entitled: “Integrated Water Resource Management Nadi Demonstration Project”.

Participation and engagement of key project stakeholders including community groups and Non-Governmental Organisations [Yavuna Landcare Group, Nausorihighland and Navunitawa Community ,IUCN, Live & Learn], the project coordinating committee Nadi Basin Catchment Committee, national Lead Agency Division of Land & Water Resources Management , Cabinet, national development partners [Land and Water Resources Management Division, Public Works Department ,Fiji Meteorological Office, Water Authority of Fiji , Department of Environment , Mineral Resources Department , National Planning, Provincial Affairs (Commissioner Westerns Office), Nadi Town Chamber of Commerce, Native Lands Trust Board, Department of Forestry , Tui Nadi/Tui Nawaka, Nadi Provincial Council, Department of Tourism, Airports Fiji Limited, Fiji Hoteliers Association, Department of Lands, Town and Country Planning, Department of Environment, Nadi Rural local Authority], and global donors in project planning, monitoring, and reporting was considered important in guiding the successful implementation of the project in Fiji.

2. GUIDING PRINCIPLES

The key principles used in developing the project planning, monitoring, and reporting approach were that it should:

- primarily act to better inform an “*IWRM continuum of transition*” in the relevance, effectiveness, efficiency, results, and sustainability of investment in IWRM;
- facilitate good governance of demonstration project activities, including areas of project finances, coordination, planning, capture of lessons learned, and technical quality assurance;
- ensure efficient and cost-effective compliance of reporting requirements of the National Government of Fiji Islands , SPC/SOPAC, UNDP, UNEP, and the GEF;
- ensure relevance of the information and data collected, and that data on project results can be rolled up and down, from “*Community to Cabinet*” and from “*Country to Global Donor*”; and
- Draw on participatory Most Significant Change (MSC) techniques which act to monitoring and validate reported project impacts on behaviour.

3. PLANNING, MONITORING, AND REPORTING FRAMEWORK

The general planning, monitoring, and reporting framework developed for operation through the Fiji national IWRM demonstration project is summarised in Table 1. The timetable of activities is summarised in Table 1.

Project Planning

The Nadi Basin Catchment Committee (NBCC) comprises of 24 members from the government agencies, non government agencies, resource owners and the communities living in the catchment. The committee meets once every quarter to discuss on the progress of the project- physical & financial, endorse work plans for the next quarter and discuss issues pertaining to development & prospects within the catchment.

Under its portfolio there are four functional subcommittees Technical, Community Liaison, Land & Water Use and Governance & Planning. This committee also meets at least once every quarter and primarily as far as the planning of activities are concerned; this committee has a major input in the formulation and planning of project activity and its outputs. Effort is made to use the participatory approach in activities that directly affect the communities or specific group of people. Once activities are formulated and endorsed by the sub-committee it is then presented to the NBCC for final approval.

The financial management of the project is being closely done in collaboration with the National Financial Management system under the Lead Agency's account section and the Finance Division of SOPAC utilising the UNDP financial guidelines. In all instance a thorough due diligence is carried out on the cost of the activities and in some instance activities are outsourced to NBCC members that have competence in that area.

The NBCC is also part of the divisional Integrated Development Committee which coordinates and implements national policies within the whole western division. A number of project activities are interlinked with the activities of other agencies hence indirectly the project contributes significantly to the developments outside the parameters of the project. This in turn contributes positively towards national mainstreaming and up-scaling.

Capturing lessons learned is an integral part of this project and serves several purposes. The capturing lessons learned occur throughout the project lifecycle to ensure all information is documented in a timely and accurate manner. The lessons learned document serves as a valuable tool for use by stakeholders and other project within Fiji and the region. This lesson learnt are not only on what went wrong during a project and suggestions to avoid similar occurrences in the future, but it also documents what went well and how similar projects may benefit from this information. It may be also be used as a part of new project planning for similar projects in order to determine what problems occurred and how those problems were handled and may be avoided in the future. Additionally, this document details what went well with the project and why, so that other project managers may capitalize on these actions. Each quarter the lessons learnt are being documented and presented to the NBCC to solicit their feedback. This is then formally communicated to PCU and other relevant agencies.

