

National Integrated Coastal Management Framework and Implementation Strategy for Vanuatu

**A National Approach to Cooperative Integrated Coastal
Management**



4 December 2010

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Acronyms and abbreviations

ACIAR	Australian Centre for International Agricultural Research
CCM	Cooperative Coastal Management
CMT	customary marine tenure system
COLP	Code of Logging Practice
COT	crown of thorn starfish
CRISP	Coral Reef Initiatives for the Pacific
CTI NPA	Coral Triangle Initiative National Plan of Action
DoE	Department of Environment
DoF	Department of Fisheries
DoH	Department of Health
DPA	Department of Provincial Affairs
EAFM	Ecosystem Approach to Fisheries Management
EBM	Ecosystem Based Management
EIA	Environmental Impact Assessment
EMC Act	Environment Management and Conservation Act
EMMP	Environmental Management and Monitoring Plan
FAD	fish aggregating device
FAO	Food and Agriculture Organization
FSP	Foundation of the people of the South Pacific
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
ILO	International Labor Organisation
IMO	International Maritime Organisation
IRD	Institut de recherche pour le development (French research organization)
LMA	Locally Managed Area
LMMA	Locally Marine Managed Area
MPA	marine protected area
NACCC	National Advisory committee on Climate Change
NAPA	National Adaptation Programme of Action
NGO	Non-Government Organization
NICMF	National Integrated Coastal Management Framework
NRM	Natural resource management
REDI	Rural Economic Development Initiative
SOPAC	South Pacific Applied Geo-science Commission
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regionally Environment Programme
VANRIS	Vanuatu Natural Resource Information System
VBRMA	Village based Resource Management Area

Executive Summary

The coastal zone is one of Vanuatu's greatest assets. Its unique values and resources are vital to the Ni-Vanuatu way of life, subsequently, the capacity to ensure ecologically sustainable use and development of the coastal zone is imperative for all the Ni-Vanuatu people, both now and into the future.

The National Integrated Coastal Management Framework (NICMF) for Vanuatu has been developed to assist responsible government agencies and concerned stakeholders to cooperate, collaborate and integrate their activities into a coordinated response to mitigate and reduce impacts affecting Vanuatu's coastal ecosystems and resources.

The NICMF provides the structure and process which guide the behavior and conduct of government agencies, NGOs, the privates sector, and communities to achieving sustainable coastal environmental management. Some of the outcomes expected of the NICMF are:

- realigning and optimizing management processes of the Fisheries Act, Environment Management Act, Foreshore Development Act, Mines and Water Act and other related legislation to fill gaps and eliminate overlapping roles to foster improved performance;
- ensuring ecosystem considerations are efficiently and adequately taken into consideration during all stages of developments to minimize detrimental impacts;
- improving collaboration of all actors including government agencies, NGOs and communities in the management processes;
- reducing terrestrial inputs entering the marine environment; and
- maintaining ecological balance, sustained biodiversity and sustained livelihood.

The NICMF aims to promote and facilitate these objectives by serving as a strategic coastal environmental decision-support framework for the Department of Fisheries (DoF) and Department of Environment (DoE) in coordinating their efforts in the integrated management of coastal ecosystem.

The NICMF provides a consolidated overview of roles and responsibilities, issues and the range of tools (strategies, plans, legislation, etc) available to address management of the coastal zone. The Framework is designed to allow for stakeholders, managers, and those involved in management of Vanuatu's coastal resources, to identify the most appropriate response to best manage coastal resources for long term sustainable use. The Framework is not a static document and should be viewed as a guide, which will be reviewed and revised over time so that depending on changing circumstances, it always remains a current and valuable resource and guide for implementing best practice coastal resource management.

Implementation by the relevant stakeholders will be achieved through;

- legislative, legal and policy frameworks and systems;
- sectoral dialogue and collaboration;
- mainstreaming into Government agency workplans;
- community engagement;
- data sharing; and
- financial and human resource systems.

The key pressures affecting sustainable management of the coastal zone have been assessed based on six categories of pressures/activities;

- coastal development,
- coastal fisheries,
- tourism,

National Coastal Management Framework for Vanuatu

- land-based pollution and siltation,
- marine-based pollution, and
- climate change.

The specific objectives of the NICMF are to;

- maintain the functional integrity and health of coastal ecosystems and environments through maintenance of ecological balance, protection of biodiversity, preservation of resources and sustainable fisheries and livelihoods of communities;
- harmonise coastal management processes provided for by relevant legislation, strategies, policies and plans;
- enhance and strengthen collaboration of all actors including government agencies, NGOs and communities in the management process;
- ensure coastal ecosystem considerations are efficiently and adequately taken into consideration during all stages of development to minimize detrimental impacts on the coastal environment and achieve sustainability;
- facilitate the progress of sustainable multi-sectoral development;
- reduce resource use conflicts;
- maintain aesthetic appeal of the coastal environment for the enjoyment of the population and for tourism development;
- preserve customary, cultural and traditional values; and
- facilitate climate change adaptation activities.

National Coastal Management Framework for Vanuatu

There are a wide range of stakeholders involved in coastal management in Vanuatu, as shown below.

Government	Non-Government Organizations
<ul style="list-style-type: none"> • Department of Forestry • Department of Agriculture • Department of Fisheries • Department of Geology, Mines and Rural Water Resources • Department of Environment • Department of Lands • Department of Ports and Harbour • Department of Internal Affairs • Vanuatu Cultural center • Department of Meteorological Services • Public Works Department • Municipality of Port Vila and Luganville • Provincial Offices 	<ul style="list-style-type: none"> • FSP-Vanuatu • Wan Smol Bag Theatre • Live and Learn Environment Education • Farm Support Association • Other NGOs
Private sector	Community
<ul style="list-style-type: none"> • Investors • Business community • General public 	<ul style="list-style-type: none"> • Village councils • Village/area women committees • Village/area youth committees • Church groups • Island Council of Chiefs

It was agreed in the consultation process during development of the NICMF (subject to NACC endorsement) that the DoE would take the lead role in coordinating implementation of the NICMF.

Implementation

An Implementation Strategy has been developed to give effect to the NICMF. Different tools are used to implement ICM and the type and number of tools used depends on geographical locations, the issue(s) to be addressed, the available legislation, strategies and policies and the available resources. Some of these tools are already being used by different stakeholders to address ICM issues in Vanuatu and have been identified and included in the NICMF. When consideration is being given to how a particular issue, or issues, could be addressed then responsible organizations should consider any one, or combination, of these tools or approaches.

NATIONAL INTEGRATED COASTAL MANAGEMENT FRAMEWORK

1. INTRODUCTION

The Vanuatu archipelago is located between latitude 12° and 23° south and longitude 166° to 173° east, stretching some 1,300 km from north to south in the Western Pacific Ocean (see Map 1). Total land area is 12,336 km², with a maritime economic exclusive zone of 680,000 km². The two largest islands, Espiritu Santo and Malekula, comprise nearly 50 % of the total land mass. The islands are geologically young and mountainous and reefs are relatively poorly developed around most islands. The coastline of all the islands total about 2,528 km, and coral reefs and associated lagoons comprise 448 km² in area.

Vanuatu's population was estimated to be around 209,920 in 2006, with an annual growth rate of 2.6 %. Eighty percent of the population is considered rural, with more than 70 % of the population residing on the coastal fringe. Urban populations are rapidly increasing in the major centers of Port Vila and Luganville, which are found on the coast. Population increase is driving many changes in the patterns of coastal settlement, development and resource use. The livelihood of these coastal communities is under increasing threat by the challenges of environmental disasters, coastal development and loss of food resources.

There are three levels of governments in Vanuatu;

- the national government;
- provincial governments which comprises the six provinces plus the two municipalities of Port Vila and Santo; and
- community governance, which functions through customary protocols.

