DEPARTMENT OF ENVIRONMENT FIJI

2014

Rerevaka na Kalou ka doka na Tui

Fiji's Fifth National Report to the United Nations Convention on Biological Diversity

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ACRONYMS

ADB	**Asian Development Bank**
BAF	**Biosecurity Authority of Fiji**
BI	**Birdlife International**
BOD	**Biological Oxygen Demand**
BSC	**Biodiversity Steering Committee**
CBD	**Convention on Biodiversity**
CI	**Conservation International**
CITES	**Convention on International Trade of Endangered Species**
DoE	**Department of Environment**
DP	**Development Plan**
EEZ	**Exclusive Economic Zone**
EIA	**Environmental Impact Assessment**
EMA	**Environment Management Act**
ESCAP	**Economic and Social Commission for Asia and the Pacific**
FNBSAP	**Fiji National Biodiversity Strategy and Action Plan**
FLMMA	**Fiji Locally Managed Marine Area Network**
GEF SGP	**Global Environmental Facility's Small Grants Programme**
IAS	**Institute of Applied Science, University of the South Pacific**
ICM	**Integrated Coastal Management**
ICMC	**Integrated Coastal Management Committee**
IUCN	**International Union Conservation of Nature**
MAFF	**Ministry of Agriculture, Fisheries and Forest**
MESCAL	**Mangrove EcoSystem for Climate Change and Livelihood**

NBSAP	**National Biodiversity Strategy and Action Plan**
NEC	**National Environment Council**
NGO	**Non-government Organization**
NFMV	**NatureFiji-MareqetiViti**
NRI	**National Resource Inventory**
NTF	**National Trust of Fiji**
TLTB	**iTaukei Land Trust Board**
PAC	**Protected Area Committee**
SoE	**State of Environment**
SPACHEE	**South Pacific Action Committee on Human Ecology and the Environment**
SPC	**Secretariat of the Pacific Community**
SOPAC	**Secretariat of the Pacific Community Applied Geoscience and Technology Division**
SPREP	**South Pacific Regional Environment Programme**
UNDP	**United Nations Development Programme**
USP	**University of the South Pacific**
UNEP	**United Nations Environment Programme**
WAF	**Water Authority of Fiji**
WCS	**Wildlife Conservation Society**
WWF	**World Wildlife Fund**

Executive summary

This report has been prepared by the Republic of the Fiji Islands for the Convention on Biological Diversity (CBD) as required by Article 6 of the Convention.

This fifth national report covers the period from 2010-2013 and aims to:

- Analyze the status, trends and threats and implications for human well-being.
- Outline the national biodiversity strategy and action plan (NBSAP), its implementation, and the mainstreaming of biodiversity.
- Assess the progress towards the 2015 and 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals.

Included and attached to the reports are appendix documents which are relevant to the report.

PART I:

Fiji consists of a fragile island ecosystem where biodiversity resources and ecosystem functions play important roles towards sustaining life and economic well-being of the country. Biodiversity has given a huge contribution towards food, agriculture, various life forms, tourism, recreational sports and social activities, shelter and other needs for people in general.

The lush green forests, the clear pristine waters and a beautiful underwater world in Marine flora and fauna within Fiji has its own share of conservation and management problems and given the nature of Fiji's interaction with human influences the importance of conservation of biological resources for sustainability is an increasing challenge.

Threats from overfishing, improper land use in agriculture, forest removal for growing needs and improper practices, mangrove cutting and lack of planning in developments contributes significantly towards Fiji's environmental problems. Fiji's biodiversity is constantly under pressure from all sectors. The main driver of threats to Fiji's biodiversity is economic development and is mostly human induced. Threats include over-fishing and exploitation, pollution through agricultural and industrial wastes, urbanization, agricultural development and species introduction. Several species of fish, shellfish and crustaceans have notably been introduced into Fiji, mostly for aquaculture, as ornamentals, for sports fishing or biological controls. Finally, unplanned and uncoordinated tourism activities can become a major threat to Fiji's biodiversity. In particular, habitat destruction in the coastal areas for tourism development is a major threat to Fiji's biodiversity in the mangrove, estuaries, reef and foreshore ecosystems.

However while the problems do persist, there are commendable successes in managing Protect Areas in Fiji, projects that highlight the effectiveness of eco system based management, initiatives that involves

community based management practices and locally managed marine areas in Fiji. There are special committees and working groups that have worked over the years to reduce many problems that had previously been very difficult to handle such as coastal developments and community involvement, invasive species, forest fires and improper land use etc.

The NBSAP had played a significant role in Fiji to bring stakeholders closer and plan for a more effective, collaborative approach that ensure sustainability of natural resources. In doing so, NGO's have contributed largely by providing the much need technical expertise and resources towards programs and activities of National property and significance.

Part II: Elaborates on the national biodiversity strategy and action plan (NBSAP), its implementation, and the mainstreaming of biodiversity. Biodiversity Environment is divided into 7 thematic areas where each thematic area has its own set of strategies and targets

1. Forest conversion Management
2. Invasive Alien Species
3. Inshore Fisheries
4. Coastal Development
5. Species Conservation and: threatened and endangered species
6. Protected Areas
7. Inland Waters

All the targets set are within the 4 year period. Fiji's Biodiversity targets have been aligned with that of the 2020 Aichi Biodiversity Targets to assess the achievement and progress of implementation. Each thematic area discusses the number of areas that have been protected and managed and threats imposed on biodiversity

PART III: Tabulates the Progress towards the 2015 and 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals, showing all the relevant document that has been compiled, all the research in place, policy formulation and implementation, and the relevant authorities responsible for the tasks labeled which reveals the evidence of the progress towards achieving the Aichi Target

PART I: AN UPDATE ON BIODIVERSITY STATUS, TRENDS, AND THREATS AND IMPLICATIONS FOR HUMAN WELL-BEING

THE IMPORTANCE OF BIODIVERSITY TO FIJI

Fiji has a diverse variety of natural resources. The direct and indirect influences of its geographical location in a tropical climate are apparent in Fiji's physical, biotic and human ecosystems. Situated on coordinates 18 00 S, 175 00 E (Shardul, et al., 2003) with a total land area of 18,270 sq.km, it is an archipelago of 332 islands of which the two larger ones are Viti Levu and Vanua Levu. Fiji has mountainous rugged reliefs thus agriculture has been restricted in some islands and the economy has largely depended on resources from forests and surrounding water bodies besides tourism, sugarcane farming and others. However the uplands slope runs down steeply to the surrounding flatlands that are used for agriculture and other activities (Shardul, et al., 2003).

As an archipelagic nation which contains more than 300 islands that is scattered over boundaries within 1.3 million km^2 within the South Pacific region, the island has a unique Island ecosystem complimented by mountainous terrain that however limits arable land and puts a pressure on coastal environment for development. According to the National Environment Strategy of 1993, the larger islands have about 19% of land area for extensive agriculture, with further 10.5 % capable of being productive with only minor improvements. Furthermore, 70% of the land requires intensive management or is unsuitable for use.

Fiji's endemic fauna and flora are almost exclusively terrestrial forest species. The vascular flora of Fiji is regarded as an extension of Indo-malesian floristic province with about 90% of all seed plant genera found in Fiji being present in New Guinea (Balgooy, 1971; Ash 1992). However, affinities do exist with Australia, Hawaii, New Caledonia, New Zealand and French Polynesia (Fuller, 1997).

According to the National Biodiversity Strategy and Action Plan of Fiji, much of Fiji's biodiversity is unique to Fiji, species found nowhere else in the world. The uniqueness of Fiji's natural assets distinguishes her from all other countries – it is a living treasure forming a natural heritage that we can be proud of. However this places a heavy responsibility on the conservation organizations within Fiji for their continued contributions to maintaining the unique biodiversity found nowhere else in the world.

The natural resources encompass freshwater, marine, land, agriculture and both energy and mineral resources which are scarce and unique in variety and quality in the Fiji islands. Sustainable use of these resources is essential for the growth of the Fiji's economy. Freshwater and marine habitats are part of a highly integrated marine ecosystem that supports the biodiversity of marine and freshwater flora and fauna. Indeed, the Fiji islands have a unique physical geography and terrestrial flora and fauna.

The biological resources or biodiversity derived from our natural resources are unique, comprising of plants, animals and microbes which are vital to humanity's economic and social development. These resources of the earth are vital and as a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today.

Figure 1.1: Map of Fiji Island **Source**: www.cireport.ca

Biodiversity supports many life forms, food availability, water and other resources besides contributing to the national economy.

IMPORTANCE OF BIODIVERSITY TO FIJI

Biodiversity is important for the survival of all species. Biodiversity is the source of vast amounts of ecosystem goods, food and genetic resources. Biodiversity simply means the diversity of species in an area. A variety of habitat is needed for different species because each species adapts to a certain set of environmental conditions.

All species are dependent upon each other for survival, if one species become extinct the other species that relies upon I may also be likely to become extinct. All levels of biodiversity makeup the ecosystem and if one level is removed the whole ecosystem will suffer.

Contributions of biodiversity and related ecosystem services to human well-being and socio-economic development

Ecosystem and biodiversity are the life support system for human well-being. Human have the need for food, water, clean air, shelter and favorable climatic conditions, change in the ecosystem and biodiversity may lead to adverse effects on the livelihoods, migration and occasional political conflict

Biodiversity contributes to many aspects of human well-being, for instance by providing raw materials and contributing to health.

Biodiversity and the many ecosystem services that it provides are a key factor determining human well-being. Biodiversity loss has-direct and indirect negative effects on several factors:

Food security: The availability of biodiversity is often a "safety net" that increases food security and the adaptability of some local communities to external economic and ecological disturbances. Farming practices that maintain and make use of agricultural biodiversity can also improve food security.

Vulnerability: Many communities have experienced more natural disasters over the past several decades. For example, because of the loss of mangroves and coral reefs, which are excellent natural buffers against floods and storms, coastal communities have increasingly suffered from severe floods.

Health: A balanced diet depends on the availability of a wide variety of foods, which in turn depends on the conservation of biodiversity. Moreover, greater wildlife diversity may decrease the spread of many wildlife pathogens to humans.

Energy security: Wood fuel provides more than half the energy used in developing countries. Shortage of wood fuel occurs in areas with high population density without access to alternative and affordable energy sources. In such areas, people are vulnerable to illness and malnutrition because of the lack of resources to heat homes, cook food, and boil water

Clean water: The continued loss of forests and the destruction of watersheds reduce the quality and availability of water supplied to household use and agriculture. In the case of New York City, protecting the ecosystem to ensure continued provision of clean drinking water was far more cost-effective than building and operating a water filtration plant.

Social relations: Many cultures attach spiritual, aesthetic, recreational, and religious values to ecosystems or their components. The loss or damage to these components can harm social relations, both by reducing the bonding value of shared experience as well as by causing resentment toward groups that profit from their damage.

Social Consequences of Biodiversity Degradation

Freedom of choice: Loss of biodiversity, which is sometimes irreversible, often means a loss of choices. The notion of having choices available irrespective of whether any of them will be actually picked is an essential constituent of the freedom aspect of well-being.

Basic materials: Biodiversity provides various goods - such as plants and animals - that individuals need in order to earn an income and secure sustainable livelihoods. In addition to agriculture, biodiversity contributes to a range of other sectors, including "ecotourism", pharmaceuticals, cosmetics, and fisheries. Losses of biodiversity, such as the collapse of the Newfoundland cod fishery can impose substantial costs at local and national level.

1. SOURCE OF FOOD AND PROTECTION

Mangroves are vital habitats Altogether there are about 65 recognized species of mangrove plants belonging to 20 families. Three types of mangroves are found in Fiji: white mangroves, red mangroves (*tiri*) and black mangroves (*dogo*). Over the centuries this hardy species has adapted to harsh conditions that no other plant can tolerate. Unique adaptive features of mangroves include the ability to survive in oxygen deficient soils with high salt concentrations. Special root systems permit them to stand their ground in the presence of huge and ferocious wave action.

Alongside the coasts of Fiji are roads, communities and commercially important industries. Most of these areas are lined with mangroves and are direct recipients of the vital services that these forests provide such as preventing coastal erosion, protecting infrastructure from being damaged from swells and strong winds and forming a buffer zone to absorb flood waters. Mangroves are estimated to reduce wave energy by 75%. Roots not only act as natural sieves preventing rubbish from being washed out to sea but also are found to absorb pollution, including heavy metals. Without mangroves whose roots effectively trap soil and sediments from being washed to sea, some of our coral reefs would be destined for certain demise.

Other vital services include providing commercially important reef fisheries with a habitat at the earliest stages of their life cycles. Numerous medicines are also derived from mangroves and useful for skin disorders, sores, headaches, rheumatism, snake bites, boils, ulcers, diarrhoea, and hemorrhages. In addition mangroves are important sources of firewood and building material.

RIVERS & STREAMS:

Unpolluted rivers and streams have traditionally been an essential component of traditional rural lifestyles. Apart from wild pigs, rivers and streams have in the past provided the bulk of essential dietary protein for the vast majority of inland Fijians in the form of fish, prawns and eels. The loss of these is a major detriment to rural lifestyles.

Similarly a constant supply of clean water has been an expectation of rural living and one of the important determinants in the location of villages. Rivers and streams have always provided drinking water, but have also been important for washing and bathing, as well as for livestock needs.

2. SOURCE FOR INCOME GENERATION AND SELF-EMPLOYMENT

i) MPA

Fiji's abundance of forest, marine and mineral resources has allowed it to become one of the most developed economies among Pacific island nations. However, Fiji's rural communities remain heavily reliant on traditional, subsistence livelihoods, drawing on marine resources to meet daily protein needs and provide cash income. Traditional marine management areas called *qoliqoli* (traditional fishing grounds under the control of the communities adjacent to them) have been implemented for hundreds of years in Fiji. Decisions about the management of these areas are taken by tribal chiefs, through village councils

which often work together at the district level to coordinate planning. This customary resource management system is typical of many Pacific islands in which communities have long imposed traditional management methods such as seasonal bans and temporary no-take areas.

In recent years, however, the livelihoods of Fiji's rural fishing communities have increasingly come under threat by human pressures from overfishing, the advent of a cash-based economy, insufficient implementation of regulations, and the adoption of unsuccessful approaches to resources management, resulting in decreasing availability of marine resources.

Due to such circumstances FLMMA was established to manage the marine areas which have decreased in productivity thus this program ensured that marine resource was properly managed and the yield in harvest increased.

There are 385 marine and 25 freshwater *qoliqoli* and in 2005 FLMMA included60 sites involving 125 communities which is 20% of Fiji's inshore fisheries. In 2009 the FLMMA sites had grown to 250

The FLMMA Network has also undertaken extensive socioeconomic monitoring using such techniques as household surveys and catch-per-unit-effort (CPUE) data, with resultant data demonstrating the correlation between biodiversity conservation and poverty alleviation. Booklets have been issued to communities for recording CPUE data, which quantifies the time taken, the distance covered, the number of people involved, and the equipment used, to catch a given amount of fish. Specific socioeconomic benefits of the initiative include increased household income, improved livelihood options, diversified income sources, improved diets, greater gender equality, and substantially strengthened local management capacity.