Project Monitoring

Similar as stated in the planning process, Nadi Basin Catchment Committee (NBCC) meets once every quarter to discuss on the progress of the project- physical & financial. The PMU presents to the forum the actual outputs of the project against what was planned. Since numbers of activities are carried out in collaboration with other agencies, activities are appraised differently by each agency. Apart from NBCC, the expenditure and budgets of the project is audited by the office of Auditor General (National) annually. It is significant to note that this not a thorough audit, however it is quite



representative. A special inspection team from Prime Minister Office also inspects projects and government departments programs quarterly. The output of this project is listed under the outputs of the Lead Agency; hence during routine inspection the project outputs are also monitored. Further, the project is monitored and reviewed each quarter by the PCU; monitoring and evaluation is systematically encompassed in the quarterly project reporting . Annually the project is evaluated by the project steering committee and the Regional Technical Advisory Group.

Project is currently in the process of carrying out a thorough audit. It is anticipated that this will be completed by the end of November this year.

Project Reporting

Periodically the project produces reports specifically for certain agencies as a requirement as well as number of agencies / communities to create awareness. The reports are quite comprehensive, narrative and use graphics, images, voice, or specialized representation in order to explain and accordingly undertake an action. In addition, it visually represents the project status, length of an activity and time spent on it. Each quarter the four subcommittees Technical, Community Liaison, Land & Water Use and Governance & Planning each present their report which is then compiled by the PMU. These reports play an integral part in reporting as its quite comprehensive (specialized) and carries a digress views of all stakeholders.

As a requirement the project prepares monthly, quarterly and annual reports for the Lead Agency whilst it reports quarterly and annually to the PCU.

Through its communications strategy, the project utilizes its website, national TV and Newspapers to keep its stakeholders informed. A number of community awareness and collaborative sessions are organized for specific activities. In order to keep the policy makers informed, the project periodically prepares cabinet papers and cabinet briefs.