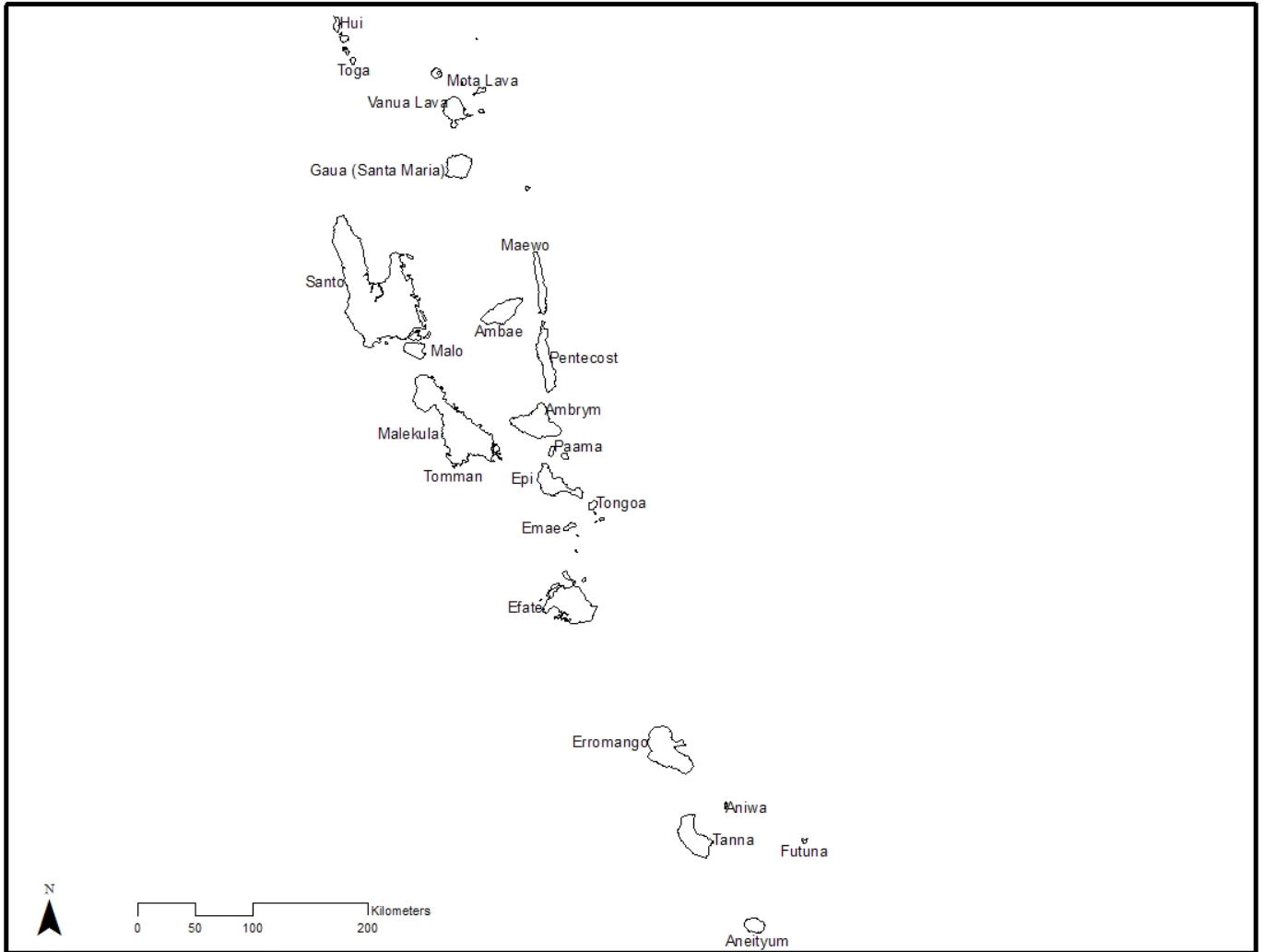
The main foreign exchange earner is tourism while agriculture, forest and fisheries are potential areas for development.

1.1 Coastal Resources of Vanuatu

The coastal zone is one of Vanuatu's greatest assets. Its unique values and resources are vital to the Ni-Vanuatu way of life, subsequently, the capacity to ensure ecologically sustainable use and development of the coastal zone is imperative for all the Ni-Vanuatu people, both now and into the future.

The coastal zone of the islands of Vanuatu covers coral reefs, mangroves, sea grass beds, mudflats rocky shores and is highly dynamic where climatic, geological and oceanographic regimes mix with terrestrial, estuarine and marine ecosystems to support a wide range of biodiversity. Coastal biodiversity is the resource base for food, recreation, commercial and cultural activities. Coastal communities rely very much on the health of the coastal environments to provide such ecosystem services that include fisheries, recreation, urban development, shipping and transportation, aquaculture, coastal agriculture and freshwater supply from adjacent catchment areas.

National Coastal Management Framework for Vanuatu



Map 1. Republic of Vanuatu

The coastal zone of the islands of Vanuatu is a focus of major economic, industrial and social activity. About 70% of Vanuatu's population lives on the coastal lowland and are dependent on the sea for their food security needs. Intense development pressure on the coastal zone, especially around Port Vila and Luganville, has resulted in increased land values and lifestyle living opportunities on coastal areas thereby attracting more and more people to live on the coasts, in particular expatriates from Australia, New Zealand and France.

Direct impacts and effects of cyclones, severe storms, earthquakes, and flooding increases the vulnerability of these coastal developments, and impacts the quality of the marine environment to support biodiversity and peoples' livelihoods dependent on this biodiversity. The severity of natural calamities is likely to be aggravated by climate change due to global warming. Like other island states in the Pacific region, Vanuatu wishes to strengthen the resilience of its coastal ecosystems and communities.

The National Adaptation Programme for Action (NAPA) has highlighted coastal erosion, cyclone damage, flooding, and a possible increase in fish poisoning as the main impacts affecting the health of the marine ecosystem in Vanuatu. The existing coastal and resource management arrangements in Vanuatu are based on the management of specific resources with little integration of sectoral activities. The need for a National Integrated Coastal Ecosystem Management Framework (NICMF) framework is highlighted in the NAPA and also by the South Pacific Applied Geoscience Commission Report (SOPAC) (Pelesikoti

2006)¹. The Vanuatu Government thus has a commitment to incorporate coastal management in its planning processes.

The NICMF should be viewed as a summary of activities and proposals to protect and conserve coastal environment of Vanuatu. The NICMF will need to be revised continuously to accommodate new developments which conform to coastal management needs nationwide.

1.2 Coastal Environment Issues

The key issues faced in coastal environmental management in Vanuatu are:

- depletion of marine resources due to unsustainable harvesting, other commercial incentives, and community desire for cash;
- overall weakening of traditional management system;
- increasing sedimentation from catchment activities;
- increasing coastal erosion due to sea level rise and tectonic activities;
- projects and programs undertaken by government agencies falling short of meeting overall goals;
- communities at the end are not seeing the real impact of management and conservation activities;
- poor information sharing between agencies - Vanuatu Natural Resource Information System (VANRIS) is not functioning to its full capacity;
- waste pollution of Port Vila and Luganville Harbour; and
- overlapping legislations and policies and no clear policy direction.

The underlying concerns for managing these key issues are:

- lack of a national policy leadership on coastal management in Vanuatu;
- national government is structured sectorally and there is no mechanism in place for cross-sectoral integration (i.e difficult to mainstream);
- poor coordination between national and provincial governments and provincial governments lack clear policy focus, capacity (both human and financial), and low staffing resources;
- no mechanism in place to monitor activities undertaken by government, NGOs and communities to assess their impacts;
- lack of resources (financial and human) at multiple levels to accomplish objectives;
- poor human capacity, with limited number of people skilled in coastal zone management and policy design; and
- no formalized data collection, storage or analysis for informed decision making.

Pelesikoti (2006)² also identified a number of concerns for coastal management in Vanuatu, including:

- coastal areas require integrated management and planning approaches;
- coastal management boundaries should be issue-based and adaptive;
- a major emphasis of coastal resources management is to conserve common property resources;

¹ Pelesikoti, N. 2006. *Vanuatu: Project Report on institutionalizing and mainstreaming integrated coastal management*. Suva: South Pacific Applied Geoscience Commission.

² *ibid*

- prevention of damage from natural hazards and conservation of natural resources should be combined in all ICM programmes;
- all levels of government within a country/province must be involved in coastal management planning;
- similarly, multi-sector involvement is also essential to sustainable use of coastal resources; and
- traditional management practices should be respected and adopted as part of the ICM approach.

1.3 Development of a National Integrated Coastal Management Framework

The objective of integrated coastal management (ICM) is to maximize the benefits provided by the coastal zone and to minimize the conflicts and harmful effects of activities upon each other on resources and on the environment.

Many other names are used to define ICM, including:

- Integrated Coastal Zone management (ICZM),
- Ecosystem Based Management (EBM),
- Ecosystem Approach to Fisheries Management (EAFM), and
- Cooperative Coastal Management (CCM).

Integrated Coastal Management (ICM) is a dynamic process that unites government and community, science and management, sectoral and public interest in preparing and implementing plans for the protection and sustainable development of the coast and its resources. Integration is essential because the coast is a dynamic zone where the land and sea processes occur.

The NICMF for Vanuatu has been developed to assist responsible government agencies and concerned stakeholders to cooperate, collaborate and integrate their activities into a coordinated response to mitigate and reduce impacts affecting Vanuatu's coastal ecosystems and resources.

Importance of the NICMF

Vanuatu is facing many challenges, one of these being the lack of coastal governance arrangements. Coastal management responsibility is shared by many agencies who, according to the present arrangements, conduct their activities in isolation to one another. In general many sectoral jurisdictions (in regard to environmental management) overlap, which has been the cause of conflict, confusion, duplication and lack of clear direction. To date there is no central mechanism in place to encourage more effective cooperation at all levels.

The non-governmental organizations are contributing to nation building in many areas including coastal conservation; though they themselves must have clear objectives on how well to align their activities and programmes to achieve the overall national goals and objectives. Many environmental projects are being implemented but without any monitoring mechanisms to assess the impact or effectiveness of various activities, which are impacting the lives of the people. This results in duplication of activities, use of resources on unnecessary areas, unclear goals, and poor coordination.

A strong national governance system is needed to effectively improve ecosystem management overall. Through implementation of the NICMF, enabling legislation, policies and strategies for coastal management will be strengthened.

Need for a NICMF for Vanuatu

The NICMF provides the structure and process which guide the behavior and conduct of government agencies, NGOs, the private sector, and communities to achieving sustainable coastal environmental management. Some of the outcomes expected of the NICMF are:

- realigning and optimizing management processes of the Fisheries Act, Environment Management Act, Foreshore Development Act, Mines and Water Act and other related legislation to fill gaps and eliminate overlapping roles to foster improved performance;
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- improving collaboration of all actors including government agencies, NGOs and communities in the management processes;
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- maintaining ecological balance, sustained biodiversity and sustained livelihood

The NICMF aims to promote and facilitate these objectives by serving as a strategic coastal environmental decision-support framework for the Department of Fisheries (DoF) and Department of Environment (DoE) in coordinating their efforts in the integrated management of coastal ecosystem.