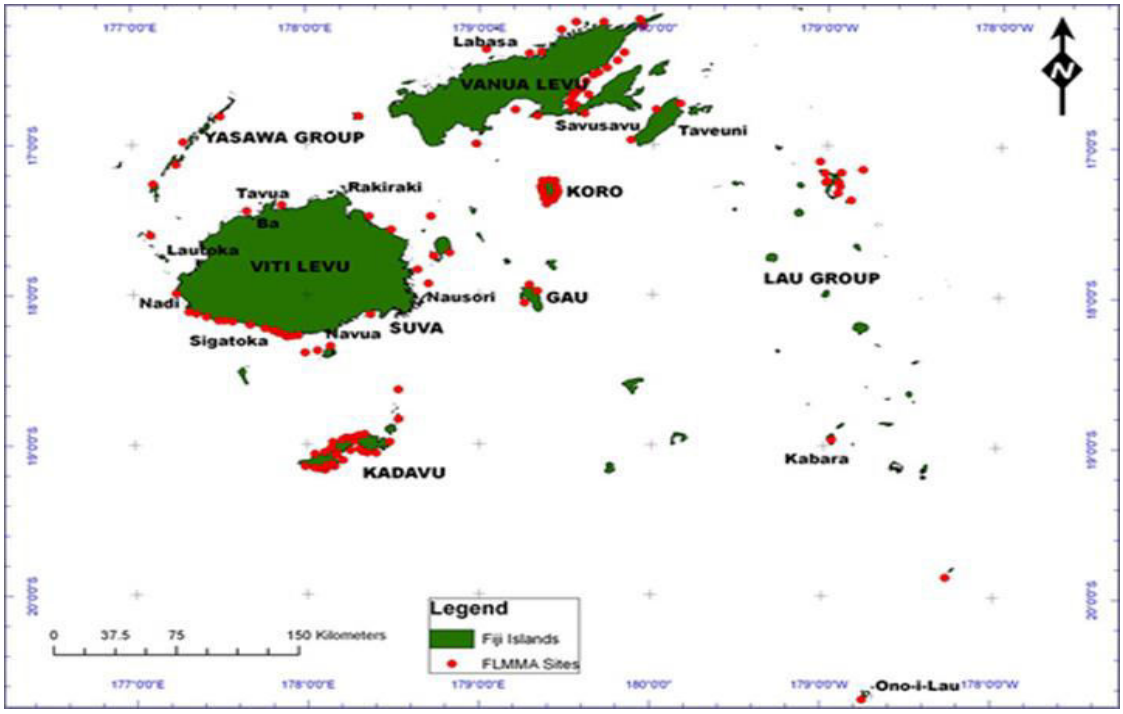


Figure 1.2: FLMMA Sites **Source**: The LMMA Network

In terms of protected areas, the country already counts over 100 Locally Managed Marine Protected Areas (LMMAs). Fiji has identified its Key Biodiversity Areas (KBAs) and Important Bird Areas (IBAs), nationally significant wetland sites, fish aggregation and spawning sites. Ecosystem-based management is more and more used, notably in the Kubulau reserve, and quota systems have been introduced for marine and terrestrial export commodities, as prescribed by CITES and the Endangered and Protected Species Act (2002). Moreover, thriving programs have been set that range from terrestrial ecosystems to marine ecosystems and for which positive outcomes have already been identified by communities. In particular, strict Environment Management and Monitoring Plans have been developed in relation to logging, quarry and sewage treatment plans, mangroves have been replanted in most Pacific Island Countries and the National Turtle Recovery Plan expects sea turtle populations in Fiji to have measurably recovered to levels allowing for sustainable harvesting and traditional use by 2026. Regarding the participation of indigenous populations in biodiversity protection, members of the community at the village level are directly involved in planning and decision-making, collecting data as well as protection of their resources in the Navakavu Clan. The Ministry of Education, through the Culture and Heritage Department, is conducting a survey and mapping of traditional knowledge. Cooperation with individual famers was also carried out to combat pests that are harmful to Fiji. In terms of environmental education, several programs have been carried out in schools, notably by the Mamanuca Environment Society (MES), in order to raise the children's awareness of their environment. These initiatives have had positive results: there is an increased awareness in adults and children about conserving resources. Finally, enforcement of the Environment Management Act 2005 saw operation compliance, issuing of notification to all commercial buildings and industries on the need to acquire a permit to generate waste.

ii) Community-based Conservation of Forest Biodiversity in Fiji

Biausevu, a small village located in the Korolevuwai district, houses approximately 200 hundred residents. Currently the village runs a 2km walking tour from the village to the Savanamateya Waterfall, along a bush track through the native forest.

Global Environmental Facility's Small Grants Programme (GEF SGP), implemented by the United Nations Development programme (UNDP) supported a project on community-based conservation of forest biodiversity through ecotourism support in Biausevu.

The project's primary purpose was to improve the environmental management of the Biausevu Waterfall Tour and develop more environmentally friendly and sustainable ecotourism activities. In particular, the project helped the community identify the effects of logging on waterfall and creek water quality, as well as raise their awareness on the different plant and tree species along the waterfall track and the vegetated area surrounding the village and consequently developing a strategy to manage and minimize future damage. Additionally, the project involved upgrading the quality standards and reception facilities of the tour to deliver a more professional tour, increasing tour sales and revenues, while ensuring the conservation of the biodiversity in the area.

3.0 SOCIO ECONOMIC IMPACT

The project contributed to generate more sustainable livelihoods and allowed the community to take ownership of the project which increased the community's ability to manage the ecotourism activities. In the past only village chiefs were involved with managing the ecotourism activities, thus leading to numerous

conflicts. To help solve this issue, the BTW adopted a strategic plan to manage conflicts on financial management and community ownership by openly communicating the projects initiatives and goals relating to good forest management, and sustainable practices. In addition, since the forest tour and walk involves the engagement of several landowning clans, there is a set of guidelines, part of the strategic plan, that have helped to minimize conflicts and lead to better governance and quality of life.

Other socio-economic impacts include providing alternative economic opportunities, employment opportunities, facilitating positive interaction between visitors and villages, and increasing interpretation skills. The Forest Walk is generating income from tourists who pay an entrance fee and providing opportunities for women in the community that are now able to sell their local handicrafts and cook meals for a small fee.

The project has generated over 100 jobs including forest tour guides, waterfall attendants, nursery attendants, story-tellers, meals coordinators, tour coordinators and handicraft sellers.

iii) TIMBER EXPORT

Pines woodchips are the main low value processed commodity and have dominated Fiji's exports of wood products since the early 1990s. Woodchip exports represent over 50 percent of the total value of forest product exports annually; for example, 56 percent (US$32.2 million) in 1995, 58 percent (US$24.4 million) in 2000 and 54 percent (US$20.3 million) in 2006. Pine woodchips are exported to Japan for the pulp and paper industry. Wood chip production and export will increase from 2008. Wood chip production should increase to 400,000 m3 in 2010 and 650,000 m3 in 2020 from the pine log harvesting nationwide. Beyond 2020 wood chip production for export could increase to over 700,000 m3.

TABLE 1.1: INDUSTRIAL ROUND WOOD PRODUCTION (M3)

	Actual 2000	**Actual 2005**	**Estimated 2010**	**Estimated 2020**
Natural forests	106,672	104,484	105,000	105,000
Softwood plantations	347,947	321,681	600,000	850,000
Hardwood plantations	nil	17,406	90,000	150,000
Total	**454,619**	**443,571**	**775,000**	**1,105,000**

Source*:* FIJI FORESTRY OUTLOOK STUDY

iv) Forests

The tropical forests of the Fiji Islands contain the richest natural communities in Oceania. Over 99% of Fiji's endemic biodiversity is found in the forest. These forests are critical for the conservation of Fiji's unique

biodiversity, and provide valuable ecosystem services such as soil conservation, water purification and carbon storage. 90% of the forest belong to the clans and for them forests provide their main source of livelihood.

Fiji's forests have already been lost through clearance for agriculture, unsustainable logging and fire, and, as a result, many of Fiji's endemic species are threatened, local people's livelihoods and cultural links with their land are being degraded, and valuable eco-system services are being lost. Therefore, the future of both the people and biodiversity of Fiji depends upon local communities being empowered to effectively manage their remaining precious woodlands in a sustainable way.

Realizing Fiji's Dream: Working towards Sustainable Forest Management for People, for Nature, Forever

This project is looking forward for long term conservation and the survival of large tracts of native forests throughout Fiji. These unique and threatened woodlands will provide a long-term income base to the Fijian people who will be empowered to protect and sustainably manage them for the benefit of themselves, their children, and Fiji's endemic and beautiful biodiversity.

THE STATUS, TRENDS AND THREATS TO BIODIVERSITY IN FIJI

IUCN classified protected sites only make up 2.7% of Fiji's land mass. However, proposed Key biodiversity Areas, Important Bird Areas, and Priority Forest Areas make up a further 15% if accepted under protected area status. Management plans are planned or underway for key sites.

A significant number of environmental invasive species exist on many Fijian islands. The spread to other areas in Fiji appears to be happening rapidly in some places. However, Fiji Biosecurity has had success in keeping new pests out of Fiji and efforts in eradicating invasives on some small islands have been successful.

Invasive species are introduced plants, animals and other organisms that can cause harm to the environment or human livelihoods. They are mostly spread through human activity, deliberately or unintentionally. Many of these organisms are present in Pacific Island Countries and Territories.

This indicator is limited to "environmental" invasive species that have a direct impact on habitats and species and indirectly impact humans through loss of food, disruption of trade, forestry, tourism and damage to crops and the built environment. It does not include the multitude of diseases and viruses that directly affect agriculture, although many of these may have indirect impacts on crops. The indicator assessment is based on three criteria, 1) the volume and spread of established invasive species within Fiji, 2) the introduction of new invasive species to Fiji in the past 10 years and 3) the level of infrastructure in place to control invasive compared to other Pacific countries.

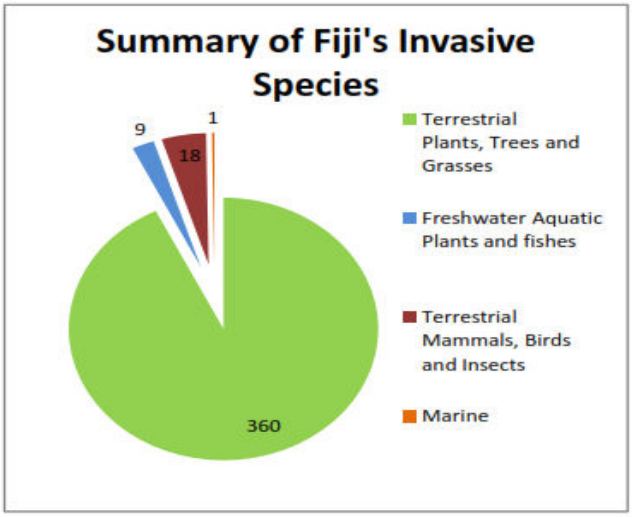


Figure 1.3: showing summary of Fiji's Invasive Species

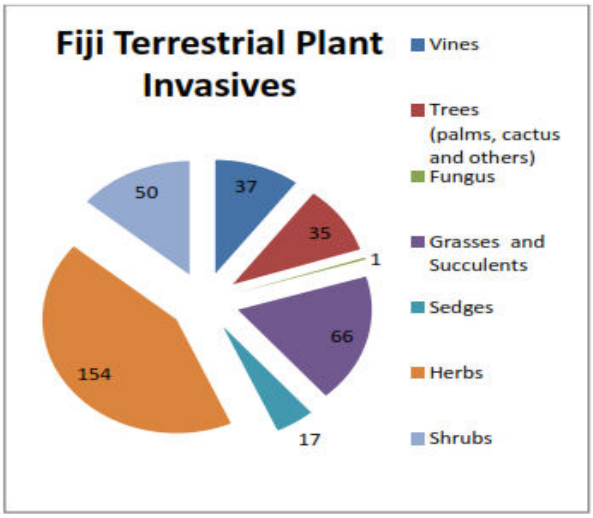


Figure 1.4: Showing Fiji's Terrestrial Plant invasives

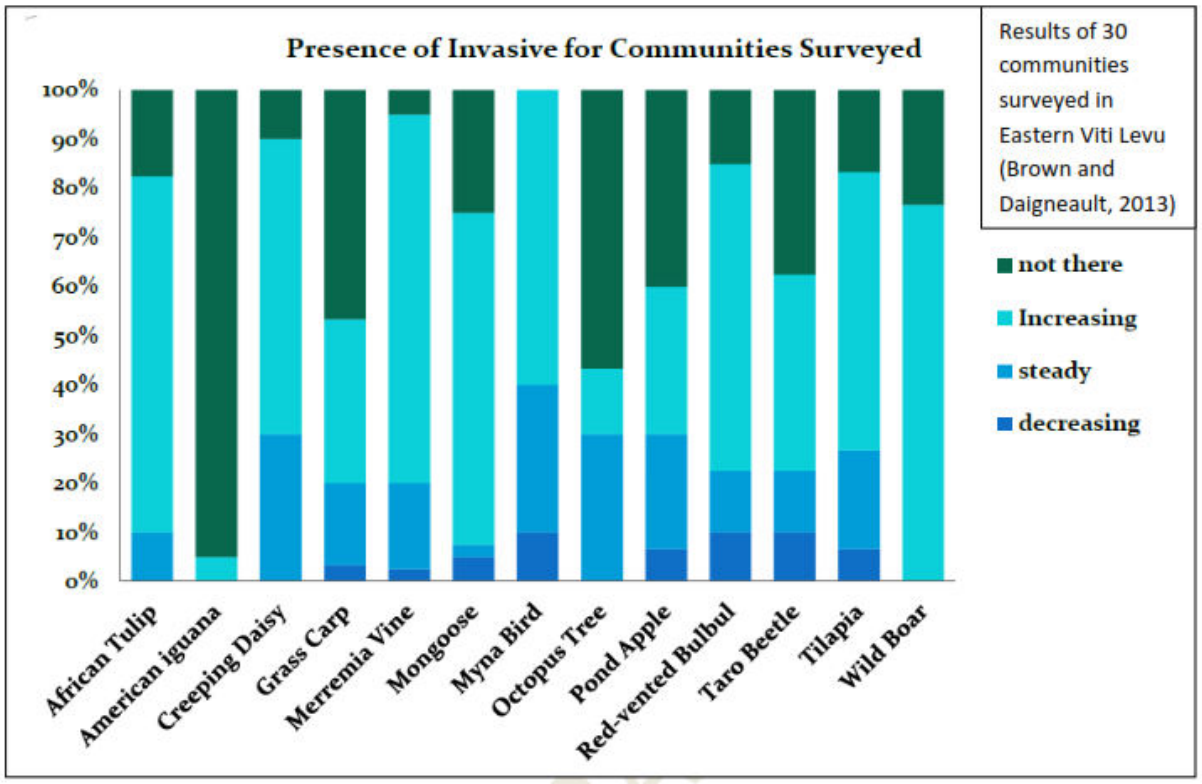


Figure 1.5: Graph showing the presence of Invasives in Eastern Viti Levu

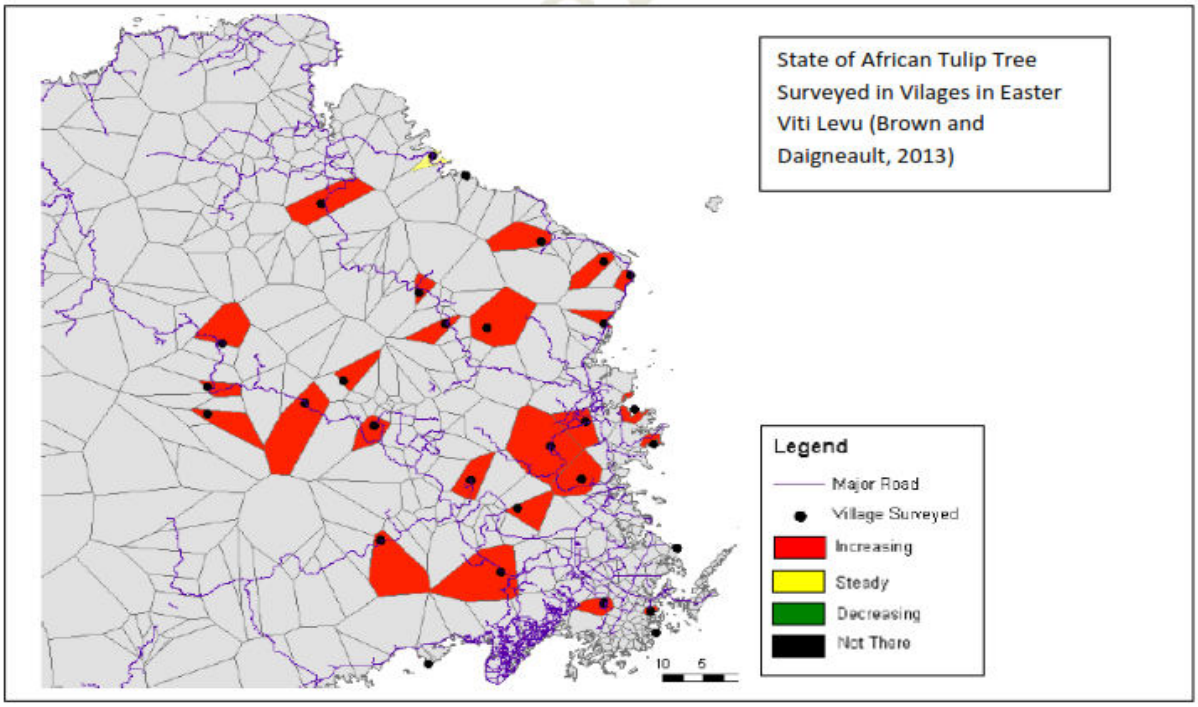


Figure 1.6: Map showing the increasing number of African Tulip in Eastern Viti Levu