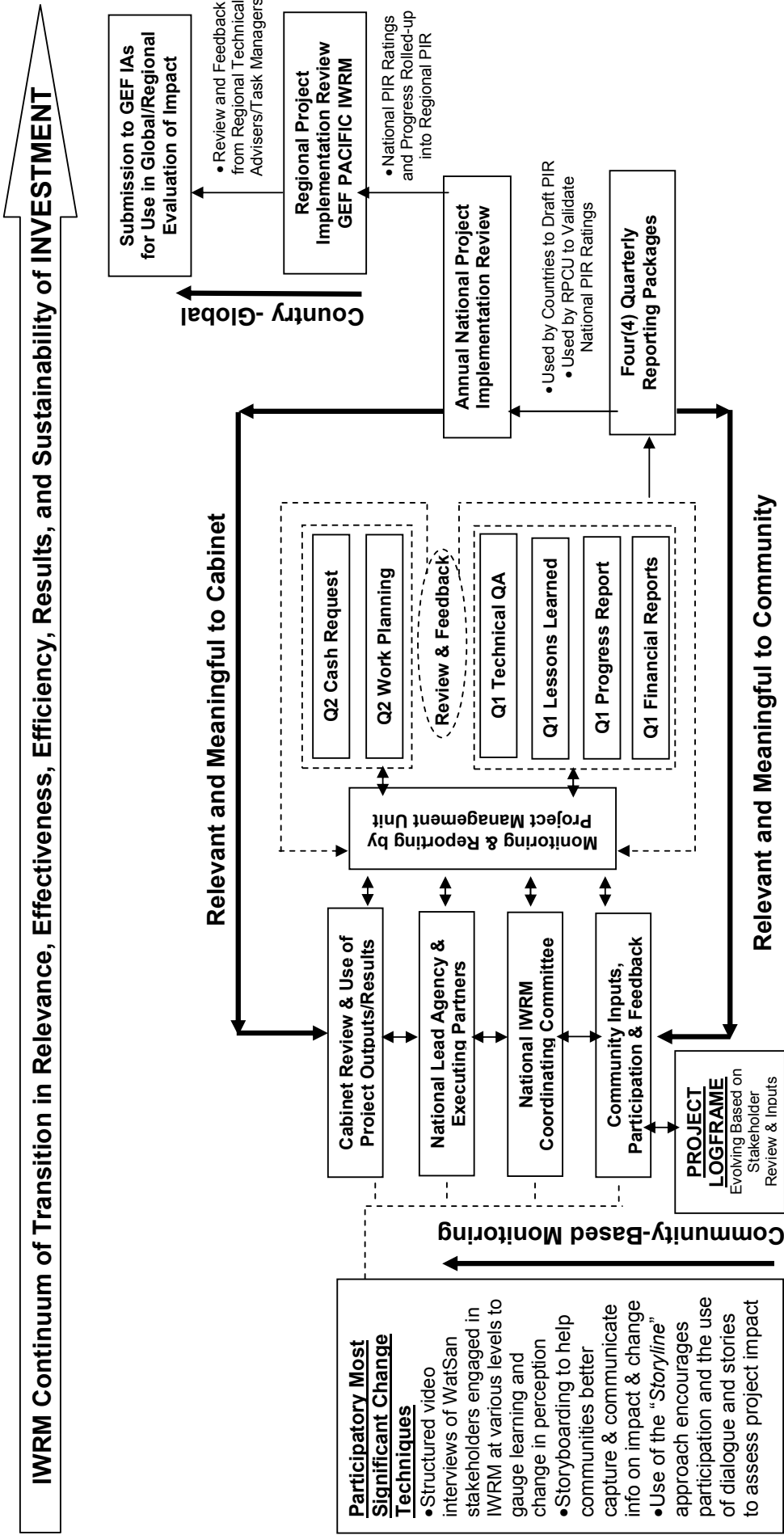


Figure 1 Schematic of the Planning, Monitoring, and Reporting Approach Adopted for the [Integrated Water Resource Management Nadi Demonstration Project]

Annex 8: Replication and Scaling-up Plan

Lesson	Audience(s)	Scale	Applicability of Lesson	Replication Tool(s)	Timeframes	Cost
<p>Stakeholder Engagement Obtaining government, Private Sector consensus on the IWRM concepts and principles</p>	<p>Government Agencies , Project Managers (NGOs, national and regional)</p>	<p>Regional / National</p>	<p>Engaging support for addressing issues in an integrated / participatory approach</p> <p>Specifically applicable to initiatives of IWRM concept of ridge to reef.</p> <p>Key Areas:</p> <p>Community engagement Influencing communities Resource utilization & Responsibility Water Resource Use Efficiency</p> <p>Integrated Flood Management</p>	<p>Government agencies: - resource package - GEF IWRM ,DOA internet - conference/RSC presentations</p> <p>agencies - APEX body discussions and presentations - resource package - direct engagement</p> <p>Project Managers - resource package - regional project reporting - conference presentation(s)</p>	<p>1st -2nd Quarter 2012 4th Quarter 2011 3rd Quarter 2011</p> <p>1st -2nd Quarter ,2011 2nd Quarter 2011 2010 – 2013</p> <p>2nd Quarter 2011 End 2013 3rd Quarter 2010</p>	<p>\$5000 Negligible Negligible</p> <p>covered already Negligible</p> <p>Negligible – already covered Negligible Negligible</p>
<p>Setting up of Catchment Committees – collective forum</p>	<p>Government Agencies , Project Managers Communities</p>	<p>Regional/ National</p>	<p>Applicable for any initiatives / projects</p>	<p>Government agencies: - Presentation to DSC, JIDDC - resource package - GEF IWRM internet - conference/RSC presentations</p> <p>agencies - APEX body discussions and presentations - resource package - direct engagement</p> <p>Project Managers - resource package - regional project reporting - conference presentation(s)</p>	<p>4th Quarter 2011</p> <p>1st Quarter – 2011 2010 – 2013</p> <p>1st Quarter ,2011</p> <p>1st -2nd Quarter ,2011 2nd Quarter 2011 2010 – 2013</p> <p>2nd Quarter 2011 End 2013 3rd Quarter 2010</p>	<p>covered already Negligible Negligible</p> <p>covered already Negligible Negligible</p> <p>Negligible Negligible Negligible Negligible</p>