Where does the NICMF apply?

The NICMF will apply to the coastal waters of Vanuatu as defined in various legislation and International Conventions, and to those areas where catchment activities affect the coastal zone of Vanuatu.

How was the NICMF developed?

The NICMF was developed in consultation with stakeholders from the national government, provincial governments, community, NGOs and private sector through workshops in October 2009 and October 2010 and through other consultative processes. It is the result of a call by the Vanuatu Government under the NAPA to establish a mechanism for improved coordination and integration in the sustainable management of the coasts as a response to the impact of climate change and sea level rise. Technical assistance was provided by SPC in workshop facilitation and supported by SPREP, with financial assistance from the MacArthur Foundation.

How will the NICMF be used?

The NICMF provides a consolidated overview of roles and responsibilities, issues and the range of tools (strategies, plans, legislation, etc) available to address management of the coastal zone. The Framework is designed to allow for stakeholders, managers, and those involved in management of Vanuatu's coastal resources, to identify the most appropriate response to best manage coastal resources for long term sustainable use. The Framework is not a static document and should be viewed as a guide, which will be reviewed and revised over time so that, depending on changing circumstances, it always remains a current and valuable resource and guide for implementing best practice coastal resource management.

Implementation by the relevant stakeholders will be achieved through;

- legislative, legal and policy frameworks and systems;
- sectoral dialogue and collaboration;
- mainstreaming into Government agency workplans;
- community engagement;
- data sharing; and
- financial and human resource systems.

Who will use the NICMF?

The NICMF is intended for use by organization and individuals who:

- are directly involved in current climate change adaptation activities and projects;
- require an understanding of the legal process and functions of the line agencies;
- need to know how ICM is applied within the DoF, DoE and other line agencies;
- need to know the national process for addressing coastal impacts (fisheries and non-fisheries);
- need to know the formal process of developing ecosystem management plans to better organize the community to respond more effectively to issues affecting them; and
- need to know the roles of NGOs and their input into addressing issues of national importance.

The users may include:

- Meteorological Services
- Department of Fisheries
- Department of Environment
- Department of Forestry
- Department of Agriculture
- Non-government organization
- Department of Ports and Marine
- Department of Internal Affairs
- Department of Public Works
- Municipalities
- Department of Health
- Environmental consultants
- Regional partners
- Communities

2. COASTAL ZONE PRESSURES

The key pressures affecting sustainable management of the coastal zone have been assessed based on six categories of pressures/activities;

- coastal development,
- coastal fisheries,
- tourism,
- land-based pollution and siltation,
- marine-based pollution, and
- climate change.

These activities are presented in Table 1 with their related potential impact on the coastal zone. Destructive/negative impacts are denoted by a (-) sign are activities that have potential to cause adverse impact on the coast and the constructive/positive denoted by a (+) sign are activities that have potential to benefit the marine ecosystem and people's livelihood.

Table 1. Coastal activity Impacts; Negative (-); and Positive (+)

Coastal activity		Coastal conditions				
		Coastal erosion	Marine water pollution	Solid waste pollution	Coral reef ecosystem health	Human health, and economic sustainability
Coastal development	Housing construction	-	-	-	-	+
	Reclamation	-	-		-	+
	Sea wall protection	-				+
	Aggregate mining	-				+
Coastal fisheries	Reef fishing				-	+
	Offshore fishing				-	+
	Aquaculture				+/-	+
	Coral reef monitoring				+	+
	Marine protected area	+	+	+	+	+
Tourism	Diving and recreation				+	+
	Sport fishing				+	+
	Marine sanctuary				+	+/-
Land based pollution	Human waste		-	-	-	-
	Solid waste		-	-	-	-
	Industrial waste		-	-	-	-
	Siltation		-	-	-	-
Marine based pollution	Vessel discharge		-	-	-	-
	Oil spills		-	-	-	-
	shipwrecks		-	-	-	-
	Port activities		-	-	-	-
Climate Change impacts	Sea level rise	-			-	-
	Salt water Intrusion					-
	Coastal flooding	-	-			-
	Tsunami	-	-		-	-
	Cyclones	-	-		-	-

2.1 Coastal Development

Housing construction

Housing construction on the coastal zone has increased recently and is driven by growth in the real estate industry and tourism, which are both focused on expatriates. The coastal fringe on Efate and Santo are the most expensive and sought after areas. Formal residential housing in Vanuatu must comply with cyclone proofing regulations, while major infrastructure projects must comply with the Environment Impact Assessment (EIA) requirement under the Environment Management and Conservation (EMC) Act.

Aggregate mining

Development and management of non-living resources such as sand and gravel are under the jurisdiction of the Department of Geology, Mines and Water Resource. The Department functions under the Mines and Minerals Act 1986 which controls mining activities and the Water Resources Management Act 2002 under which water resources are managed. In practice the issuing of permits and licenses is subject to an EIA report from the DoE. The current mining permits issued do not have any condition to ensure mining does not cause adverse impact on watershed and/or marine areas or provide provisions for creating buffer zones, and these provisions need to be considered for inclusion in the EMC Act. There are no regulations yet under the Water Resources Management Act, and subsequently there is a need to develop those necessary regulations to address activities that discharge pollution into the rivers and eventually the coastal marine environment.

Reclamation

Large reclamation projects in Port Vila include the Sea Front area and Tasiriki which were undertaken during colonial times. More recently, there are several large reclamation projects on Efate. The notable ones underway are the reclamation for the extension of the Star Wharf and the extension of some parts of the Emten Lagoon for resort and marina development.

Seawall Protection

Construction of seawalls is found on Efate and Santo especially around the two urban centers of Port Vila and Luganville. The main purpose of building seawalls is for residential purposes to extend coastal land or for protection from wave surge.

2.2 Coastal Fisheries

The coastal fisheries sector contributes significantly to rural incomes but most importantly to the food security needs of 70 % of the population living on the coasts and islands of Vanuatu. Over a 15 year period since 1991, studies by the DoF have shown that Vanuatu has experienced a 44% increase in the growth of subsistence fishing activities. Fisheries are the mandated responsibility of the DoF and there are many development and management challenges which are linked to lack of resources, technical expertise, and inadequate policy direction. Large fishing industry operations require an EIA.

Reef fishing

The recent agriculture census indicates an increased fishing effort by communities in many areas. As a consequence, reef food fish resources near populated areas are under considerable pressure from over-exploitation. This has been confirmed by several studies on Efate which indicate very low stocks of food fish species while the stocks of non-food fishes are relatively healthy. For example, these studies show the stocks of bump-head parrotfish, snappers and groupers are poor on Efate compared to Malekula. In

other remote areas, resources are generally stable but are vulnerable to heavy fishing pressure. Commercial invertebrate resources such as trochus, green snail, giant clams and sea cucumbers are over-exploited nationwide. These resources are a source of livelihood for food security and income and their loss has weakened the base of rural economies in many areas. Some level of habitat loss from natural events has contributed to the decline of reef resources; however the biggest cause of resource depletion to date is over-fishing. Aquarium fish collection is a modest operation limited to two active operators whose operations on west Efate have been relatively sustainable. Ciguatera fish poisoning is common in many islands. In the last ten years an increased number of people have been infected by eating poisonous fish, and more recently bivalves, such as giant clams. Ciguatera poisoning is attributed to algal blooms. Changes in reef conditions due to climate change may enhance algal blooms and thus increased ciguatera incidences.

Coastal tuna fishing

Small-scale coastal pelagic fishing has the potential to be further developed as an alternative source of food security. Coastal pelagic fishing targets tuna and related species, which are migratory, but can also include deep-water drop lining for snapper. This fishery requires development of fish aggregating devices (FADs) to attract schools for easier catching. The DoF have deployed several FADs in the country but many have been lost due to various causes. So far only two FADs are active, one on Efate and the other on Santo. FADs are useful tools but design, management and good planning is necessary. A FAD development and management plan is required and technical assistance should be sourced from SPC for assistance with design and deployment.

Aquaculture

Aquaculture is a developing sector and is being promoted through pilot programmes as an alternative source of fish protein. Species identified for development under the national aquaculture plan include tilapia, giant clams, fresh and brackish water prawns, trochus and green snail. The private sector is leading the way in freshwater aquaculture with Teouma prawn and tilapia now producing to supply the local market. The small scale sector on the other hand has been slow to develop because there is no hatchery facility to support the supply of fish fry to farmers.

Coral reef monitoring

Coral reef ecosystems are the basis for marine biodiversity which support livelihood needs. Most importantly coral reefs buffer the coast against waves and currents. Coral reefs are constructed by living organisms called coral polyps whose health is affected by sunlight and heat. Increased sunlight kills these organisms which causes coral bleaching. Vanuatu's coral reefs are being impacted by coral bleaching, crown-of-thorn (COT) starfish predation, destructive damages from cyclones and siltation. The damage caused by Cyclone Danny in 2002 has led to a reduction of live coral on West Efate, from 80% to 25%. Corals at some specific sites such as Bukura, Devils Point, Pango and Pele seem to show resilience with higher (60-75%) coral cover. Some of these sites are being monitored to assess future impacts. Few monitoring activities have been conducted in the outer islands. COTs predation is a current problem affecting the reefs of West Epi, Luganville Harbour, and Efate. COTS predation can further impact on corals after mass bleaching events. COTs clean-up campaign activities have been conducted in Luganville Harbour and are being undertaken by some communities on Efate with the help of tourism operators e.g Hideaway Island. Coral reef monitoring is a new initiative of the DoF under the new restructuring, with monitoring responsibility being undertaken by Reef Check Vanuatu. A new Coral Reef Monitoring Plan will be developed by the DoF and Reef Check Vanuatu is in the progress of becoming a local NGO.