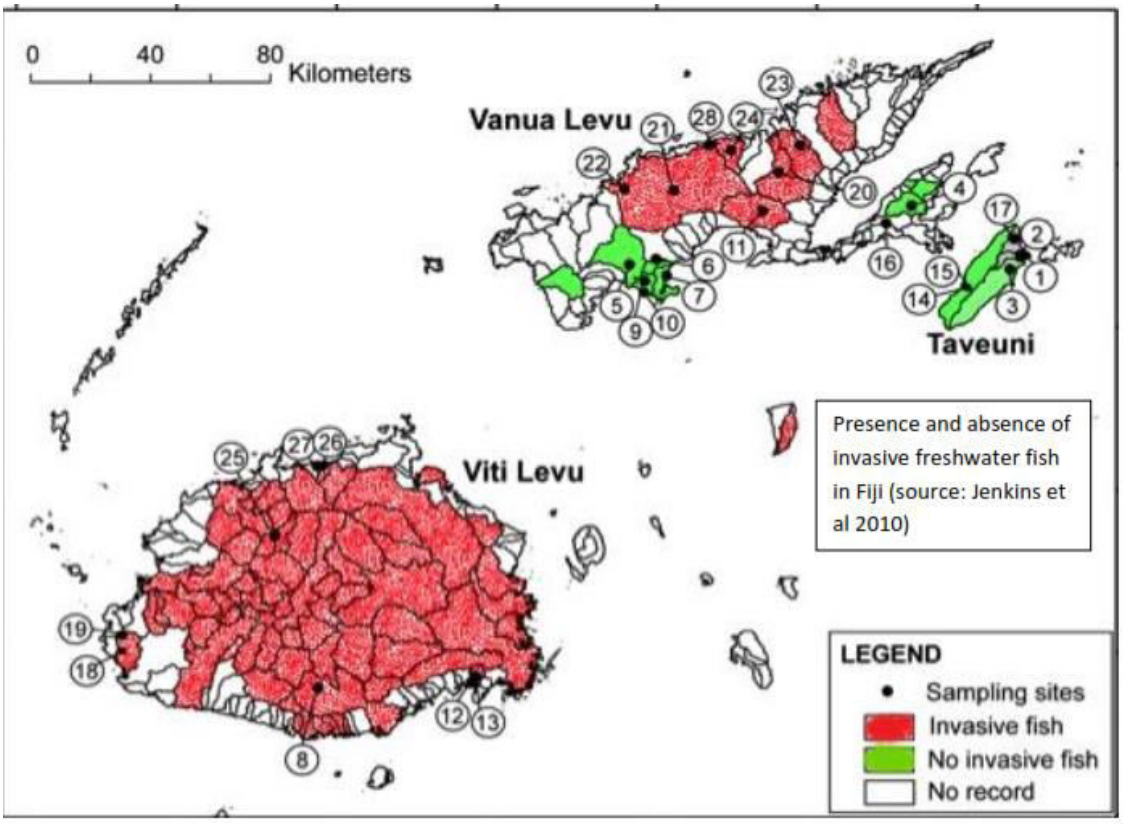


Figure 1.7: Map showing the absence and the presence of invasive fresh water fish in Fiji

Based on IUCN Fiji's assessment Fiji has approximately 390 species listed as invasive and approximately 40 more alien species that are regarded as uncertain as to their level of harm to or ability to spread in the environment. The vast majority of invasives are terrestrial plants, trees and grasses.

Travel within the Fiji group is increasing rapidly and there is a need for measures to be introduced to prevent the spread of established invasive species within Fiji's 300+ islands. Based on a recent report by Daigneault and Brown, in most places in eastern Viti Levu, commonly known invasives such as the Merrimia Vine and the African tulip tree continue to increase. Furthermore, most of these common invasives have spread to the outer islands. These include invasive fish such as Tilapia and Carp that compete with native fish in Fiji's streams and rivers.

Fiji has had more success preventing the introduction of new species to Fiji, including common Pacific Invasives such as the Brown tree snake and the Giant African Snail largely through strict border and quarantine controls. Some new introduced species such as the American Iguana and Termites are being aggressively managed and eradicated. Overall, compared to other Pacific countries, Fiji has a higher level of management actions and programs in place to control and manage Invasives.

Response: What is Fiji doing to the spread and introduction of invasive species?

Fiji is largely concentrated on keeping new invasive species out of Fiji and managing established ones in key biodiversity sites and eradicating them on small islands. Biosecuirty Fiji has strong quarantine programs in place to prevent new species being introduced. However, currently there is limited awareness of internal quarantine requirements and this is confined to species of agricultural or economic significance and often biodiversity values are not included. Efforts to reduce the spread of established Invasives in Fiji Include:

I. Research conducted on best practices to control plant species such as the African Tulip tree, the raintree and leucocephala (lead tree).
II. Goat eradication - complete eradication in 2000 from Iguana Sanctuary
III. Weed removal for past 5 - 10 years. Looking at National Trust protected areas.
IV. Bird Life International rat eradication in small islands. (IBA sites islands)
V. Biosecurity and Nature Fiji eradication and control of the American Green Iguana in Taveuni and and outlying islands
VI. Training efforts by the Pacific Invasives Initiative Creation of the Fiji Invasive Species Task Force

PROTECTED AREAS

The International Union for the Conservation of Nature (IUCN) defines Protected areas as "regions set aside primarily for nature and biodiversity conservation. They are a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values".

In Fiji, there are currently 23 protected terrestrial areas that meet the IUCN definition of protected areas and are currently protected under national regulation. They include reserves, national parks, water catchments, sanctuaries and managed areas. Other terrestrial management areas in Fiji include proposed Key Biodiversity Areas, Important Bird Areas and Priority Forest-Areas. These are areas that have been identified by Fiji as important for conservation of biodiversity of key ecosystems and species. This indicator describes the status of Fiji's current and proposed protected areas, including their management plans, achievement of biodiversity targets and percent of ecosystem types protected.

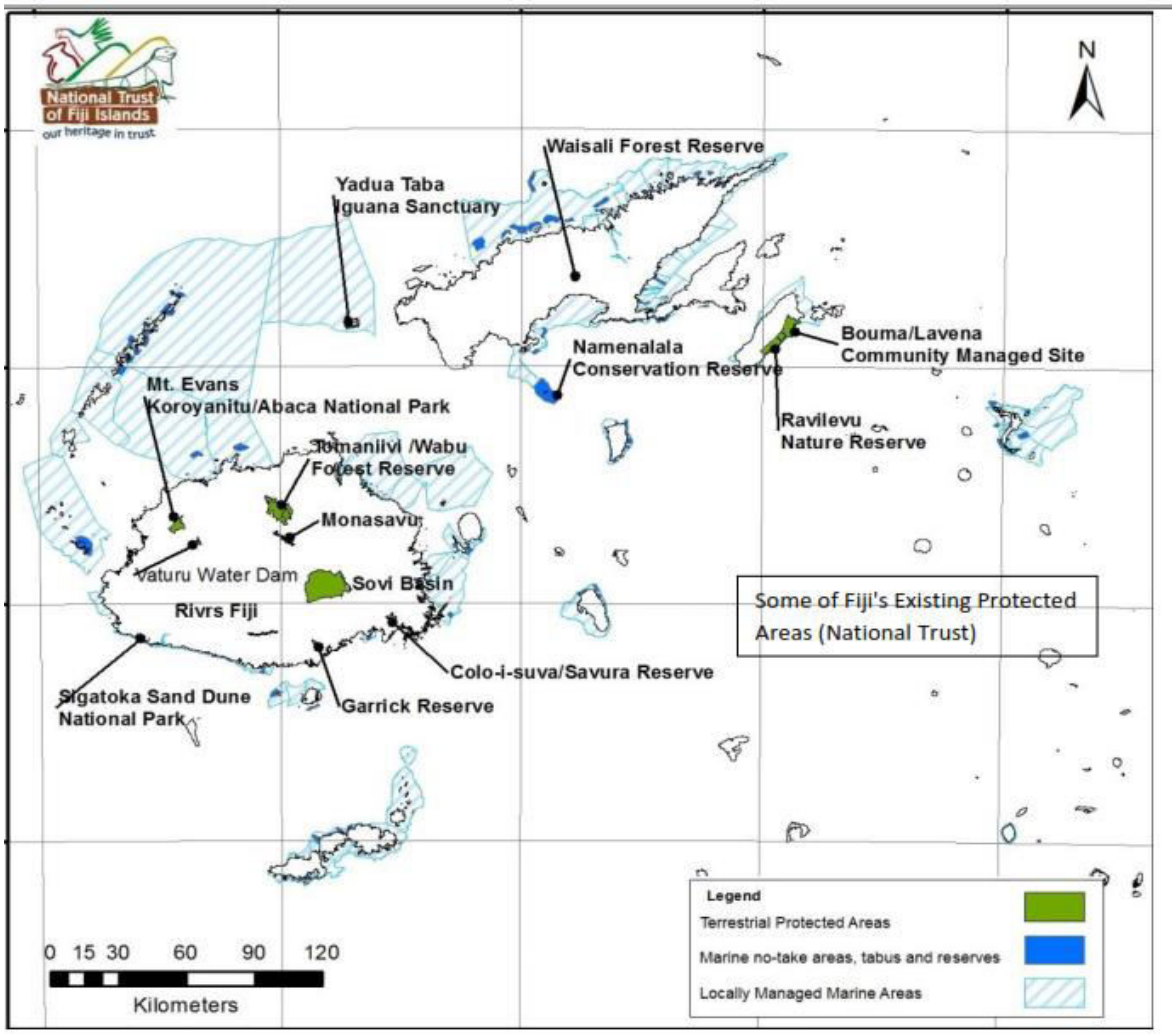


Figure 1.8: Protect Area Map **Source:** National Trust of Fiji

There are 23 existing terrestrial protected areas in Fiji. They make up a total land area of ~50,000 hectares with ~35,000 ha on Viti Levu and the remaining 15,000 ha on Vanua Levu and Taveuni. In total they account for 2.7% of Fiji's land mass and protect 0 to 19% of Fiji's terrestrial ecosystems. This falls far short of Fiji's protection targets for the main vegetation types in Fiji (see table below).

Of the 2.7% protected areas, some are managed by National Trust, some by Forestry, and some are community or privately managed. Most do not have management plans in place. National Trust is currently piloting management plans for Sigatoka Sand Dunes National Park and Sovi Basin Protected Area.

Classification of Key Biodiversity Areas, Important Bird Areas and Priority Forest Areas as protected areas would bring Fiji much closer to achieving its protection targets, particularly in the Cloud, Lowland and upland forests. Combined together with current PAs, the total area protected would 18% of Fiji's land mass.

A number of the proposed sites currently have management arrangements through work being carried out by government and NGOs. Currently work is ongoing to ensure boundaries and biodiversity significance and management needs are identified

Table 1.2

	Vegetation protected under current PAs	Vegetation protected under proposed PAs	Protection Target	Management Target
Cloud/Montane Forest	19%	63%	100%	100%
Dry Forest	0%	29%	100%	100%
Lowland Rainforest	4%	36%	40%	60%
Mangroves and scrub forest	0%	0%	30%	70%
Upland Rainforest	13%	53%	100%	100%
Kaarst and Small Island Forests	0%	9%	40%	60%
Wetland Vegetation	9%	11%	100%	100%

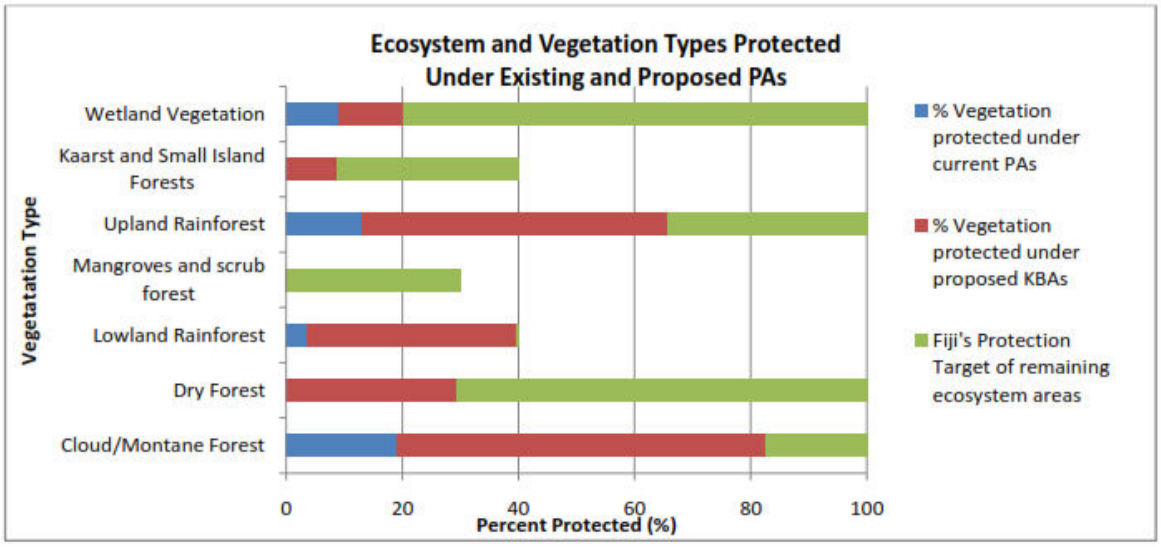


Figure 1.9: Graph showing Ecosystem and Vegetation Types Protected under existing and proposed PAs

Impacts

Protected areas allow the land to replenish itself relatively free from human exploitation. Protecting our forest reserves directly helps prevent the ongoing loss of biodiversity. Protected areas also replenish species population, promote better stewardship by landowners.

Proposed sites may be vulnerable without proper protection. By including these sites into the protected areas definition it would increases the management options available for these areas.