Project Management						
Establishing an international project in Fiji	Fijian Government Agencies Project Managers (NGOs/ national) Regional / Donor project managers	Regional/ National	Generally instructive to facilitating smooth project inception and ongoing management	Fiji agencies and project managers - report(s) - APEX body discussions and presentations National government agencies: - twinning visits - report(s) - RSC Regional / Donor Project Managers - report(s) - RSC - Agency meetings with Donors	End 2009 2010 – 2013 3 rd Quarter 2012 2010 – 2013 2 nd Quarter 2012	Already Established \$5000 Negligible
Capacity / Performance						
Coordination/Integration						
Interagency Collaboration & synergising / resource pooling	Government Agencies, Project Managers (NGOs, national and regional) Communities	Regional/ National	Applicable to any project / activity – new initiatives. Key Areas: Pooling resources Synergizing Resource Local Consultancy	Government agencies: - Presentation to DSC, JIDDC - resource package - GEF IWRM internet - conference/RSC presentations agencies - APEX body discussions and presentations - resource package - direct engagement Project Managers - resource package - regional project reporting - conference presentation(s)	2 nd Quarter 2011 1 st Quarter – 2011 2010 – 2013 2010 – 2013 1 st Quarter ,2011 2010 – 2013 2 nd Quarter 2011 2 nd Quarter 2011 End 2013 3 rd Quarter 2010	covered already Negligible Negligible covered already Negligible Negligible Negligible Negligible Negligible
Technical						

Integrated Early Warning System	Government Agencies , Project Managers (NGOs, national and regional) Communities	Regional / National	Engaging support for addressing issues in an integrated approach rather than relying onto only technical or one solution. Specifically applicable to Key Areas: Synergizing Resource Common equipments Centralized system Extrapolating existing technology	Government agencies: - Presentation to DSC, JIDDC, NDMO - resource package - GEF IWRM / DOA internet - conference/RSC presentations agencies - APEX body discussions and presentations - resource package - direct engagement Project Managers - resource package - regional project reporting - conference presentation(s)	2 nd -4 th Quarter 2011 1 st Quarter – 2012 2010 – 2013 2010 – 2013 1 st Quarter ,2011 2010 – 2013 2 nd Quarter 2011 2010 – 2013	Partially Covered Negligible Negligible Negligible Negligible Negligible Negligible
Political Socio - Cultural Communications						



Annex 9: IW Pilot Project Logframe

Components	Outcomes	Indicator	Baseline	Targets End of Project	Source of Verification	Risks and Assumptions
1. Sustaining local coordination mechanisms (NBCC) and management measures and broadening their scope to support an R2R approach in the Nadi Basin	1.1 NBCC operational and guiding sustainable development with an emphasis on flood risk planning, biodiversity and conservation and livelihoods issues and engagement of the tourism sector	Extent and continuity of government agency and private sector participation in NBCC meetings	NBCC established and functional with main focus on the development and structuring of the early warning flood system, needs to expand objectives	Roles and responsibilities of the NBCC reviewed to include biodiversity and conservation issues, engagement of the tourism sector as well as flood risk planning; NBCC advising national decision makers and regional fora	NBCC Terms of Reference, quarterly meeting reports, participants list, joint management decisions	Willingness of participants to engage in joint management decisions
	1.2 Mainstreaming flood early warning system and IFMP implementation in local, divisional and national government planning	Status of endorsed asset handover and MoU between MET and NBCC	Flood early warning system is currently operational through the IWRM project and NBCC	Commitment from MET and partner agencies to take responsibility of the operation of the flood early warning system, including investment in on-going maintenance, staffing and procurement	Signed and endorsed documents	MET and partner agencies have capacity for on-going operation and maintenance of the flood early warning system
	1.3 Donor and private sector engagement via investment fora	Status and effectiveness of the Sustainable Investment Symposium (SIS) Status of Private Sector Investment Plan	Limited opportunities to engage private and tourism sector	Network of private sector, tourism sector, local government agencies and community boards meeting annually through Sustainable Investment Symposium (SIS) and; discussing the needs and opportunities for partnerships for investment in actions to support sustainable development	Annual meeting reports including participant lists and joint development agreements Private sector investment plan	Willingness of tourism and private sectors to engage in sustainable development of the Nadi Basin Catchment Willingness of different sectors to collaborate on joint development and management plans