Management and conservation

Three levels of management authorities exist in Vanuatu - National, Provincial and community. Reef resources are managed by communities and resource custodians through customary marine tenure (CMT) systems. While 'tabu' systems are active there are signs of overall weakening. One of the weaknesses is the national control system, especially on commercial invertebrate fisheries. For many years since the birth of Vanuatu as an independent country, resource custodians have been given the responsibility to manage their resources themselves in an effort to strengthen their customary practices. In the face of increasing commercialization of these fisheries, community-based management faces many challenges. Some communities have received external assistance for MPA development such as Mistry Island and Crab Bay whose CMT system have been strengthened while in others there are no information on the impacts. There are some level of collaboration between DoE and FSP-Vanuatu but there is an urgent need to put in-place a national mechanism to bring about cooperation and integration amongst all the actors. The only legislated marine reserves are the Million Dollar Point and President Coolidge reserves in Santo.

At the national level, DoF has taken the initiative to strengthen its management measures by enforcing a moratorium on green snail, giant clam, and sea cucumbers, banning the development of the live reef food trade and introducing control mechanisms for the aquarium trade industry. These efforts need to be extended to cover other fisheries such as trochus and reef fish. Mariculture is being promoted as an alternative source of production and giant clam have so far been successful. Enforcement of existing regulations needs to be improved and the Provinces need to participate in management activities.

Marine and fisheries research

Research activities are being conducted in the area of community-based management, ciguatera fish poisoning, resource inventory, aquaculture and reseeded, coral health monitoring and ecosystem based management. These activities are supported financially and technically by several regional partners, including SPC, IRD, CRISP, SPREP, ACIAR, and FAO. Recent reef resources and socio-economic status information for Paunagisu, Moso, Uri-Uripiv, Maskelyne and Epi have been made available to the DoF by SPC and can be used to contribute to management decisions. Already results from these surveys have resulted in the closure of the sea cucumber fishery in 2008. More thorough and comprehensive stock assessments need to be expanded to other sites in the country.

2.3 Tourism

Tourism is an important economic sector accounting for 40 % of Vanuatu's GDP. Tourism numbers increased from 55,000 in 2003 to around 80,000 in recent years. Most tourism developments are situated on the coastal fringe to benefit from the scenic view of the coastline. Scuba-diving and snorkeling are fast developing tourist activities on the coast.

Diving and recreation

Scuba-diving is mostly a non-destructive marine activity (although unregulated diving operators can cause impacts through anchoring and fin damage to corals by divers). Scuba-diver operators generally promote sustainable use of the marine environment. Currently, there are seven dive operators, two in Santo, with the remainder based in Port Vila. The main dive sites on Efate are Hideaway Island, wreck dives near Port Vila Harbour, Devils Point, Hat Island, Paul's Rock, and Tukutuku Bay. There are many dive sites to be discovered throughout the islands which could be accessible by developing a live-aboard dive industry. While tourism growth may not bring any major negative impacts on resources, there is a need to look at ways of maximizing the benefits accruing to traditional reef owners (such schemes exist elsewhere e.g charges per diver for access).

Sport fishing

Sport fishing is a developing industry with 13 operators currently based in Port Vila. With the increasing growth of the tourism industry, there is potential for game fishing development in Santo and other islands. Game fishing operators are licensed by the DoF which requires submission of their catch information for monitoring purposes. Development of coastal FADs by the DoF and Game Fisheries Association could help to support sport fishing industry, and improve local community catches.

Marine conservation

Dive tourism operators generally promote sustainable development and use of the marine ecosystem in generating monetary gain from the marine environment without excessive impacts on marine resources. They also play a part in mobilizing communities to understand the value of conserving their marine areas and resources. Dive tourism has promoted marine sanctuary development at Hideaway Island, Hat Island, President Coolidge, Million Dollar Point and Tutuba Island.

2.4 Land Based Impacts

Human Waste

Sewage pollution is considered one of the most serious environmental problems in Port Vila and Luganville. There are no collective sewage treatment systems and currently there is poor management of septic tank systems. The treatment plants in Port Vila are not being effectively monitored and the unregulated use of pit latrines at Erakor Lagoons and Mele Bay has caused contamination of the ground water system and adjacent coastal waters. Likewise the coastal waters at Luganville Harbour are polluted although levels may be lower than Port Vila. The concentration of *e-coli* bacteria in the lagoon waters of Port Vila was in the range of 5-50 per 100 ml in a 2004 assessment. This is below WHO standards for recreational purposes though bivalves should be considered to have been poisoned and should be left alone. Nutrient loading is likely to be aggravated with the increase in rainfall and flooding due to increased climatic variability. The Department of Health (DoH) and the Municipalities of Port Vila and Luganville are responsible regulators of sanitation issues. Monitoring of the hospital waste treatment plant in Port Vila and some hotels is undertaken to ensure waste is treated before being discharged.

Industrial waste

Several industrial outfalls exist in Port Vila and Santo but are not being monitored, even though there are permitting systems to force industries to comply with proper waste management policies. Waste leakage from factories in the Tagabe area is polluting the Tagabe stream. The DoH and the Municipalities of Port Vila and Luganville are the responsible waste management authorities. Studies are necessary to understand the impact of this waste on the marine environment.

Solid waste Disposal

The issue of solid waste management is relevant in Port Vila and Luganville and also in other provincial centers. The Boufa dump site at Teouma is placed well away from the town and coastal area and does not pose any immediate threat to ground water or coastal areas. Solid waste collection in the expanding urban centers remains an outstanding issue to be addressed.

Siltation from erosion

Siltation is caused naturally during heavy rain but is elevated by forest clearance on rugged hillsides. The most severe erosion in the country is on Aneityum Island as a result of logging in the 1970s. Fortunately a

re-vegetation program funded by the New Zealand Aid since 1995 has successfully contained the soil erosion problem and dramatically reduced coastal siltation. Other severe erosion sites such as on West Coast Santo are caused naturally, which are likely to be exacerbated with changing rainfall patterns. Many other islands such as the Shepherds Islands, South Epi and some parts of Ambae, which do not possess coastline buffer zones or reef systems, are already suffering coastal erosion. Such coastlines are considered to be at greater risk from erosion due to projected sea level rise.

2.5 Marine and Maritime Activities

Large vessels are associated with vessel discharge, oil spills and ship wrecks in the waters of Port Vila and Luganville. Upgrading of port facilities and the onshore tuna industry development in Port Vila are likely to attract more vessels into Port Vila and Santo.

Vessel Discharge

Larger vessels carry water taken onboard elsewhere to act as ballast. There are strict laws governing vessel discharges, including ballast water, in ports. Enforcement of existing laws can be improved and data on vessel discharges are needed.

Oil Spills

Oil spills in the Port Vila harbour are a common occurrence. Harbour monitoring need to be strengthened to locate sources and ensure compliance.

Shipwrecks

Shipwrecks are reported as a common problem in Port Vila harbor.

Hazardous Waste

No mechanism is in place for collecting hazardous waste from ships in Port Vila and Santo.

Port Development

Expansion of the Port Vila wharf needs careful assessment to minimize siltation. Any new construction should be built to withstand increased wave action and cyclone damage from projected climate change impacts.

2.6 Climate Change and Sea Level Rise

As noted earlier, sea and the coastal areas play an important part in the lives of the people in Vanuatu as a source of food, transport and livelihoods. Climate change models and historical observational trends point to warmer and drier conditions for much of Vanuatu in the future. However, it is likely that some parts of the country may receive increased rainfall, due largely to the frequent tropical depressions and storms that are likely to develop in Vanuatu waters. It is also likely that cyclones will become more intense and more frequent. Climate change will thus have an enormous impact on the coastal ecosystem, likely effects include increased sea temperature, altered ocean circulation patterns, CO₂ exchange, increased ultra-violet radiation, rising seas, increased winds and waves, flooding, salt intrusion, siltation, etc.

Climate change is already impacting directly on marine resources through its effect on marine ecosystems such as mangroves and reefs. Enhanced sedimentation, due to soil erosion from agricultural and forestry practices, can have a profound effect on the availability of fisheries resources. Rising sea surface temperatures have caused considerable loss of coral due to coral bleaching and COT outbreaks. Changes in the quality of the sea water can create conditions favorable for algal blooms and increase the severity of ciguatera fish poisoning.

The NICMF provide opportunities for good planning of responses to manage the impacts of climate change. Adverse impacts of climate change will not be uniform in coastal areas, however a common understanding of potential impacts can assist in maximizing opportunities for communities to adapt to social, economic and environmental changes.