What is Fiji doing about our Protected Terrestrial Areas?

Fiji has a National Protected Areas Committee (PAC) that was established in 2008 under section 8(2) of Fiji's Environment Management Act 2005 in order to advance Fiji's commitments under the Convention on Biological Diversity (CBD)'s Programme work on Protected Areas (PoWPA). The PAC has established national targets for conservation and management, collated existing and new data on species and habitats, identified current protected area boundaries, and determined how much of Fiji's biodiversity is currently protected through terrestrial and marine gap analyses. The terrestrial working Group for the PAC is composed of representatives from the University Of the South Pacific (USP) Herbarium, Conservation International (CI), National Trust Of Fiji (NTF),BirdLife International And Nature Fiji/Mareqeti Viti.

Current priorities for protected areas include:

1) Finding sustainable financing for ongoing management of current and proposed protected areas.
2) Pursuing equitable sharing of benefits from conservation for resource owners and communities. e.g. S Sovi Basin
3) Linking protected areas to alternative livelihood projects

THEMATIC AREA: INLAND WATERS

Undeveloped watersheds in Fiji have good vegetation cover, relatively low sediment loads and high dissolved oxygen (DO). The watershed development index (WDI) is a measure of the degree to which the watershed has been impacted by development and infrastructure. The higher this index is the more likely the aquatic ecosystem is degraded and impaired.

All land uses, from preserved forest areas to mining, agriculture and urban development affect the condition and health of freshwater systems. These systems in turn impact the condition of the reefs at the mouths of rivers; erosion and nutrient loading has particular detrimental impacts on reefs.

Roads impact healthy rivers and watersheds in 3 ways. 1) They act as pathways for exotic species, 2) they are the largest source of sediment to streams and 3) road stream crossings can block upstream and downstream movement of aquatic life.

Forest cover in a watershed serves to provide shade and thus cooler more oxygen rich water to the streams, detritus with forms the base of the riverine ecosystem as well as intercepting and decreasing the impact of heavy rainfall events and holding soil erosion in check. Recently logged areas have the converse effect, more soil erosion, and warmer, less oxygen rich water with an unbalanced nutrient load.

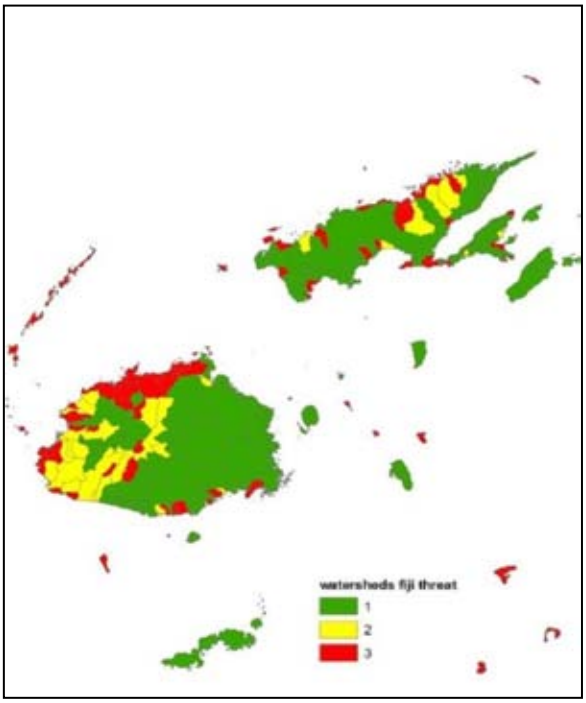


Figure 1.10

The watershed development index is a factor of the total forested area, the area logged over a twelve year period, the road density and the number of stream crossings roads make. While the data used in the current WDI is in some cases over 10 years old, it represents the best national dataset for ambient watershed condition.

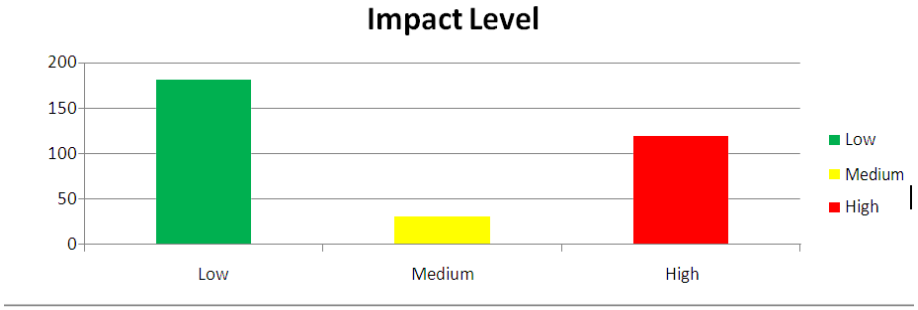
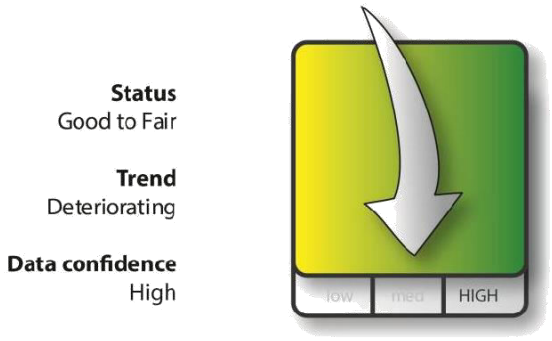


Figure 1.11

Status: Fair to Good
Trend Deteriorating
Confidence: High

Fiji freshwater systems exhibit a range of conditions from nearly pristine to heavily impact. Over one third of all freshwater systems are ranked as "highly" impacted, however in terms of area only 17% of the total area of freshwater systems are in the highly impacted category and some larger watersheds are in good condition. Currently the condition of Fiji's terrestrial aquatic systems is fair to good. The trend is in watershed condition is declining based on in situ observations, continued resource extraction, road construction practices and development pressure. "(Source: A.P Jenkins ET. AL.)



Impacts to Fiji:
Intact riverine systems have an average of 11 more native species than degraded watersheds and form a tangible link from the mountaintops to the sea and back as represented by the life cycle of many native Fiji fish. These native fish, which play an important role in the diet and livelihoods of inland communities, have been declining in recent years; impacting negatively food security, income and the systems in which they live.

Degraded or impacted watersheds provide reduced sediment retention, increased peek flows and flooding as well as a decrease in overall biodiversity thus reducing the natural resilience to high rainfall events and cyclonic activity.

How is Fiji managing watershed condition?
Actions are being taken by DOE/Forestry on 1) stream buffers, forest road construction, including proper culvert placement

Management recommendations:
1) Ecosystem management utilizing traditional community based catchment management is fostered
2) Maintaining and restoring forest cover
3) Prohibiting the introduction of exotic aquatic species into pristine riverine systems

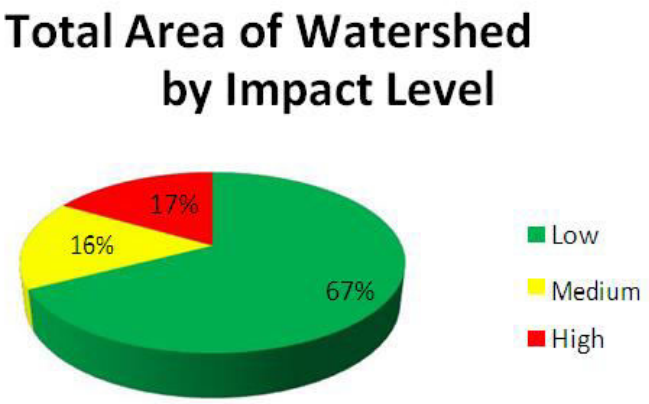


Figure 1.13

The Waimanu River, located in the Nausori-Naitasiri topography is one of the three rivers draining large amounts of fresh water into the Rewa River. It drains fresh water from the upper Wainibuku, Wainimala and Waibau rivers and its water is one of the major drinking water sources in Viti-Levu. Waila Water Treatment Plant operated by the Water Authority of Fiji treats 100 mega liters of raw water from Waimanu River each day that serves the Suva-Nausori-Rewa Delta areas, thus serving a significant proportion of Fiji's population, industry and agriculture. The Waimanu River is also a major source for the freshwater fishery; Kai harvesting and gravel extraction source of Fiji, so pollution can impact both the aquatic species and people who rely on them for subsistence and diet.

CASE STUDY 1 Waimanu River

Waimanu River's water quality is monitored by the National Water Quality Laboratory which frequently studies the underlying chemistry and changes in trends.

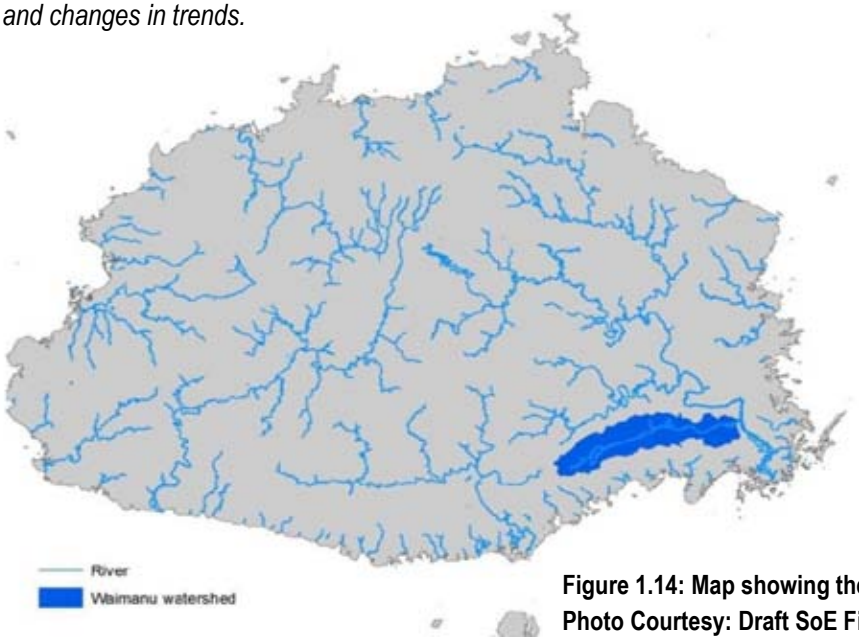
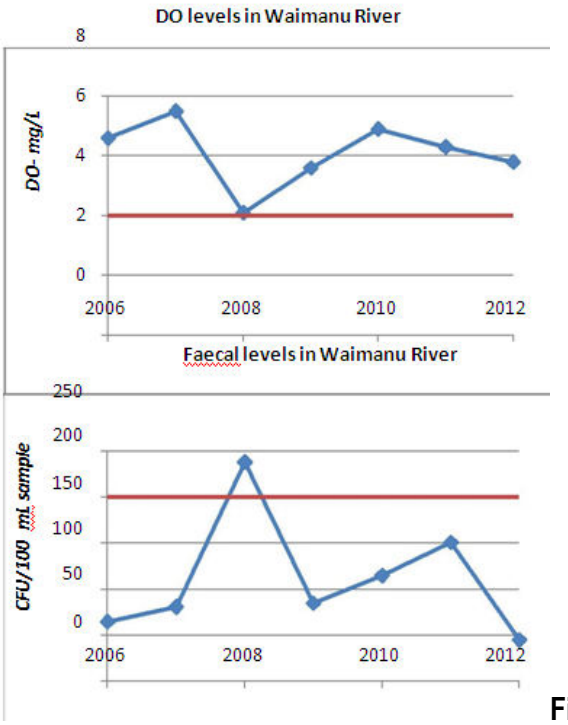


Figure 1.14: Map showing the Waimanu Catchment
Photo Courtesy: Draft SoE Fiji (SPREP)



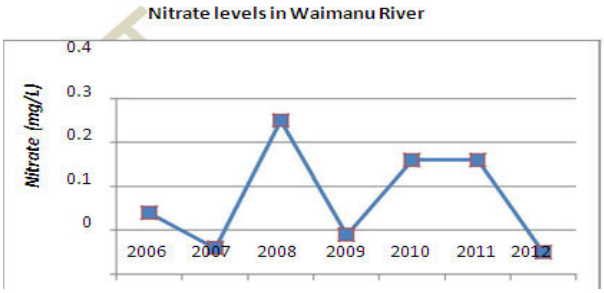


Figure 1.17

Figure 1.15 and 1.16

Data generated by the National Water Quality Laboratory for the past seven years indicates Waimanu River being well oxygenated, low in nutrients and heavy metals. Fecal coliforms are generally below guidelines for drinking and bathing but concern remains for occasional exceedances which lower dissolved oxygen levels and pose risks to human health. These are mainly due to a rise in populations nearby with unsafe septic systems, leaking sewerages into receiving waters.

"The Waimanu River is the main drinking water source for eastern Viti-levu and almost half of Fiji's population. It is therefore crucial for protection to maintain health of the watershed and reduce costs on treatment."

What is Fiji's response to improving or maintaining clean surface waters?

The Water Authority of Fiji (WAF) continues to pursue efforts to get more households hooked up to the sewer system. Where sewer hookup is not an option, organizations such as SOPAC and NGO's are working with the Ministry of Health to educate communities on proper septic system setup.

In addition, the WAF is embarking on an outfall testing program across major rivers and creeks in Fiji to look for major sources of sewage and prioritize hookup areas to sewage. S

The Environmental Management Act (EMA)is in place and has regulation in place to protect surface waters but collaborative effort needs to be coordinated at National level to address water quality in various sectors. In

addition:

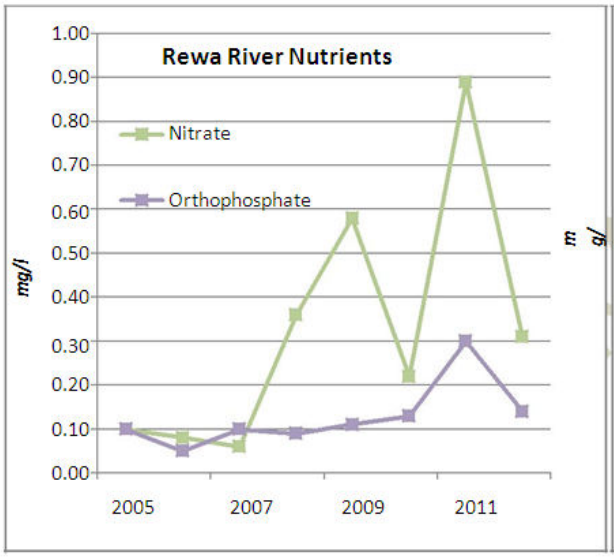
- *Government has developed an overarching document National Water Resources and Sanitation Policy (still yet to be passed by the Cabinet) to an efficient and effective management system for the sustainable development of water resources (surface water & groundwater) and sanitation – Monitoring of Water Quality*

- *Also, existing policies such Rivers Act, Rural Water and Sanitation Policy, Land Water Resources Policy addresses policies*

CASE STUDY 2: REWA RIVER

The Rewa River is Fiji's largest river, 145 km long and almost 1 km wide at its mouth in Laucala Bay near Suva. It drains more than 1/3 of Viti Levu Island and its watershed provides water for a significant proportion of Fiji's population, industry and agriculture. The Rewa River is also a major source for the freshwater fishery and Kai harvesting of Fiji, so pollution can impact both the aquatic species and people who rely on them for subsistence and diet.