Components	Outcomes	Indicator	Baseline	Targets End of Project	Source of Verification	Risks and Assumptions
2. Strengthening the recognition of blue forests as a hazard risk reduction asset in Nadi coastal zone	2.1 Identifying priority areas and actions for establishing mangrove management plans	Status of integrated model study, governance and regulation review, and mangrove function investigation Uptake of scientific and technical recommendations	CSIRO Storm surge and World Bank/NIWA flood inundation models; international research of mangrove role in catchment protection though no integration of these into a coherent plan	Completed study that links storm surge and flood inundation models together and assesses the role of mangroves as hazard risk reduction asset Review of land tenure and zoning governing the use of mangroves in the Nadi area and identifying gaps in policy and regulations	Study on the role of mangroves in protecting against both storm surge and flood inundation in the Nadi area Report on regulations and zoning aspects of mangrove use published	Technical capacity to review and link scientific models and draw conclusions
	2.2 Pilot activities to reduce stress on vulnerable mangrove communities with a focus on generation of sustainable livelihoods	Status of mangrove eco-farming and alternative charcoal production activities	Limited options for sustainable development of mangrove stands to reduce environmental stressors	Investigating the role of mangroves as flood and storm surge protection to identify priority locations in the Nadi area Demonstration of innovative community level activities to develop sustainable livelihoods while reducing stress on mangrove stands piloted at 2 villages; including but not limited to alternative charcoal production and mangrove eco-farming	Report on priority areas and actions for sustainable mangrove management	Residents willing to adopt new mangrove management techniques
	2.3 Development of management plans for priority mangrove sites	Status of endorsement of Mangrove Management Plan	Lack of an integrated management plan for priority mangrove areas in Nadi	Mangrove Management Plan for priority mangrove sites in Nadi area developed and agreed to through community and agency consultation; endorsed by NBCC	Report on assessment of the operational status [Yr 3] Endorsed Mangrove Management Plan for the management of priority mangrove communities and associated biodiversity	On-going commitment to operation of new techniques Agreement on management plan initiatives



Components	Outcomes	Indicator	Baseline	Targets End of Project	Source of Verification	Risks and Assumptions
3. Supporting implementation of the Integrated Flood Management Plan via strategic partnerships and awareness raising	3.1 Monitoring of illegal clearing and gravel extraction in Nadi Basin with supporting enforcement and community awareness raising	Status and continuity of government agency and local authority participation in RRS meetings	Lack of regular monitoring and infrequent enforcement of existing laws; limited understanding among target populations of illegal activity impacts on catchment health	Risk Reduction Subcommittee (RRS) of the NBCC established and functional to; develop and implement a Monitoring and Enforcement Plan for illegal activities within the catchment; establish partnership with local authorities to enforce laws regarding illegal extraction and clearing; increase target population awareness of laws and impacts regarding illegal clearing and gravel extraction by 50% via locally appropriate awareness raising programme	RRS Terms of Reference and biannual meeting reports (joint management decisions and participant lists)	Willingness of local authorities to participate in monitoring and enforcement activities
		Status of Monitoring Plan and extent of data collected			Endorsed Monitoring and Enforcement Plan	Capacity for enforcing applicable laws and regulations
		Number of official warnings or fines dispensed for illegal activities			Online catalogue of illegal activity events and fines or warnings given	Capacity for consistent data collection and online management
		Percent increase in target population with applied understanding of illegal activity impacts			Consultation meeting reports, awareness programme documents, participatory interviews	Awareness and capacity building materials are sufficiently well designed to engage community members and resource users
						Continuity of participation of target audience in awareness raising events