Sea Level Rise

The rise in sea level from the present level will influence coastal ecosystems in many different ways. Rising seas will effectively increase the area of coastal aquatic systems; however whether this increase will result in increased ecosystem productivity is not fully known. The most obvious impacts are coastal erosion and its associated effects. Coastal siltation is detrimental to live corals, and increased nutrient loads can lead to algal blooms which can trigger de-oxygenation of the coastal waters or increase toxic algae causing ciguatera fish poisoning. Coastal erosion is happening already in many islands that do not have coral reef systems to protect shorelines, and rising seas will only worsen the present condition. For smaller islands such as the Shepherds, a further rise in sea level will erode much of the land. Damage to the coastal ecosystems could also lead to loss of biodiversity, which could then impact on coastal fisheries. Beaches could change and these could become unattractive for tourism and recreational purposes.

Salt water intrusion

In small islands, a fresh water aquifer beneath the island provides a source of fresh water for the inhabitants. The quality of this freshwater lens depends on the sea water levels. Small low lying islands and coastal lowlands stand the risk of losing their source of portable fresh water source to salt-water intrusion in into this shallow water lens.

Coastal flooding

The coastal lowland of Vanuatu is inhabited by 70 % of its population including the two urban areas of Port Vila and Luganville. The lowland area in most places is a few meters above sea level where most island road systems are also situated. Some of these lowland areas have been affected by cyclones and earthquakes. With the rise in sea level, these lowland areas stand to receive the full impact of rising seas as a result of wave surges associated with increased cyclones and high 'king' tides. Some human actions on the coast, for example the removal of mangroves and other coastal vegetation, have increased the sensitivity of the coastal buffers. Low lying islands in the Torres Group, Maskelynes, Uripiv, Achin, Wala, and Lamén Island, could become uninhabitable. Already a community in the Torres Group has been relocated upland due to flooding of their village.

Earthquakes and tidal wave

Vanuatu is situated on a geologically active zone prone to earthquakes, volcanic disasters and tsunamis. Earthquakes are frequent and often originate at considerable depth and are therefore not too destructive (i.e. large magnitude but low density). Nevertheless, some earthquakes have caused extensive damage in the past. Some fault movements have produced changes in shoreline elevations of up to two meters as islands have tilted. Destructive tsunamis occur occasionally as the result of these earthquakes. It is thought that the tectonic thrust of the Pacific plate on which Vanuatu sits could act to balance rising sea level as projected by several climate change scenarios. This however is only speculation.

Tropical cyclones

There has been a significant increase in the frequency of tropical cyclones in Vanuatu over the recorded period. A total of 124 tropical cyclones have affected Vanuatu since 1939. Forty-five (36 %) of these were categorized as having hurricane force winds (>64 knots), twenty-six (21 %) were of storm force winds (48 - 63 knots) and twenty-five (20 %) were of gale force winds (34 - 47 knots). This represented an overall increase from nine events in 1939 to 29 in over the following six decades and is consistent with evidence of the increasing frequency of tropical cyclones.

3. National Integrated Coastal Management Framework

3.1 Scope

The NICMF seeks to give substance to the national vision for sustainable coastal environmental management (see below) by prescribing institutional arrangements needed for management of the coastal ecosystem, and identifies relevant stakeholders to support the process for implementing management activities. The overall policy goal is also stated and appropriate objectives with their underlying strategies are also stated.

Vanuatu is facing many environmental challenges, including the lack of a central coordinating system for management of the coastal zone. Coastal management responsibility is shared by many agencies who, according to current arrangements, conduct their activities in isolation to one another. In general many sectoral jurisdictions overlap, which causes conflict, confusion, duplication and lack of clear coordinated direction. To date there is no central mechanism in place to encourage more effective cooperation and coordination at all levels.

The private sector, communities and non-government organizations are also contributing to nation building in many areas, including coastal conservation, though they themselves must have clear objectives on how well to align their activities and programs to achieve the overall national goals and objectives. Many environmental projects are being implemented without any monitoring mechanisms to assess the impacts or effectiveness of how various activities impact on the lives of the people. This results in duplication of activities, use of resources on unnecessary areas, unclear goals and poor coordination.

A strong national coastal governance system is needed to effectively improve ecosystem management overall. Through the NICMF enabling legislation, policies and strategies for coastal management will be strengthened.

3.2 Vision Statement

Our vision is that we will have a clean and healthy coastal and marine environment for current and future generations of the people of Vanuatu, able to be used sustainably in perpetuity.

This will be achieved by an appropriate approach to coastal management which will ensure that all the actors of coastal development, management and conservation cooperate in managing coastal environments. Additionally, climate change considerations and associated adaptation measures will be adequately addressed during all stages of development processes undertaken within the coastal environment through the functions, activities and projects implemented by the Government and local authorities.

3.3 Mission Statement

Our mission statement for coastal management in Vanuatu, based on the above vision, will be to;

- fully develop legislations, policies, strategies and plans that facilitate integration, cooperation and effectiveness within the government system and the NGOs;
- achieve environmentally sustainable development on land and reduction of sedimentation and other detrimental impacts on the coast;
- reduce waste disposal on the marine environment;

- provide a clean and health marine ecosystem, healthy marine biodiversity and long term services to the people;
- achieve responsible resource use, maximum benefit derived and improved quality of life; and
- mitigate the impacts of climate change on the lives of the people.

3.4 Goal

The goal of the NICMF is to give substance to the national vision for sustainable coastal ecosystem management by *prescribing institutional arrangements needed for management of coastal ecosystems and identifying relevant stakeholders who will support the process for implementing management and development activities.*

3.5 Objectives

The specific objectives of the NICMF are to;

- maintain the functional integrity and health of coastal ecosystems and environments through maintenance of ecological balance, protection of biodiversity, preservation of resources and sustainable fisheries and livelihoods of communities;
- harmonise coastal management processes provided for by relevant legislation, strategies, policies and plans;
- enhance and strengthen collaboration of all actors including government agencies, NGOs and communities in the management process;
- ensure coastal ecosystem considerations are efficiently and adequately taken into consideration during all stages of development to minimize detrimental impacts on the coastal environment and achieve sustainability;
- facilitate the progress of sustainable multi-sectoral development;
- reduce resource use conflicts;
- maintain aesthetic appeal of the coastal environment for the enjoyment of the population and for tourism development;
- preserve customary, cultural and traditional values; and
- facilitate climate change adaptation activities.

3.6 Institutions and Organizations Involved in Coastal Management

There are a wide range of stakeholders involved in coastal management in Vanuatu, as shown below.

Government

- Department of Forestry
- Department of Agriculture
- Department of Fisheries
- Department of Geology, Mines and Rural Water Resources
- Department of Environment
- Department of Lands
- Department of Ports and Harbour
- Department of Internal Affairs
- Vanuatu Cultural center
- Department of Meteorological Services
- Public Works Department
- Municipality of Port Vila and Luganville
- Provincial Offices

Non-Government Organizations

- FSP-Vanuatu
- Wan Smol Bag Theatre
- Live and Learn Environment Education
- Farm Support Association
- Other NGOs

Private sector

- Investors
- Business community
- General public

Community

- Village councils
- Village/area women committees
- Village/area youth committees
- Church groups
- Island Council of Chiefs

Lead Agency for ICM

It was agreed in the consultation process during development of the NICMF (subject to NACC endorsement) that the DoE would take the lead role in coordinating implementation of the NICMF.

Environmental management responsibilities in Vanuatu are shared between several agencies, including the Departments of Environment, Fisheries, Forestry, Agriculture, Lands, Geology, Mines and Water. Although there exist a level of uncoordinated decision-making due to lack of an integrated mechanism for considering cross-sectoral coastal issues, some existing legislation and policies have provision to incorporate an ICM approach.

A clear policy on environmental management needs to be incorporated into the REDI plans. The EIA provision of the EMC Act 2002 is an important instrument for cooperation amongst all agencies. All projects likely to cause impact on the environment must comply with an EIA process and EMMP.

The Provinces were set up under the Decentralization Act to provide local level government systems in the six regions of the country, including the two municipalities of Port Vila and Luganville. The Provinces will need to become an integral part of the NICMF implementation process.

3.7 Existing Legislation and Policies

The responsibility for coastal management in Vanuatu is not explicitly defined as a function of any single national agency under the present arrangements. However, existing policy and legislation has provisions to incorporate ICM. The existing legislation relevant to coastal management is outlined as follows.

Environmental Management and Conservation

The *Environment Management and Conservation Act 2002* provides for conservation, sustainable development and management of the environment of Vanuatu and the regulation of related activities. The provisions of the Act require EIAs be done for new developments which are considered likely to impact the environment. Regulations will need to be developed to enforce the Act.

National Parks and Nature Reserves

The *National Parks Act No.07* of 1993 provides for the declaration of national parks and nature reserves for the protection of areas of; high biodiversity significance, unique ecosystem, or are historically significance. The Act empowers the Minister to declare national parks or reserves for areas having unique ecosystems, genetic resources or physical and biological formations, threatened species, areas of conservation, archeological or scientific value.

Geology, Mining and Water Resources.

The Department of Mines, Mineral and Water Resources works under two pieces of legislation, the *Mines and Minerals Act 1986* and the *Water Resources Management Act 2002*. The agency issues mining permits and licenses and conducts monitoring of mining activities to ensure operations are conducted in a sustainable manner. In practice the issuing of mining permits and licenses is subject to EIA reporting, control pollution and control of aggregate mining. The *Water Act* deals with protection of water resources including estuaries.