- *The Rewa also drains some of the most intact forested areas in Viti Levu so is a good indicator f emerging trends in the aquatic environment and developing a baseline for the future.*
- *Nutrients like nitrate and orthophosphate are found in natural levels in many creeks in Fiji, but can be increased through human sources such as sewage and agriculture. Dissolved oxygen (DO) is a measurement of available oxygen in the water for aquatic life. Nutrients and DO are useful indicators for aquatic health for fish, invertebrate and other aquatic species*



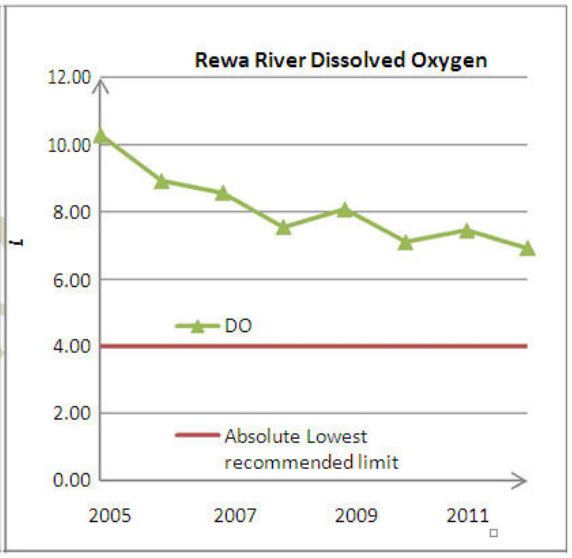


Figure 1.18 **Figure 1.19**

***Status**: Good, **Trend**: Deteriorating, **Confidence**: Medium*

Overall, for aquatic organisms, the condition of the Rewa River is still good with moderate levels of fecal coliforms, levels of nutrients well within guidelines and dissolved oxygen above acceptable levels. Fecal coliforms are generally still above guidelines for drinking and bathing.

Coliforms appear to have decreased in the last 5 years but the trend seems mixed and it is too early to determine if this is a true trend. DO has decreased each year from a high of 10 mg/L to approximately 7 mg/L, suggesting oxygen depletion from algal growth and nutrient loading. Over the same time period, phosphate and nitrogen have increased moderately.

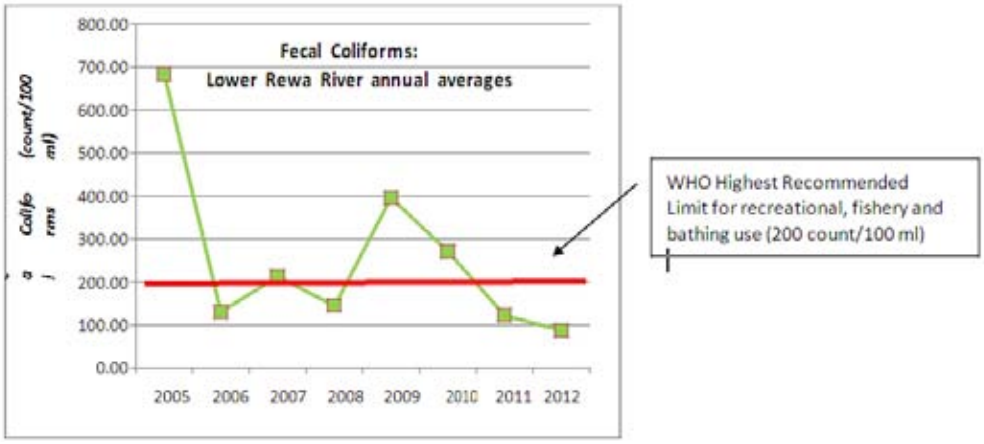


Figure 1.20

The Rewa River is a major ecosystem for a variety of fish, invertebrates and birds. It is also a substantial food source for Fijians. Habitat destruction on the Rewa in addition to sewage pollution impacts the health of the people who rely on the river directly.

What is Fiji's response to improving or maintaining clean surface waters?

The Water Authority of Fiji (WAF) continues to pursue efforts to get more households hooked up to the sewer system. Where sewer hookup is not an option, organizations such as SOPAC and NGO's are working with the Ministry of Health to educate communities on proper septic system setup.

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- *Government has developed an overarching document National Water Resources and Sanitation Policy (still yet to be passed by the Cabinet) to an efficient and effective management system for the sustainable development of water resources (surface water & groundwater) and sanitation – Monitoring of Water Quality*
- *Also, existing policies such Rivers Act, Rural Water and Sanitation Policy, Land Water Resources Policy addresses policies around water protection.*

THEMATIC AREA: FORESTRY, MANGROVES AND LAND

Forest cover is a significant indicator of the overall state of forests in Fiji. It provides a measure of land use pressures on the forest including development, harvesting, agriculture and other activities.

Fiji's natural forest are dominated by lowland rainforests (78%) , followed by upland rainforests (8%) with the remaining divided between mangroves, cloud forests, wetland vegetation and dry forest.

For this indicator, forest cover is divided into 4 general groups: Natural forests consisting of Open and Closed forests, and Plantations consisting of Pine, Hardwood and Coconut. 1991 and 2007 are the most reliable datasets for Fiji forest cover.

Open forests are defined as natural forest with crown cover by trees and / or ferns 10-40% and ground coverage by, palm and / or bamboo 50-80% . Closed forests are defined as natural forest with crown cover by trees and / or ferns 40-100% and ground coverage by, palm and / or bamboo over 20%. Closed forest includes the least impacted forest areas in Fiji in a near natural state as well as areas that have re-grown to near natural levels.

Closed natural forest has decreased by 21% between 1991 and 2007, converted largely into open forest through development and agricultural expansion onto steep slope natural areas. Mangrove areas Declined by ~5% between 1991 and 2007, most significantly in urban areas

Cultivation of arable land has decreased by 60% between 1991 and 2009 due to the decline in cane sugar production, a fundamental driver of both the agricultural economy and crop diversity. Soil acidity has also increased from fertilizer and pesticide use. Other commodities, such as dalo, livestock and fruits, are performing better. Despite the decrease in leased land agriculture, there is evidence that farmers are increasingly moving on to poorer class steep slopes not suited for agriculture. This is impacting both the natural forest and overall soil health.

Since 1991, Fiji's forest industry has transitioned from predominantly harvesting of indigenous species to plantation harvesting of pine and mahogany for export and local use. However, despite a general decrease of commercial logging in native forests, between 1991 and 2007 closed forest cover still decreased ~7300ha per year while open forest increased by ~8600ha per year, as seen in Figure 1.

Both pine (softwood) and hardwood plantations increased significantly with ~3000ha and ~1600ha added per year respectively, the major increase in the plantations being since the early 2000's. Coconut plantations decreased slightly by about 400ha per year.

Six principle causes of deforestation in Fiji are:

1) Clearing of forest associated with a large-scale commercial (agriculture) rural development projects;
2) The continuing small but steady growth of smallholder agriculture involving mixed commercial and subsistence farming;
3) The continuing spread of small villages and settlements;

4) Urban growth and infrastructure to service these areas (roads, dams, bridges, reservoir);
5) Fire; and 6) poor logging practices followed by land clearance. (Source State of the Forests Genetic resources in Fiji, 2013)

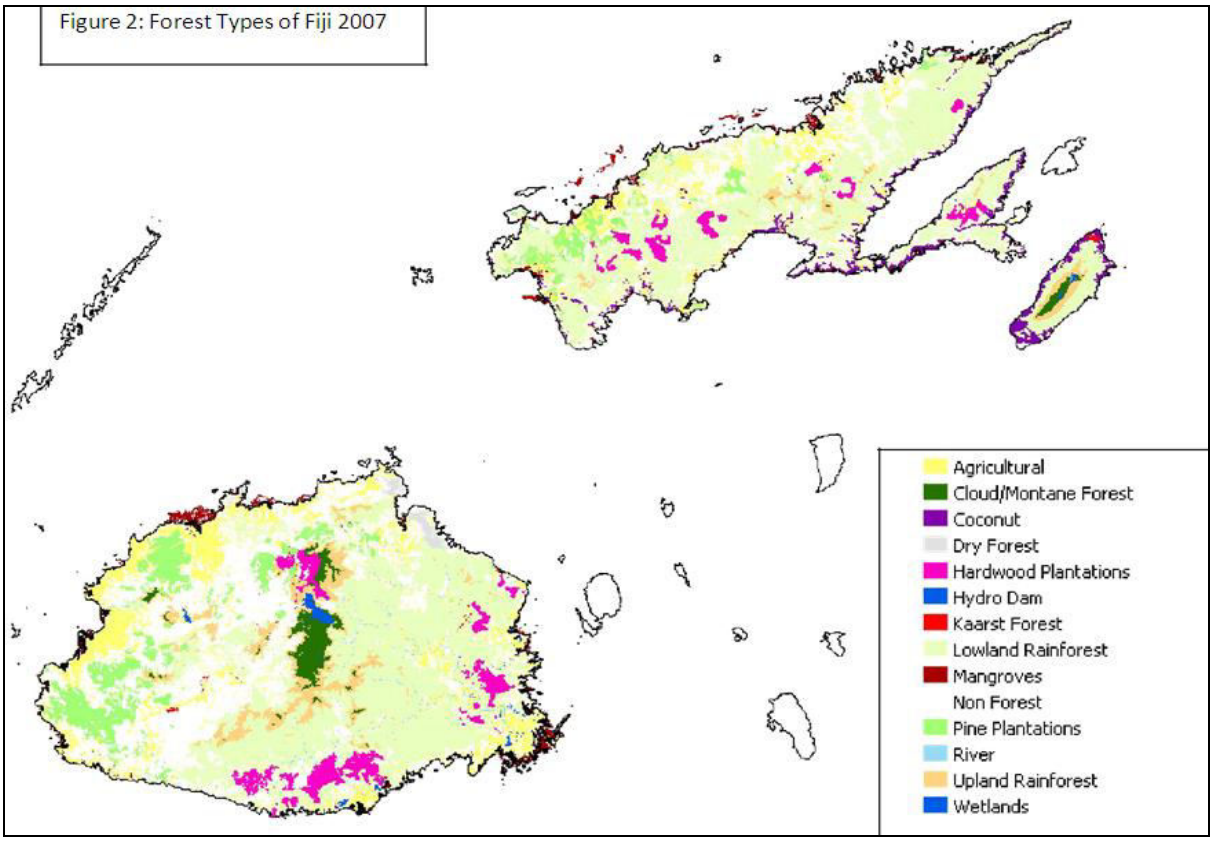


Figure 1.21

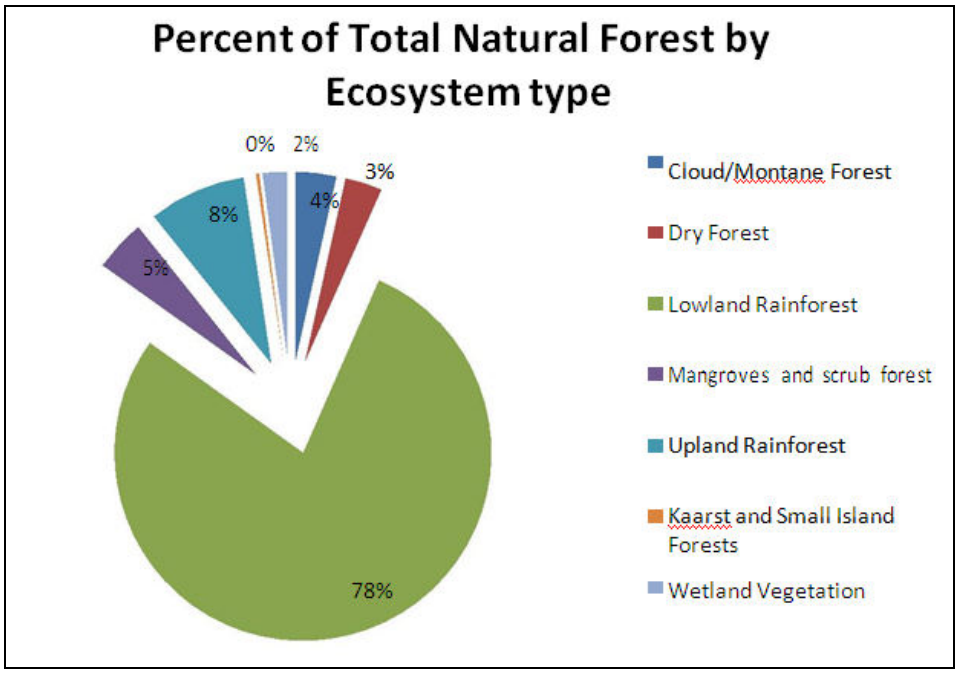


Figure 1.22

IMPACTS: Loss of terrestrial biodiversity "Loss of forest is the single most destructive force destroying our biodiversity (Watling)". Water quality from poor logging practices impacts freshwater (loss of shading, spread of invasive) and marine environments (coral reefs).

In Fiji, mangrove forests are found along estuaries, river banks, and lagoons. They are unique forests as they thrive in brackish water, oxygen deprived soils and can process a variety of toxins. They provide a unique biodiversity environment for many flora and fauna. They also provide valued protection and nutrients for near shore ecosystems like coral reefs and sea grass beds, and are major nursing areas for fish and birds.

Mangroves support people too, providing rich ecosystems for subsistence, materials for buildings, defending coastlines against winds and storms surges and cleaning polluted effluent from freshwater systems. In addition, they serve as large carbon sinks.

Area of mangroves over time across Fiji was chosen as the indicator to determine the status of mangroves. Estimates were used based on remote sensing processing by SOPAC of 1991, 2001 and 2007 aerial and satellite images.

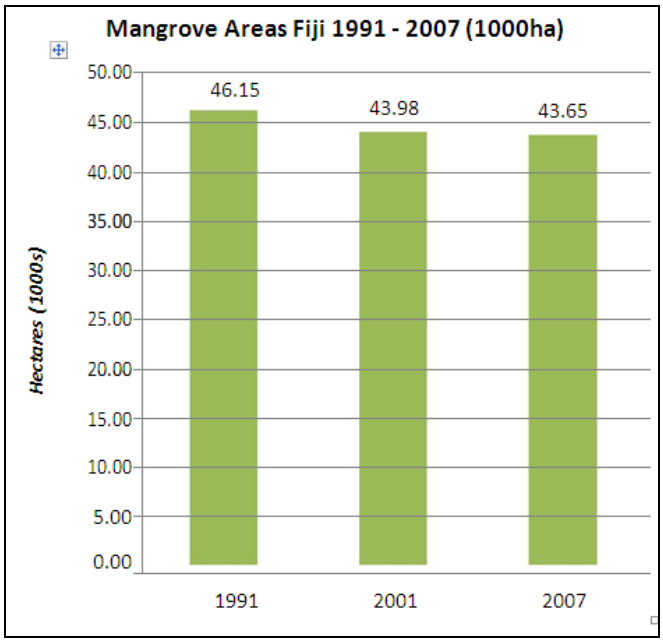
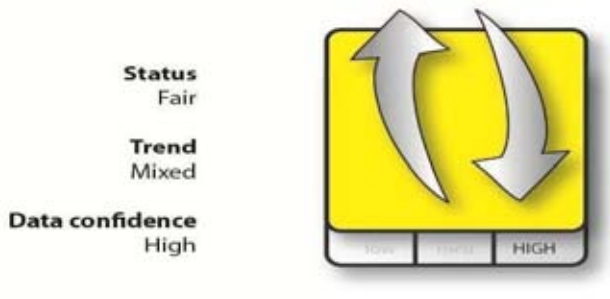


Figure 1.23

Status: Fair
Trend: Mixed: Urban Areas Deteriorating, Other Areas: Stable
Confidence: High

SOPAC (Forstreuter and Qioniwasa,2013) estimate that, overall, mangrove areas have decreased in size from 46,150 hectares in 1991 to 43,650 hectares in 2007. Much of the loss was experienced between 1991 and 2001 (~2000 hectares) and has since slowed in the last 10 years. Some larger mangrove areas have actually grown by 5 - 10%.