Fisheries Management and Development

The *Fisheries Act* No of 2005 and its regulations provide for the control, development and management of fisheries in Vanuatu. Part IV of the Act provides for the regulation of fisheries through licenses and measures on certain products. The current *Fisheries Act* does not provide adequate cover on coastal fisheries and aquaculture.

Forestry Development and Conservation

The *Forestry Act* No. 26 of 2001 provides for the protection, development and sustainable management of forest. Forestry policy relevant to coastal management is the Code of Logging Practice which stipulates a code of conduct to ensure sustainability by minimizing soil erosion.

Foreshore Development

The *Foreshore Development Act 1975* regulates the carrying out of works on the foreshore. Any development on the coast of any islands in Vanuatu must obtain consent from the Minister of Internal Affairs. Development activities such as reclamation, sea wall construction, dredging and housing construction require a permit from the Ministry of Internal Affairs. The Act is quite old and does not cover important areas in its provisions such as the consent of land-owner and EIA requirements. Also its definitions are too narrow, exclude development on beachfronts above high water mark, and overlaps with the *Decentralization Act* and *Municipalities Act*.

Land Laws

There are seven items of land legislation in Vanuatu and the *Land Lease Act* (CAP.163) has provisions regarding land use management. Standard lease agreement provides conditions for environmental protection such as to preserve water resources and soil erosion.

Waste Management and Public Health

The *Public Health Act* No. 22 of 1993 provides for general public health including pollution of water resources and the regulation of adequate sanitary systems. The Act is extended to include protection of the water supply, discharge of sewage, disposal of solid waste into watercourse, littering on the beach or foreshore and provisions relating to vessels and sanitation.

Marine zone and Fisheries

The *Maritime Zone Act* (Cap 138) 1981 provides for the delimitation of the maritime zones or the maritime boundaries of Vanuatu, which sets out the internal waters, territorial sea, archipelagic waters and the economic exclusive zone subject to the UNCLOS. The Act provides for licensing for mineral exploration in the marine environment, research, prospecting, drilling, construction of structures and artificial islands, and provisions to prevent marine pollution. The exclusive rights by jurisdictions over

the low water line are in conflict with customary ownership rights as stipulated by the Constitution. The Act lacks regulations in relation to dumping and other forms of pollution.

Maritime and Shipping and Ports

The *Maritime Zone Act* and the *Shipping Act* provide for the establishment of a shipping register for vessels of Vanuatu engaged in foreign trade and for matters connected therewith. The most important part of this legislation is the management of the Prevention of Marine Pollution by ships. Section 16 imposes an obligation on ship owners and masters to ensure that their vessels are in compliance with the requirements of various conventions that had been adopted under the auspices of the International Maritime Organization (IMO) and the International Labor Organization (ILO). These include the International Convention for the Prevention of Pollution of the Sea by Oil 1954 (as amended), the International Convention on Marine Pollution 1973, and the International Convention on Tanker Safety Pollution Prevention 1978. The *Ports Act* covers proper port administration and proper discharge of wastes and ballast water in the harbor and proper placement of facilities.

Customary land tenure and resources management

Customary land and marine tenure and resource ownership forms the basis for community based marine resources management, beliefs and practices in Vanuatu. Marine tenure ownership is the extension of adjacent land into the marine area and further out to an undetermined limit where ownership rights can extend to where the sea floor become invisible from the surface with the naked eye, to the nearest lagoon, reefs and islets. Communal ownership is practiced where clans have agreed to allow use of their reefs for the benefit of the whole village. The system of *tabu* on harvesting of resources stem from the CMT system is used to control access to reefs or taking of certain products. The *tabu* system is an active practice in the country but its strength in ensuring resource sustainability is being weakened by economic pressures, resources depletion, and improved fishing practices. The system provides the basis for strong cooperative management between government and communities.

3.8 Implementation of the NICMF

The next step in the NICMF process is to develop an Implementation Strategy which will in turn support the development of detailed implementation arrangements (an Implementation Plan). The Implementation Strategy follows on in this document and has been developed based on the information contained in the first part of this document and the consultation process undertaken by DoF during the development of the NICMF.

The Implementation Strategy will seek cooperative outcomes between Government Departments, Provincial Governments, communities and other stakeholders. Implementation will build on current and existing strategies and initiatives and new strategies and plans as they are required or developed. Where feasible, implementation will be achieved through existing resource allocations. Further funding implications associated with implementation of the NICMF will need to be identified and agreed between those organizations responsible for implementation.

NATIONAL INTEGRATED COASTAL MANAGEMENT FRAMEWORK IMPLEMENTATION STRATEGY

The Implementation Strategy for the National Integrated Coastal Management Framework (NICMF) for Vanuatu sets out the broad strategic priority areas, implementation objectives that are of national importance and the range of strategies/plans/etc (the tools) that are available. The Implementation Strategies also identifies where issues will benefit from a complementary, coordinated and integrated management approach using the range of tools (or responses) identified in the NICMF.

1. National Issues

The key pressures areas comprising the priority issues affecting sustainable management of the coastal zone have been assessed as;

- coastal development,
- coastal fisheries,
- tourism,
- land-based pollution and siltation,
- marine-based pollution, and
- climate change.

It is likely that these priority issues within these key pressure areas will change over time and in some cases will cease to be a high priority while other new and emerging issues are likely to be included in the NICMF. These new issues, and the status of currently recognized issues, will emerge over time and be identified either through the monitoring and evaluation process or through more immediate situations such as natural disasters, increasing use of natural resources or change of responsibilities.

2. National Roles and Responsibilities

Roles and responsibilities for ICM in Vanuatu have already been identified elsewhere in this document. In summary, the primary organizations with responsibilities for coastal management are;

- Meteorological Services
- Department of Fisheries
- Department of Environment
- Department of Forestry
- Department of Agriculture
- Non-government organization
- Department of Ports and Marine
- Department of Internal Affairs
- Department of Public Works
- Municipalities
- Department of Health
- Communities

3. Tools and Strategies Available for ICM

Different tools are used to implement ICM and the type and number of tools used depends on geographical locations, the issue(s) to be addressed, the available legislation, strategies and policies and the available resources. Some of these tools are already being used by different stakeholders. Table 2 shows the range of tools currently available to address ICM issues. When consideration is being given to how a particular issue, or issues, could be addressed then responsible organizations should consider any one, or combination, of these tools or approaches.

Table 2. Tools and Strategies

Area of Focus	Tool/Approach
1. Legislation	<p>a) Current legislative provisions with a range of Acts, Regulations and By-Laws (as described elsewhere in this document)</p> <p>b) Current national policies and strategies (as described elsewhere in this document)</p>
2. Natural Resource Management	<p>a) Precautionary Approach to Fisheries Management Precautionary approach, or often called the common sense approach, implies that management action must be taken even without the best scientific information. Data collection is costly and requires skilled man power, a good database and analytical tools to manage these data. Where such information is lacking, management action can go ahead using the precautionary principle.</p> <p>b) Ecosystem Approach to Fisheries Management (EAFM) EACFM is an improved approach to developing and managing coastal fisheries and aquaculture. It takes into account the broader effect of fishing activities on the environment and the effect of non-fishing activities on the marine ecosystem.</p> <p>c) Fisheries Management Plans A Fisheries Management plan is a specific plan for managing and developing a specific fishery and is coordinated by the DoF. Existing fishery management plans in Vanuatu include the Tuna Management Plan, Aquarium Trade Management Plan and the Aquaculture Management and Development Plan.</p> <p>d) Other NRM Strategies e.g</p> <ul style="list-style-type: none"> • Forestry-Buffer Zones • Nursery/forestry development • Ecosystem restoration • Resource monitoring e.g Reef Check, Turtle/coconut crab monitoring • Water Quality Monitoring Program (coastal, lagoon, river)

<p>3. Environmental Impact Assessment</p>	<p>a) Environmental Impact Assessments An EIA is an assessment of the state of the environment of a particular development site. EIA is conducted prior to approval of developments which are likely to cause detrimental impacts on the environment and is under the responsibility of the DoE.</p> <p>b) Environmental Management and Monitoring Plan EMMP is a more detailed plan on how a business is to manage specific activity. EMMP sets how a business will undertake its operation to manage pollution risks, and deals mainly with pollution of land and water and is also under the responsibility of the DoE.</p> <p>c) Preliminary Environmental Assessment An initial scoping assessment to identify issues and impacts.</p> <p>d) Strategic Environmental Assessment A high level assessment which also considers policy impacts.</p>
<p>4. Protected Areas</p>	<p>a) Conservation areas Conservation areas are for the protection of specific area on land and associated forest or the catchment area. The purpose of conservation areas is to protect forest biodiversity, soil and to preserve water catchment zones.</p> <p>b) Network for Locally Managed Marine Area or VBRMA Locally Managed Marine Areas (LMMA) are a network of communities who have agreed to work together to manage their marine areas through a joint committee where issues are shared. An example of a LMMA network is the Nguna-Pele MPA network on Efate.</p> <p>c) Marine Protected Area A marine protected area (MPA) is a specific coastal marine area declared by a community as a protected area. An MPA boundary is clearly identified by landmarks or by installed markers at sea. The purpose of an MPA is for the preservation of breeding stocks of living coastal marine resources.</p> <p>d) Marine Reserve A marine reserve is a marine area declared as a protected area by law for the purpose of preserving an area of significant importance to the country. Such areas may include areas of historical significance, an archeological site, a wreck, or an area containing threatened marine species.</p> <p>e) Recreational Marine Reserves These are marine areas set up by resorts and tour operators and communities responsible for recreational dive sites. While the use is recreational, it has conservation significance in that these areas are only allowed for diving and snorkeling while fishing is not permitted.</p>

National Coastal Management Framework for Vanuatu

<p>5. Community – Based Management including traditional and customary management approaches</p>	<p>a) Community-Based Management Community-based management relates to the management authority undertaken by a community or resources custodians based on customary practices of land and marine tenure system. Community-based management is an important community governance system in Vanuatu.</p> <p>b) Alternative livelihood (e.g eco-tourism) Alternative livelihood activities which are less destructive than the activity they displace/replace.</p> <p>c) Awareness – communities/schools Education and extension programs.</p>
<p>6. Codes of Practice/Environmental Best Practice</p>	<p>a) Code of Logging Practice The Code of Logging Practice (CoLP) is a set of rules and guidelines on the best practices of carrying out logging activities in Vanuatu. The purpose of the CoLP is to control logging activities and to protect water resources. The CoLP is enforced by the Department of Forestry under the National Forest Policy.</p> <p>b) Other Codes of Practice developed as required</p> <p>c) Best Environmental Practice Best practice approaches are based on national, regional and international practices which demonstrate better outcomes e.g Agricultural best practice</p>

National Coastal Management Framework for Vanuatu

<p>7. Current/Proposed/Suggested Planning Processes</p>	<p>a) Other plans as required e.g</p> <ul style="list-style-type: none"> • Land Use Planning • Disaster Management Plans • Waste Management Plans • Sand Mining and Rehabilitation Plans • Physical land use planning and zoning (Land Use Plan, Physical Plan) • Eco Tourism Plan • IWRM Plan • Survey plan – lease • Restoration and Rehabilitation Plan • Water Safety Plan • Sewage Treatment Plan • Forest Development Plan • Water Catchment Plan • Livestock Management Plan • Oil Spill Response Plan • Watershed Management Plan • Emergency/Salvage Response Plan • National Tourism Accreditation Scheme • Coastal Infrastructure Development Plans
<p>8. Other Tools</p>	<ul style="list-style-type: none"> • Climate Change vulnerability assessments • Information dissemination e.g VBRMA • National networks • Local Governance System

4. National Implementation Strategy for ICM

Table 3 outlines the range of national priority ICM issues and the suggested tools to be used to address those issues. The recommendations are a guide only and each priority issue area will need to be analyzed and assessed in detail to determine the most appropriate approach and response. In some cases implementation will be best achieved through the development of specific ICM plans for particular areas. Details for developing ICM plans are contained in Section 5 below.

Table 3. Tools available to Address Issues

Key Pressure Area	Response/Tool Options							
	1.Legislation	2. Natural Resource Management	3.Environmental Impact Assessment	4.Protected Areas	5.Community Based Management	6.Codes of Practice/Environmental Best Practice	7.Planning	8. Other Tools
Coastal Development	X	X	X	X		X	X	X
Coastal Fisheries	X	X	X	X	X	X	X	X
Tourism	X		X	X		X	X	
Land Based Sources of Pollution	X	X	X			X	X	X
Marine Based Sources of Pollution	X	X	X			X	X	X
Climate Change	X	X	X	X	X	X	X	X

5. DEVELOPING AREA ICM PLANS

The NICMF provides for the development of specific ICM Plans for an area or island of interest. The area or island ICM plan brings together the interest, issues and activities, responsibilities of all the stakeholders and tools available for implementing actions. Under each tool are the undertakings of each stakeholder within that area covered by the ICM plan. This way, the interest, activity and responsibility of each stakeholder is visible by everyone to enable better monitoring. Activities and undertakings are highlighted in the various plans (tools) developed by each sector. For instance other agencies are able to see what DoF is doing, how it is doing it and why they are doing it and what is expected to be achieved. Likewise the DoF can better understand what other stakeholders are doing.

The flow chart organizational structure for developing ICM plan for an area is provided in Figure 1.

One example of this approach is the ‘Romata Domain Management Plan’ which covers an area of land and sea between Lelepa Island, Hat Island and Manglilu Village and the surrounding land and sea area.

These plans bring together the various ‘tools’, strategies and organizational responsibilities to provide coordinated and integrated management of a specified area, such as the Romata plan.

The structure for implementation of ICM plans is shown in Figure 2.

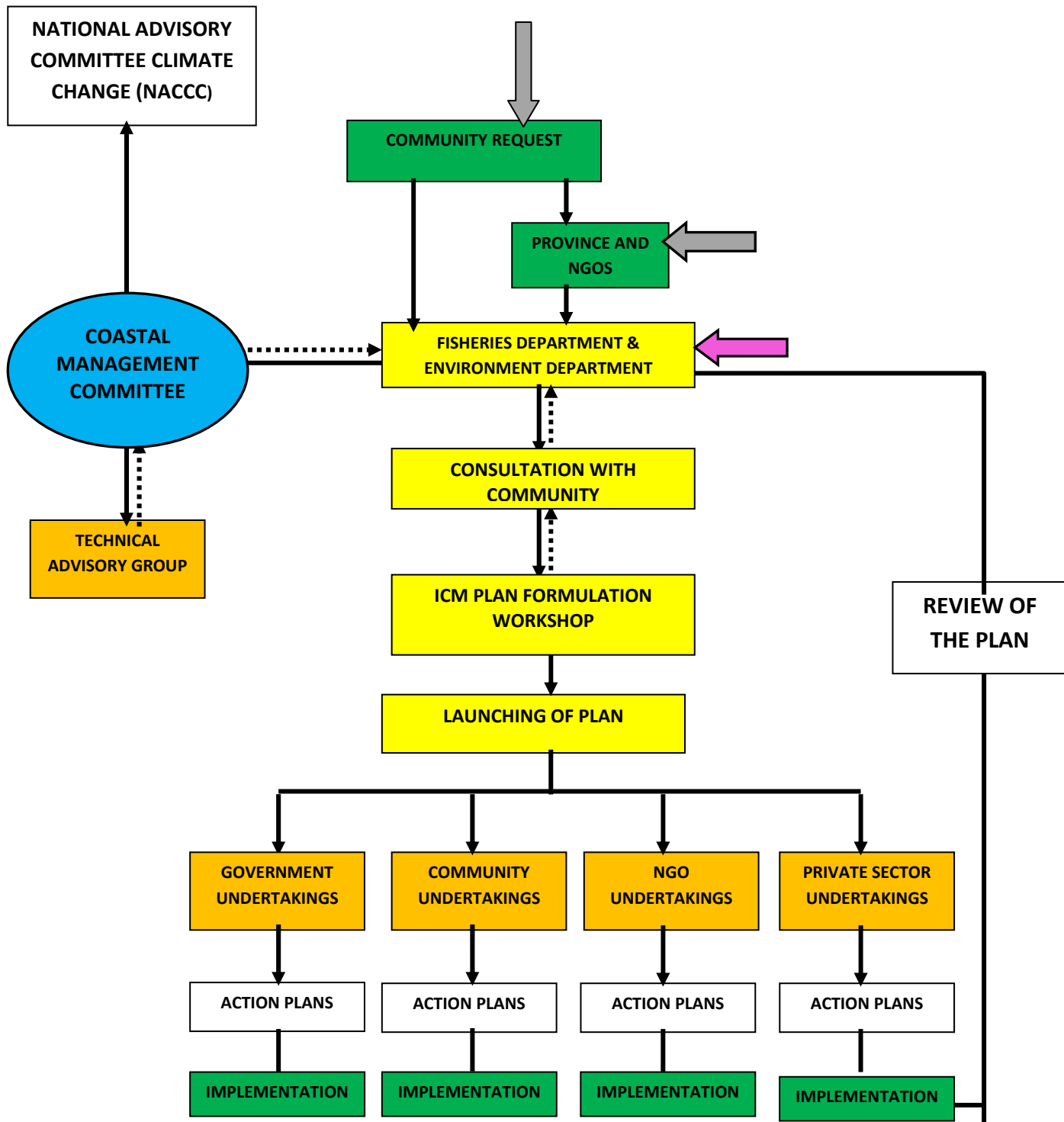


Figure 1. Flowchart organization structure and process for developing an ICM management plan for an area.