Much of the loss is from urban areas such as Lautoka/Nadi, Suva and Labassa and is due to expansion of urban areas (formal and informal) creation of waste disposal sites and dredging material disposal. Given that some areas are increasing, this means that the urban area mangroves, representing a small proportion of the total mangrove area in Fiji, are being reduced dramatically. The analysis of satellite data suggests that between 1991 and 2001 the Nadi/Lautoka area lost 21.6% of its mangroves and the Suva area lost 28.6%.



IMPACTS:
Biodiversity loss, coral reef and freshwater aquatic habitat deterioration, decreased protection from winds and storm surges, loss of carbon sequestration.

THEMATIC AREA: MARINE COASTAL ENVIRONMENT

OFFSHORE FISHERIES

Offshore catch increased from 1997 to 2006 but has since decreased due to a countrywide reduction on Catch in an effort to ensure sustainable tuna harvest. Bycatch of sharks remains a concern. Between 2002 and 2011 shark species averaged 10 to 15% of the total offshore catch.

Status: Fair
Trend: Stable
Data Confidence: Medium

INSHORE FISHERIES

Monitoring of live coral cover, fish biomass density and diversity suggest that overall inshore environment is in a good state with stable trends. Inshore fishing pressure, however, remains high, particularly unregulated subsistence fishing in certain areas. Certain inshore products, such as beche-de-mere (sea cucumber) appear substantially overfished.
Status: Good to Fair
Trend: Mixed
Data Confidence: Medium

MARINE MANAGED AREAS

Fiji's Locally Managed Marine Areas are largely a model of success across the Pacific and have resulted in the recovery of fish and invertebrate stocks in several areas in Fiji. Issues with external poaching and siting of the tabu areas remain a concern but the trend is generally improving.

Status: Fair
Trend: Improving
Data Confidence: Medium

Live coral reef cover is a significant indicator of the overall state of the inshore ecosystems in Fiji. For this indicator, live coral cover is defined as area covered with living hard coral either in mono species or multi species colonies. Coral cover provides a measure of land-use impacts and subsequent erosion, fishing pressure, relative sea surface temperature (SST), presence of disease and predators like the crown of thorns starfish and mechanical damage from anthropogenic sources or natural phenomena like cyclones. This indicator is a fundamental data type for most surveys and is widely available in Fiji and the wider Pacific region.

Persistent stressors on the reef, including eutrophication, coastal development, coral and live rock harvesting, mangrove clearing, crown of thorns (COTS) and overfishing, all negatively impact live reef cover and the ability of reefs to recover from significant events.

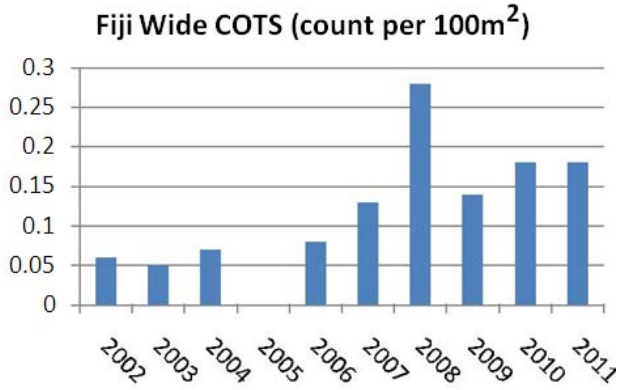


Figure 1.24

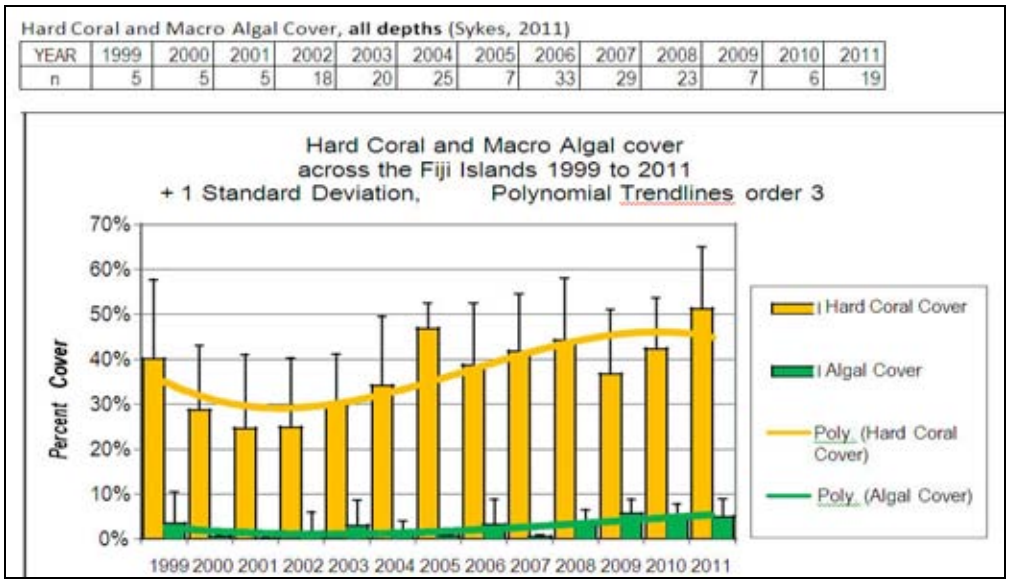


Figure 1.25 **Source**: Fiji SoE Report Draft (SPREP)

CASE STUDY 1: CORAL REEFS

Since 1999 Fiji's reefs have experience a cyclic phenomena which saw the live coral cover drop from over 40% in 1999 to less than 30% in 2003 and recovering much of the lost live coal cover by 2011; averaging over 50% live cover in the 2011 survey.

A mass bleaching event occurred throughout Fiji during the La Nina event of 2000. In the second quarter, over 60% of all coral colonies surveyed were bleached and mortality on coral colonies was recorded at over 40% at most sites surveyed

This decline in live coral cover and the subsequent recovery indicates that reefs in Fiji are generally resilient and respond to positive growing conditions in the absences of adverse growing conditions (see map). However, particular locations, urban areas, and areas of intense agricultural activity specifically, may have lower resiliency due to anthropogenic effects.

In addition to storm and pollution pressures, Crown of Thorns (COTS) remains a persistent threat and shows some increase over the past 10 years. Algal cover appears to be increasing as well but is unclear whether is part of a naturally occurring cycle or brought about by other pressures.

Impact: Tourism is the largest generator of overseas income in Fiji and the largest non-extractive user of reef resources, with over 75% of visitors involved in marine activities. Thus the condition of Fiji reefs has a major impact on sustainable livelihoods.

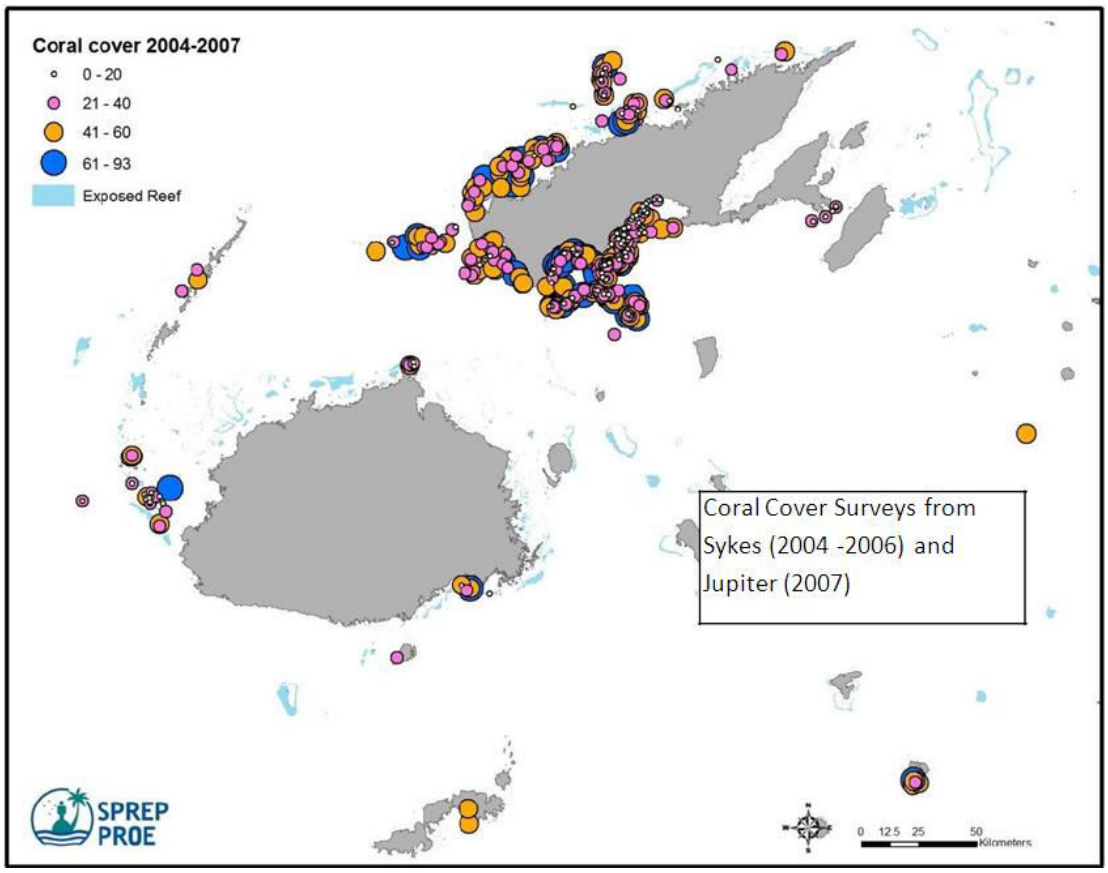


Figure 1.26

Fiji's Responses: What is Fiji doing to protect and enhance the natural resilience of coral reefs?

CDB, CITES, 30% conservation commitment, FLMMA network /tabu sites. NBSAP

Live coral trade for the international aquarium trade is also be undertaken in a sustainable manner giving quota allocation on a yearly basis. Live rock needs to be regulated. Due to Fiji's geographic location it will continue to experience cyclones and bleaching events driven by global weather patterns. The ability for Fiji's reefs to withstand and recover from these periodic natural phenomena will depend partially on the management of local anthropogenic impacts including fisheries management, land use and watershed management.

Promote further development of inshore Marine protected areas and expansion into offshore marine protected areas including the great sea reef and isolated island systems. Environment Impact Assessments being carried out before any foreshore development. Working to improve policy and legislative framework.

CASE STUDY 2 : OFFSHORE MARINE (TUNA AND OTHER SPECIES)

Offshore fisheries production, reported in metric tonnes, is an important indicator of pelagic (deepwater) fish stock health, and the health of the marine ecosystem. It also provides a measure of the state of fisheries and management outside of the reef. This indicator is a fundamental data type for most fisheries and is widely available in Fiji and the wider Pacific region

In Fiji, offshore fisheries consist almost exclusively of long lining for tuna for both local and foreign markets. This is the main source of official revenue for Fiji's fishing industry and it is largely dominated by domestic fleets. The main commercial species include; albacore (*Thunnus alalunga)*, skipjack (*Katsuwonus pelamis)*, yellowfin (*Thunnus albacores)* and big eye (*Thunnus obesus*). Other fish caught as by-catch include sharks, marlin, wahoo, barracuda, dolphin fish and mahi-mahi.

Fiji has considerable marine resources, accounting for approximately 3% of Fiji's GDP and 8% of all exports in 2012. While Fiji has 18,376 square kilometres land its Exclusive Economic Zone (EEZ) is approximately 1.3 million square kilometres.

THEMATIC AREA: AGRICULTURE

Soils in Fiji are largely volcanic and prone to high rainfall, both of which lead to naturally high acidity, affecting plant growth and reducing production. Soils in areas of high rainfall are also prone to loss of essential nutrients. These soils, in turn, require greater application of fertilizers which can increase soil acidity beyond natural levels. In addition, prolonged pesticide use also increases acidity in soils.

Soil acidity is a good indicator of over soil health and can determine the impacts of intensive farming practices on the health of the land

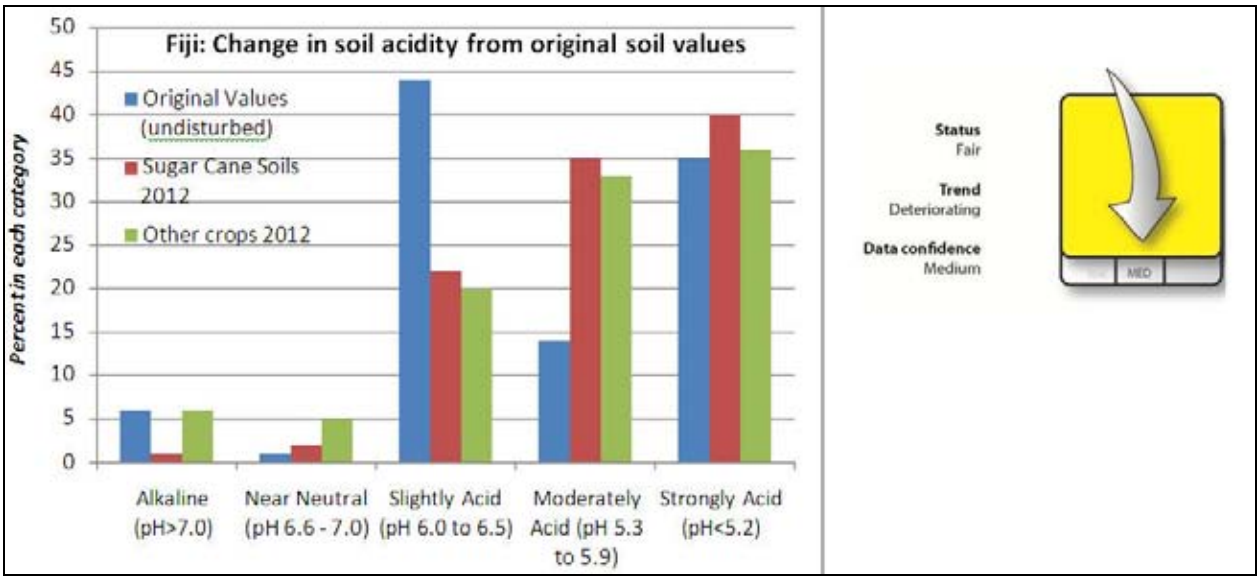


Figure 1.27: **Source: Draft SoE and MDF Aglime for Fiji**

Fiji's Response to Reducing Acidic Soils and Fertilizer Dependence:

The Ministry of Agriculture, Forests and Fisheries (MAFF) has been promoting the use of Aglime, which reduces need for fertilizer which will in turn decrease acidity. With the aid of the Market Development Facility of AusAid, Fiji has since launched local commercial production of Aglime in Fiji. MAFF is currently working with farmers to encourage use of lime as a long term cost saving tool, as lime offsets the costs of fertilizers and reduces need for them.

The MAFF research division working on trial sites for application of Aglime in the North (Taro crops), Central (Dairy), and West (Sugar cane) divisions to identify appropriate application rates for specific crops and soils. MAFF does regulate pesticide types for farmers and the Department of Environment regulates application rates.

Impact to Fiji:

Acidic soils are costly to farmers and result in lower production, abandoning of arable land for less arable land and expensive fertilizer use. Nutrients washed out from excessive fertilizer use can impact marine and freshwater quality. Usage of fertilizer continues to increase acidity, which in turn reduces productivity, increasing the need for more fertilizer.