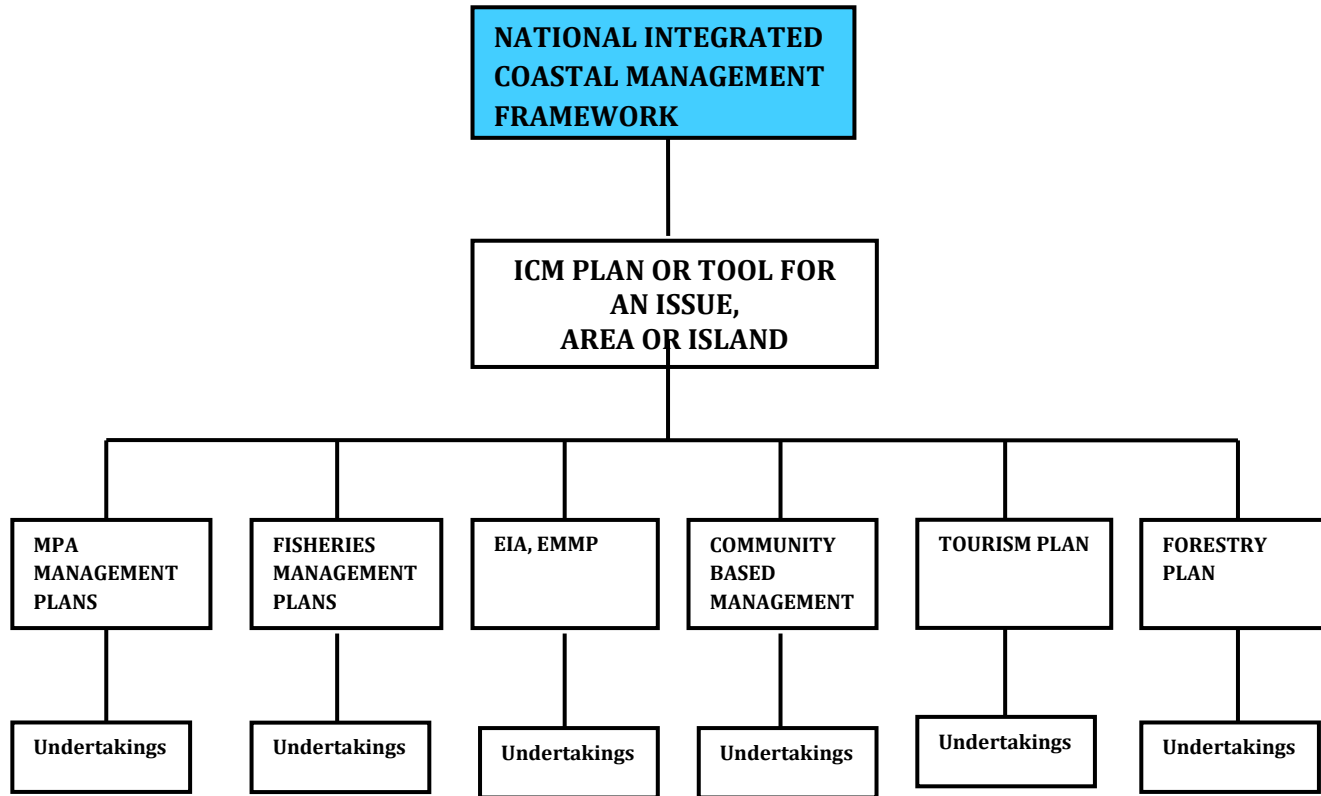


Figure 2. Structure for implementing ICM Plans in Vanuatu

These plans are proposed to be reviewed on a regular basis by the lead agencies' with advice from the ICM committee.

6. Integrating the NICMF

A major challenge for all stakeholders will be to integrate the NICMF with a) the business of relevant agencies and organizations and b) other initiatives e.g CTI NPA, NAPA, etc.

During consultation and discussions, stakeholders identified that integration of the NICMF into the business of participating organizations could be achieved through;

- stakeholder involvement;
- a coordinated approach;
- workshop outcomes being endorsed by NACCC – this would lead to adoption by Government Departments;
- the Land Sector Framework implementation;
- integration of the NICMF into all levels of planning; and
- increased awareness of the NICMF in all levels of Government and the community.

A significant issue raised during consultations was that the development consent process will impact on application of the NICMF because land is being sold by traditional owners to developers, and decisions made on the development, before necessary government approvals are sought. It was suggested that this issue needed to be resolved to ensure that application of the NICMF was successful.

7. Capacity Building

Capacity building of organizations and stakeholders is essential to achieve long term effective coastal management and protection of resources. Improved and informed decision-making in the coastal zone must be underpinned by the necessary skills, tools technical knowledge and science. All participants in management of Vanuatu's coastal zone need to be well equipped to meet their responsibilities through;

- capacity building initiatives that support informed decision-making;
- effective allocation of resources;
- adequate investment in research and information sharing to support decision-making and management; and
- provision of support to, and recognition of, the contribution of traditional and community based actions.

Information Management and Sharing

Effective management of the coastal zone requires managers to have access to social, cultural, economic, ecological, biophysical and geophysical information. Currently, coastal information data are limited, in particular the status of many coastal species and habitats. The Vanuatu Resource Information System in the Department of Lands (VANRIS) needs to be strengthened to become the main centre for holding information. This should be supported with analytical tools and software for interpreting information for policy development and decision making. Other natural resource data management agencies such as DoE, DoF, Geology and Mines, and Forestry also need to be strengthened.

Training and Education

Education and training is a major focus of the government. All types of training are needed to equip coastal managers with the best knowledge, skills and motivation to conduct their activities in an ecologically sustainable manner. Skilled human resources are needed to perform the duties required to

deliver an effective ecosystem approach to coastal management. Coastal management and climate change education needs to be development in the school curriculum.

Research

There are no local marine research institutions and the country has developed some good partnerships with international research agencies and regional institutions for undertaking research in the coastal zone. Often research by outside researchers is not in-line with the needs of national programs but rather the needs of the researchers themselves, or their agencies. Marine ecosystem research needs to be coordinated to ensure priority coastal management needs are met. Partnerships between stakeholders are essential to facilitate sharing of information and data to improve understanding of coastal condition.

Table 4 details roles and responsibilities for various government departments for actions prescribed against various capacity building activities.

Table 4. Actions and responsibilities for capacity building.

Capacity Building		
Impact	Action	Responsibility
Information	<ul style="list-style-type: none"> • Promote cooperation between agencies and research institutions for provision of data and information. • Strengthen VANRIS • Assess coastal information needs, gaps and priorities to direct future data collection and researches. 	DoE, DoF, Department of Lands
Training and education	<ul style="list-style-type: none"> • Undertake skills audit and identify coastal management training needs • Identify priority coastal management education and training needs for action. • Consult with local communities to identify needs and how to deliver their needs 	Meteorological Services, DoE, DoF
Research	<ul style="list-style-type: none"> • Research assistance by foreign partners needs to be tied to national programs such as the NAPA. • Research activities need to be conducted in a collaborative manner by local agencies. 	DoF, DoE, Forestry

8. Monitoring and Evaluation

Annual monitoring and evaluation of performance against the NICMF objectives (shown in Table 5 below) as part of annual program development will be conducted to evaluate progress and identify areas of improvement. The national annual evaluation report will be based on monitoring and evaluation against the objectives and also reports and progress reports of any Area ICM Action Plans. Technical reports from different stakeholders will be encouraged and used as part of the evaluation.

A more detailed review and evaluation of the NICMF should also be undertaken after 5 years to determine whether the approach is achieving its strategic objectives and whether structural changes need to be made to the NICMF approach.

National Coastal Management Framework for Vanuatu

Publicity should always be a priority for reporting on performance of the NICMF. To reach greater audiences, the three official languages (Bislama, English and French) shall be used in writing any monitoring and evaluation report. Bislama is necessary for reporting back to communities while English and French are required for reporting to Government Departments, local organizations and to regional/international bodies.

Table 5. Evaluating NICMF Performance

Goal	Objectives	Performance Criteria
<p>The goal of the NICMF is to give substance to the national vision for sustainable coastal ecosystem management by prescribing institutional arrangements needed for management of the coastal ecosystem, and identifying relevant stakeholders, that will support the process for implementing management and development activities.</p>	<ol style="list-style-type: none"> 1. Maintain the functional integrity and health of coastal ecosystems and environments through maintenance of ecological balance, protection of biodiversity, preservation of resources and sustainable fisheries and livelihood of communities; 2. Harmonise coastal management processes provided for by relevant legislation, strategies, policies and plans; 3. Enhance and strengthen collaboration of all actors including government agencies, NGOs and communities in the management process; 4. Ensure coastal ecosystem considerations are efficiently and adequately taken into consideration during all stages of development to minimize detrimental impacts on the coastal environment and achieve sustainability; 5. Facilitate the progress of sustainable multi-sectoral development; 6. Reduce resource use conflicts; 7. Maintain aesthetic appeal of the coastal environment for the enjoyment of the population and for tourism development; 8. Preserve customary, cultural and traditional values; and 9. Facilitate climate change adaptation activities. 	<ol style="list-style-type: none"> a) Resource monitoring shows no reduction in environmental quality below baseline levels. a) Coordination mechanisms established and functioning. a) Capacity building and training activities undertaken in accordance with the Implementation Plan. a) Development and EIA processes have CZM considerations incorporated a) Clearly defined processes and procedures are developed and implemented. a) No net loss of amenity b) Development adds value to coastal aesthetics a) Customary, cultural and traditional values maintained a) Climate change considerations incorporated into all relevant programs and projects

9. NEXT STEPS

The next steps are to develop an Implementation Plan which will provide national outcomes within nominated timeframes, based on the Framework and this Implementation Strategy.

Funding of actions under the Implementation Plan will be a high priority. Funding is a major issue to consider when developing any plans and policies. ICM is a continuous process of change and improvements. There is no project to rely on for a comprehensive implementation of ICM in Vanuatu, however there are projects available for addressing specific areas within different jurisdictions. For example there are a range of projects being implemented by the Forestry and Fisheries Departments. Each agency is responsible for implementing their own projects at different times in line with various Departmental objectives. The NICMF provide a framework for these various projects to cooperate, integrate where possible and share useful information and experiences provided that projects are working together in the same area. By doing this a national ICM approach can be achieved.

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