Fiji has a total area of 18,400km^2 and 16% is suitable for farming and a further 43% could be used for tree crops and grazing. These areas are found mainly along coastal plains, river deltas and valleys of the 2 main islands of Viti Levu and Vanua Levu. The rest is found in the smaller outlying islands of the group.

Land is classed by the Land Use Capability Classification System for Agriculture as ARABLE and NON-ARABLE. Land ownership is classified

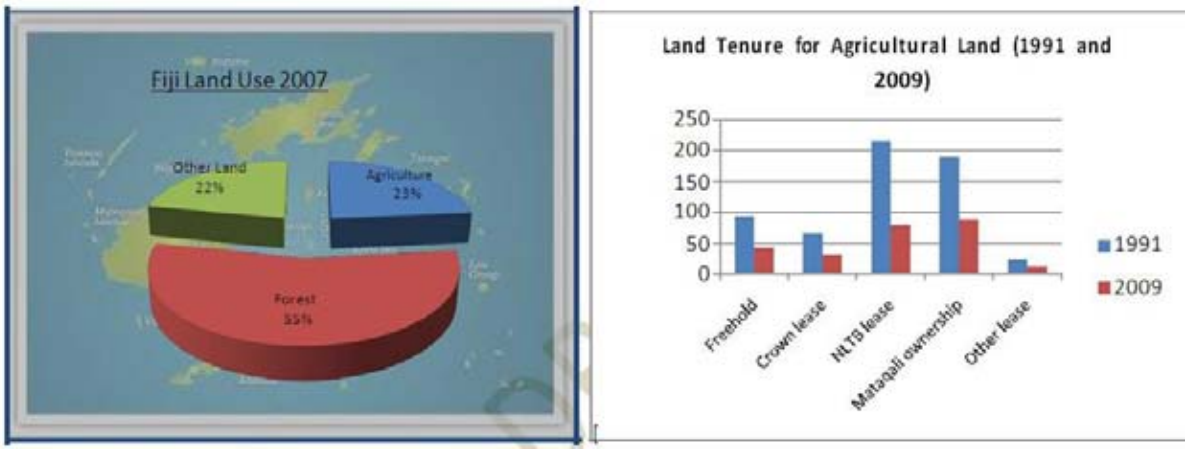


Figure 1.28 and 1.29 **Source**: Fiji's SoE Report

CASE STUDY 1 LAND UNDER CULTIVATION

Farming areas have declined significantly from 1991 to 2009. This can be variously attributed to the clearing of land for residential and industrial developments, expiry of land leases, high transportation costs, low yield, or low profitability due to unfavorable market prices and labour costs required to maintain business and sometimes also as a consequence of natural disasters (cyclones, flooding and droughts. In addition, there has been a generational loss of interest in practicing agriculture.

The predominant commodities behind the decline were sugar cane and copra. Based on area planted, sugarcane and copra production have declined from 1991 to 2009 by about 50% and 70% respectively. In 1991, sugar cane was the most dominant crop in Fiji's agriculture industry in terms of foreign exchange earnings and number of people employed in the industry. Cane decline has largely been driven by expiry of

land leases. Copra was the second major traditional export earner, based mainly around the estates in the province of Cakaudrove, but has since declined due to decreased market demand.

Freehold, crown lease and areas under other leases slightly increased in 2009 while areas under NLTB lease slightly decreased. Compared with the 1991 percentages, there was an increase of 3% in land with Mataqali tenure. There was approximately a 6% reduction in land leased from NLTB. The percentage of Crown Leased land was roughly the same as in 1991.

What is Fiji's response to the decline in agriculture?

The new Land and Water Resource Management Decree is expected to provide some authority for the implementation of the land use policy. This will ensure that land user and developers will adhere to the requirements of the ACT and at the same time exercise greater precaution on land degradation activities. Fiji is also seeking to find foundational commodities that can substitute for the decline in cane sugar.

Programs by Fiji include the: 1) Farming assistance scheme (FAS) for existing cane farmers where the government helps to relocate farmers to alternative crops outside of cane. 2) The land bank scheme that identifies un-utilized land that can be used for farming - interested farmers apply through the Land Bank. 3) The Organization of farmers (Fiji CROP and Livestock council) and umbrella council that address issues, and informs policy. Government is encouraging this to have one window approach (MOU exists) and 4) The DDA (Demand Driven Approach) program which targets micro and medium size farming enterprises where 2/3 assistance offered. It also provides Import substitution programs where farmers can move to dairy production.

PART II THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, ITS IMPLEMENTATION, AND THE MAINSTREAMING OF BIODIVERSITY

Biodiversity targets for Fiji?

Fiji's biodiversity targets were developed based on the National Priorities which were aligned to Regional Strategies and international targets such as the Aichi targets. Although Fiji's NBSAP does not exclusively address or includes all the targets that are included in the Aichi Targets (that were developed and agreed in 2010) it however does include some key ones that are relevant to Fiji. The NBSAP which was developed in 2007 had broad areas of focus which were later developed into objectives and various targets derived from the focus area. An implementation Framework to the National Biodiversity Strategy and Action Plan was developed in 2010 and launched in 2011 that had National Biodiversity Targets to be achieved in the four year period.

The process as described in the NBSAP IF itself was as follows:
Five key thematic areas were identified for the implementation process. These were:

1 Forest conversion management
2. Invasive alien species
3. Inshore fisheries
4. Coastal development
5. Species conservation: Threatened and endangered species (trade and domestic Consumption)

During further consultations and discussions, two other focus areas were identified and included in the Framework due to the synergies they provided across each of the five thematic areas. These thematic areas were:

6. Protected areas
7. Inland waters

What followed next was the collation of implementation ***strategies and actions*** for each thematic area. These strategies and actions provide a comprehensive reference guide on the focus of government and partner efforts for implementing the FNBSAP in each thematic area. They also provide the basis for the development of annual priorities and outputs over the period 2010 – 2014.

The NBSAP stakeholders involved in each thematic area met to identify a shortlist of between ***5 and 10 priority actions for each thematic area*** which were to be addressed in the first year for Implementation. The process of annual priority setting has been since done till now based on the implementation plan.

NBSAP FOCUS AREA: FOREST CONVERSION

The Fiji Islands contain almost 40% of intact forest with some of the richest natural communities of all the Oceanic Islands of the Pacific. The opportunity to conserve large areas of forest provides significant conservation potential for the South Pacific. The island of Kadavu has the highest number of endemic birds per land area in the world. The island of Taveuni has large expanses of forest running from ridge to reef.

Many species and higher taxa of flora and fauna are endemic to Fiji. These include an endemic family of plants (Degeneriaceae), 26 palms, three unique iguanids, and a diverse range of other endemic plants and invertebrates, mostly restricted to single islands, mountaintops, or watersheds. The forests and their watersheds of Fiji support rural livelihoods that are important sources of renewable energy, protect a significant amount of Fiji's water resources, and provide a range of other important ecosystem services. The major threats to the forest ecosystems are through habitat loss and degradation, including wide-spread of invasive alien species. This is exacerbated by island ecosystem vulnerability and unsuccessful conservation management.

IDENTIFICATION OF MANAGEMENT TARGETS AND THREATS

The Department of Environment ran a series of workshops in 2009 to evaluate progress of the NBSAP. New objectives, strategies and a roadmap of actions were identified for the period 2010 to 2014. Nine key action areas for Forest Conversion Management were prioritized under the following key areas: EIA mainstreaming; permits, regulation and enforcement; information, research and databases; management and recovery plans.

Table 2.1: Fiji's NBSAP Targets towards Forest conversion

Strategies	**Objectives / Targets**
Improve coordination of Government policies, legislations and management guidelines to ensure protection of Fiji's biodiversity.	**Objective 1.1** By 2012, 3 cross-sectoral forums have been established to discuss and facilitate biodiversity work.
	Objective 1.2 By 2014, all review process for Government Policies and Plans takes into consideration Biodiversity and Climate Change
Promote research and awareness on forests and terrestrial resources.	**Objective 2.1** By 2012, at least 3 Forest areas are well surveyed with recommended findings
	Objective 2.2 By 2012, promote at least 2 case studies on the relationship between forests cover and ecosystem services.
	Objective 2.3 By 2014, all education institutions (primary, secondary, and tertiary) have easy

	access to biodiversity information.
	Objective 2.4 All communities with PAs are aware of PA benefits.
Improve land-use practices through enforcement with well monitored land-use policy and logging codes.	**Objective 3.1** By 2014, 50% compliance with the Environmental Assessment Regulatory requirements is achieved.
	Objective 3.2 By 2011, riparian vegetation rehabilitation is underway in 10% of major areas.
	Objective 4.2 By 2014, sustainable funding mechanisms for PAs are in place.

NBSAP FOCUS AREA: INVASIVE ALIEN SPECIES

The Pacific regional countries, including Fiji, are facing a serious threat from invasive alien species, according to the Global Invasive alien species Program (GISP). Invasive alien species are plants and animals not native to any ecosystem but have been introduced either through trade, or through 'misguided' attempts to protect local flora and fauna. Invasive alien species are responsible for more species extinction than habitat destruction or modifications. According to IUCN an invasive alien species is defined as: "A species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity." Invasive alien species threaten developments in developing countries by impacting agriculture, forestry, fisheries and natural systems. They impact adversely upon biodiversity, including decline or elimination of native species - through competition, predation, or transmission of pathogens - and the disruption of local ecosystems and ecosystem functions. The impacts of invasive alien species are increasing rapidly and effective management is essential to prevent further extinctions and changes in the livelihoods and lifestyles of island people.

IDENTIFICATION OF MANAGEMENT TARGETS AND THREATS

The Species Management Committee with other stakeholders (Government, NGO's, and academia) met in 2009 in Suva to identify the major threats concerning the invasive alien species on the biodiversity of Fiji Islands. The threats included: targeted research to support improved knowledge on invasive alien species in Fiji, strengthen national legislation, policies and strategies to support improved control of invasive alien species; strengthen the capacity and resources of key stakeholders to address invasive alien species in Fiji, improve monitoring and surveillance of invasive in Fiji and raise awareness with Fiji public and tourists to reduce invasive alien species introductions

Table 2.2: Fiji's NBSAP Targets towards Invasive Alien Species

Strategies	Objectives / Targets
Target research to support improved knowledge on invasive Alien species in Fiji.	**Objective 1.1** By 2011, identification of potential pathways of accidental introductions.
	Objective 1.2 By 2014, a national invasive alien species database is established.
	Objective 1.3 By 2012, research conducted on the integration of impacts of invasive alien species on biodiversity and commercial values.
Strengthen national legislation, policies and strategies to support improved control of Invasive alien species.	**Objective 2.1** By 2011, complete a legislative gap analysis for invasive alien species.
	Objective 2.2 By 2014, develop a draft over-arching national invasive alien species management strategy.
	Objective 2.3 By 2014, four national control programs for priority species are in place.
	Objective 2.4 By 2012, Quarantine committee strengthened to include broader stakeholder Input into the decision making processes.
	Objective 2.5 By 2010, the Bio-security Bill implementation is initiated.
	Objective 2.6 By 2010, Fiji is actively involved in regional and international bio-safety debates.
	Objective 2.7 By 2010, increased coordination between key Government departments.
Strengthen the capacity and resources of key stakeholders to address invasive alien species in Fiji .	**Objective 3.1** By 2014, effective implementation of national invasive alien species policies, strategies, programs and initiatives
	Objective 3.2 By 2011, riparian vegetation rehabilitation is underway in 10% of major areas.
	Objective 4.2 By 2014, sustainable funding mechanisms for PAs are in place.
Improve monitoring and surveillance of invasive alien species in Fiji.	**Objective 4.1** By 2014, the existing national quarantine surveillance program is implemented to international standards.
Raise awareness with Fiji public and tourists to reduce invasive alien species introductions.	**Objective 5.1** By 2015, invasive alien species awareness programs are in place at all ports of entry into Fiji, as well as at major inter-island transport locations.

NBSAP FOCUS AREA: INSHORE FISHERIES

BACKGROUND

Recent and historical overfishing, in conjunction with rapid land cover change, has led to a collapse of coastal fisheries, biodiversity and supporting ecosystem services around the globe. Increases in fishing pressure may result in declines of biomass of targeted, largely carnivorous species; declines in species richness; and potential shifts in benthic habitat condition as grazing herbivores and predators of crown-of-thorns starfish are removed. There is great concern to manage inshore fisheries both to preserve food security, protect biodiversity and because ecosystem shifts can occur even under modest levels of artisanal fishing.

In the Fiji Islands, although fisheries data is often uncertain, there has been a high level of pressure on coastal fisheries in the past few decades. Of the 400 traditionally managed fishing grounds (*qoliqoli*), at least 70 are considered over-exploited while a further 250 are fully developed. Rising prices for fish and fishery products have contributed to declines in artisanal catches from 1996 to 2002.

Meanwhile percentages of catches sold are increasing: catch per unit effort (CPUE) from recent surveys by USP of village catch from locations across Fiji suggest that >70% of catch is being sold. Over a century of beche-de-mer harvesting has resulted in notable depletion of stocks on reefs in southern Viti Levu and Bua Province of Vanua Levu, with unknown consequences on reef ecosystems.

IDENTIFICATION OF MANAGEMENT TARGETS AND THREATS

In June 2009, a workshop was held in Suva led by a sub-group of the national Protected Area Committee to identify marine management targets for Fiji under the Program of Work on Protected Areas to enable a gap analysis of Fiji's marine systems. Participants were invited with expertise on marine species and habitats from government, NGOs, academia and the private sector. The participants collectively identified 8 key habitats that require protection in order to preserve biodiversity and food security within Fiji's inshore fishing grounds, defined as areas within traditional fisheries management areas (*qoliqolis*). These habitats include: coastal littoral forests, sandy beaches and cays; estuaries and mangroves; intertidal mud flats; sea grass; coral reef; soft bottomed lagoons; and reef channels.

These threats included: unsustainable harvesting, land-based runoff and inappropriate coastal development. The Inshore Fisheries working group focused on developing actions to mitigate unsustainable harvesting. These actions were grouped within seven broad strategies to support Outcome A: Biodiversity Protected and 2 broad strategies to support Outcome B: Sustainable Harvests which are described in detail below. The Coastal Development working group addressed strategies, objectives and actions to mitigate land-based threats to the marine environment and inappropriate coastal development, all of which are detailed in theme 4 of this plan.

Table 2.3: Fiji's NBSAP Targets towards Inshore Fisheries and Marine Areas

Strategies	Objectives / Targets
Promote sustainable aquaculture for restocking.	**Objective 1.1** By 2014, marine inshore biodiversity will be maintained at 2010 levels by increased active management of key species and habitats.
Promote biodiversity tourism.	**Objective 2.1** By 2014, all sites with biodiversity tourism have transparent accounting.
	Objective 2.2 By 2014, 20% increase in funds from biodiversity tourism coming into accounts for management and there is a 20% increase in funds (that are directly derived from biodiversity tourism activities) spent on management activities.
	Objective 2.3 By 2014, four national control programs for priority species are in place.
	Objective 2.4 By 2012, Quarantine committee strengthened to include broader stakeholder Input into the decision making processes.
	Objective 2.5 By 2010, the Bio-security Bill implementation is initiated.
	Objective 2.6 By 2010, Fiji is actively involved in regional and international bio-safety debates.
	Objective 2.7 By 2010, increased coordination between key Government departments.
Maintain existing protected areas.	**Objective 3.1** 80% of MMAs that existed in 2010 still in existence in 2014
	Objective 3.2 By 2014, biodiversity surveys show no decline in numbers related to 2010 levels and there is a 15% increase (which must be a significant difference) in biomass of targeted species inside MPA compared with outside
Design new ecologically relevant inshore MPAs.	**Objective 4.1** By 2014, biodiversity surveys show no decline in numbers related to 2010 levels.
	Objective 4.2 By end of 2011, collect new biodiversity and range information at a national scale for all species cited as important by PAC and SMC.
	Objective 4. By end of 2011, marine ecological gap analysis completed.

	Objective 4.4 By mid-2012, options for MPA networks are produced and consulted on by all external stakeholders.
	Objective 4.5 By mid-2014, 20% of communities with existing MMAs will have agreed to add additional MPAs.
	Objective 4.6 By mid-2014, 25% of the communities will have established new management structures for new MPAs.
	Objective 4.7 By 2014, 100% of all known endemic species from 2010 will be represented within at least one MMA.
Strengthen natural resource leadership, management and Governance.	**Objective 5.1** By 2014, 50% increase in number of villages and management units that have undergone leadership training.
	Objective 5.2 By 2014, all inshore MMAs will have been trained in financial literacy and have access to financial mechanisms.
	Objective 5.3: By 2014, all inshore MMAs will have a management plan that is adaptively managed.
	Objective 5.4 By 2010, resource managers at 50 selected sites are recording incidents of destructive fishing and by 2014, multi-sectoral enforcement plans developed for all MMA sites
	Objective 5.5 By 2014, report will be made of best available knowledge for dissemination to Management units
Promote education and awareness in Environmental science.	**Objective 6.1** By 2014, traditional and local knowledge will be collated by cultural sector and made available upon request to traditional owners and Education Department under the conditions of the new legislation for intellectual property rights; indicator and there will be 50 documented examples of traditional and local knowledge being used to support best management practices.
	Objective 6.2 By 2014, cabinet paper submitted.

	Objective 6.3 By 2014, 50 scholarships per year awarded for marine resource and Biodiversity management.
	Objective 6.4 By 2014, all primary and secondary schools' curriculum will include Marine resource and biodiversity management.
	Objective 6.5: By 2014, conservation messages delivered in religious sermon curriculum.
Improve communication between DoE & DoF on relevant biodiversity and food security issues.	**Objective 7.1**: By 2010, there will be a clear statement of objectives and agreement on definition of terms.
Reform fisheries legislation and Management institutions.	**Objective 8.1:** By 2014, legally gazette 100% of all no-take areas nominated by Communities depending on legislation changes on gazettal of no-take PAs.
	Objective 8.2: By 2014, size limit table will be updated with ecologically relevant minimum and maximum sizes for all target species
	Objective 8.3: By 2014, all licensed commercial fishing boats provide catch information on inshore fisheries to DoF.
	Objective 8.4 By 2014, licensing guidelines are based on stock assessments.
	Objective 8.5 By 2014, penalties under the Fisheries Act will be comparable to the Environmental Management Act and there will be 50% decrease in noted destructive fishing events by internal and external fishers compared with 2011 levels.
	Objective 8.6 By 2014, 50 successful prosecutions are conducted under the Fisheries Act.
Reduce demand for marine natural resources and biodiversity products.	**Objective 9.1** By 2014, family planning guides will incorporate how overpopulation threatens biodiversity and marine resources.
	Objective 9.2 By 2014, 50% of MMA site communities will be engaging in best practices for sustainable agriculture, including practicing sustainable animal husbandry
	Objective 9.3 By 2014, 20% increase in sale of sustainable aquaculture products.

	Objective 9.4 By 2014, tourists will be educated about what fish to avoid consuming because their stocks are in jeopardy; indicator 2: tourist operators will not sell or provide fisheries products whose stocks are in jeopardy.

NBSAP FOCUS AREA: COASTAL DEVELOPMENTS

BACKGROUND

Work and activities on Integrated Coastal Management (ICM) have been ongoing for the past 15 years with the different government sectors and partners despite its recently introduction as a legal requirement under the Environment Management Act (EMA) 2005. Section 8(3) of the EMA also stipulates the establishment of a committee that will be responsible for the development of an ICM Plan. Hence the committee serves as a technical advisory committee to the National Environment Council. The committee hopes to improve coordination and engagement and monitoring of developments that may have adverse effects on Fiji's coastal resources.

Fiji's coastal environment is susceptible to heavy developments specifically on tourism and public amenity infrastructure. The National Tourism Development Plan, the Land Use Policy, the Code of Logging, are some mechanisms in place to assist the ICMC undertake its functions under the EMA.

IDENTIFICATION OF MANAGEMENT TARGETS AND THREATS

A two day workshop in August 2009 got together stakeholders to form a working group to identify key threats to Fiji's coastal ecosystems and biodiversity and the result s framework for the next 5 year period (2010-2014). The working group consists of key stakeholders from the private sectors, government ministries, Ministry of Tourism, Public Utilities, Fisheries and Forests, Institute of Applied Science, and non government organizations with an interest on coastal resources.

Amongst the major threats identified on the Fiji's coastal resources are the increasing rates of mangrove reclamation, coral extraction, river dredging, unregulated developments, tourism developments, and the absence of updated information. An integrated approach to sectoral and partnership planning and monitoring is central to the Coastal Development thematic area to ensure proper management and utilization of Fiji's coastal resources.

Table 2.4: Fiji NBSAP's target towards coastal development

Strategies	Objectives / Targets
	Objective 1.1 By 2014, 100 ecotourism agencies to be aware of the guidelines for the inter-sectoral coastal development.

Strengthen national Guidelines for Intersectional coastal development.	**Objective 1.2** By 2014, 50% reductions in effluents discharged by industries.
	Objective 1.3 By 2014, a national coastal development plan to be developed to Regulate/monitor coastal development activities.
Develop & promote partnership between Government agencies and stakeholders towards sustainable tourism development	**Objective 2.1** By 2012, new partnerships are established between Government and communities for sustainable tourism development.
Regional tourism planning unit to consider other non-tourism development activities e.g. agriculture, aquaculture etc.	**Objective 3.1** By 2014, a regional tourism sustainable task force is in place and Chaired by four commissioners

NBSAP FOCUS AREA SPECIES CONSERVATION

The Pacific Island nations are diverse with numerous ecosystems and habitats that support many species of ecological, cultural and economic importance. The islands of Fiji have been recognized by Conservation International (CI) as one of the 25 key locations for conserving the world's biodiversity. However, the forests, freshwater and coral reefs around Fiji and their biodiversity are in danger due to land-based activities such as improper agricultural land use (fires, land-clearing), unsustainable logging, coastal developments and unsustainable Harvesting. In addition to invasive species, these destructive activities have led to the extinction of some of Fiji's unique species and the threatened status of most extant native species due to habitat destruction. An endangered/threatened species is a plant or animal those are at risk of being wiped out forever from this world. In Fiji, the documented marine endemic species is less than 20 compared to over 946 in terrestrial and freshwater ecosystems. To protect Fiji's biodiversity, the IUCN RedList, CITES, Fiji's National Biodiversity Strategy and Action Plan (2007) and Endangered Species Act (2002) are some of the initiatives taken to ensure that species and their habitats are protected or used wisely to prevent them from becoming endangered.

The IUCN Redlist is widely recognized as the most reliable evaluation of the world's species which classifies endangered species according to their extinction risk. The categories are: extinct, extinct in wild, critically endangered, endangered, vulnerable, least risk, data deficient and not evaluated. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international treaty that was drawn up in 1973 and enforced in 1975 to protect wildlife through controlling international trade. Species covered by CITES are listed in three appendices: Appendix I, Appendix II and Appendix III, according to the degree of protection required for their survival.

The Endangered and Protected Species (EPS) Act regulates and control the international trade, domestic trade and transportation of species protected under CITES. The list of non-CITES listed species that also require protection under the Act are found in Schedule 1 and Schedule 2. Schedule 1 lists species that are indigenous to the Fiji Islands, and are believed to be threatened with extinction, but are not listed in

Appendix I of the CITES. Schedule 2 lists species that are indigenous to the Fiji Islands but are not listed in the CITES Appendix I, II, or II or Schedule1 of this Act. Under this the EPS Act, no species in Schedule 1 or 2 can be traded without an export or import or re-export permit, whilst CITES listed species are bound by the CITES regulations.

IDENTIFICATION OF MANAGEMENT TARGETS AND THREATS

The Species Management Committee, CITES Enforcement, Invasive Species, Terrestrial and Marine working groups, NEC Sub-committee on Reports and Plans, NGOs and stakeholders met and developed the implementation framework for species conservation in 2009 in Suva. This committee identified the threats and its management suggestions to protect species that maybe under threat or endangered. The threats identified by the above group were: need for increased research, decrease illegal trade of threatened and endangered species, increase financial assistance and increase communication to communities and stakeholders.

The Committee developed objectives and actions to mitigate conservation of threatened and endangered species. These included currently known 305 terrestrial and 60 marine species from Fiji . However further research is needed to conform these numbers and other species that are threatened or endangered. Fiji has listed plants and animals under 'Endangered Species of Fiji' and has grouped as: plants, birds, reptiles (lizards, iguanas, snakes, and turtles), amphibians (frogs), fish (freshwater and marine fin fishes), mammals (bats) and invertebrates (terrestrial arthropods and gastropods).

Table 2.5: NBSAP'S target towards species conservation

Strategies	Objectives / Targets
Increase access to expertise/increased efforts made in the fields of quality research	**Objective 1.1** By 2012, resource inventories are compiled for at least 10 target species.
Strengthen national Guidelines for Intersectional coastal development.	**Objective 1.2** By 2014, resource inventories are systematically stored in databases.
Decrease in illegal trade of endangered & Threatened species.	**Objective 2.1** By 2012, 50% decrease in illegal trade confiscations recorded by border/enforcement agencies from 2009 levels.
	Objective 2.2 By 2012, increase capacity for enforcement and monitoring of EPS Regulations.
Increase Governments contribution to Conservation budgets.	**Objective 3.1** By October (2010-2014) ensure the budget allocation for species conservation is increased by 20% annually over the next 5 years.

Increase collaboration between relevant line Ministries.	**Objective 4.1** By 2010, improved collaboration between the DoE and other line ministries including MAFF.
Improved communication amongst stakeholders (including communities) on threatened & Endangered species.	**Objective 5.1** By 2014, the Clearing House Mechanism for threatened and endangered species is implemented.
	Objective 5.2 By 2014, a communications strategy for culturally and subsistence priority Species is developed.
	Objective 5.3 By 2014, empower communities through knowledge to protect and conserve endangered and threatened species.
	Objective 5.4 By 2012, mechanisms are developed for facilitating community feedback to DoE

NBSAP FOCUS AREA: PROTECTED AREAS

Fiji currently has 48 terrestrial protected areas covering 488 km or 2.7% of the nations land area .Eight Nature Reserves were established under Forestry legislation in the 1950-60s – all of these remain but they have never received any formal conservation management. Only three of these have ecological significance – Ravilevu, Tomanivi and Savura. The Ravilevu Nature Reserve and the Tomanivi Nature Reserve are currently under advanced plans for de-reservation and a return to native land tenure.

In 1972, a UNDP/World Bank Tourism study recommended eight protected forest areas.
Eight years later the National Trust of Fiji and WWF produced a landmark report detailing a proposed system of national parks and reserves along with information on how to establish, develop and manage them.

A total of 88 terrestrial and marine sites were identified in seven planning regions. The report promoted 'ecodevelopment' for Fiji and provided a Draft Act for the establishment of national parks and reserves. None of the recommendations have ever been fully implemented.

In the mid 1970s the Namenalala island reserve was established – a landmark Native Land Trust Board-brokered lease for a combination of resort development (restricted to 6 acres) and conservation (the remaining 50 acres of the island). This was followed in 1980 by an informal agreement with the landowners for sanctuary status for Yadua Taba island. The J H Garrick Memorial Park, comprising of 426 ha of lowland forest on freehold land in the Deuba-Namosi area, was donated to the State in 1983 and is now managed by the National Trust.

In 1988, the Native Lands Trust Board (NLTB) supported the first serious ecosystem based study
For forest conservation areas, nominating 15 sites for protection. Three of these sites have been set aside from logging, including Sovi Basin, but management of the other sites is unchanged. Four years after this

study, the 1992 State of Environment Report noted that although neighboring Pacific nations had internationally recognized protected areas, Fiji had none. The associated National Environment Strategy (NES) drew up a list of 140 Sites of National Significance, proposing that a formal legislative process be enacted to give them greater protection from destructive development. In the 15 years since the NES, several forest areas have been reserved either through formal leasing arrangements with landowners or through informal agreements. Notable among these are Waisali, established through a formal lease in 1996; and the 'Heritage Parks' of Bouma and Abaca, the former established as a result of an MoU between the landowners, NLTB, DoF and the New Zealand Government.

Significantly, the 20,000-hectare Sovi Basin is now well on the way to reserve status with an associated trust fund for landowners. Equally significant has been the establishment of over 200 locally managed marine areas. The Navua Gorge Conservation Area is a privately managed protected area of a Site of National Significance, leased by the NLTB on behalf of the Landowners. It was subsequently nominated and listed as Fiji's first Ramsar site, as a wetland of international significance.

Identification of Management Targets and Threats

A terrestrial working group within the national Protected Area Committee met in 2009 to agree on terrestrial habitat targets for Fiji. They resolved to follow Fosberg (1998) terrestrial ecosystem classification to designate habitat targets at coarse level. Finescale targets are being assessed by identifying sites where endemic species are found. To begin the process of identifying focal marine biodiversity targets, a questionnaire was Distributed to marine experts within Fiji in May 2009. The questions engaged respondents to identify species with priority for conservation due to their ecological roles, cultural significance, uniqueness (e.g. endemics) and rarity (e.g. threat status on IUCN red-list) and across which marine habitats were these species likely to be found. The target focal species and habitats were determined at a workshop with marine experts and stakeholders in June 2009 and refined at a later workshop in March 2010.

TABLE 2.6 NATIONAL BIODIVERSITY TARGETS LISTED IN FIJI'S NBSAP RELATED TO PROTECTED AREAS

Strategies	Objectives / Targets
Identify gaps in biodiversity protection against national targets.	**Objective 1.1** By end 2010, initial iteration of terrestrial and marine gap analyses complete.
Expand protected area network in priority sites at the national level and provincial level to achieve national targets.	**Objective 2.1**: By end 2011, complete list of priority terrestrial and marine sites developed.
	Objective 2.2: By 2014, develop management structures and implement paths to gazettal at highest priority sites
	Objective 2.2 By 2012, increase capacity for enforcement and monitoring of EPS regulations.

Develop sustainable finance mechanisms for new and existing Protected areas.	**Objective 3.1** By 2014, sustainable funding mechanisms are in place to continue PA work.
Share best practices and lessons learned to improve management effectiveness and governance.	**Objective 4.1:** By 2014, best practice guidelines will be collated from and distributed among National protected area sites.
Identify legislative and Institutional gaps.	**Objective 5.1**: By 2011, areas will be identified where existing legislation should be Strengthened or new legislation drafted to improve enabling environmental for PA gazettal.
Improve legislative, governance and administrative frameworks for PAs.	**Objective 6.1:** By 2014, there will be clear mechanisms to provide for legal recognition of multiple types of PAs and legislative frameworks to enable good governance and management.

was developed not all the targets enshrined in the Aichi Targets are the same as

How has Fiji's national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

Fiji received its approval for its Biodiversity Enabling Activity funding to develop a National Biodiversity Strategy and Action Plan (NBSAP) IN 1997. Significant work has been undertaken during the implementation of this project, including the establishment of a NBSAP steering committee and technical groups, which have conducted the stocktaking and assessment of biodiversity and resources use. The stocktaking and assessment work included consultation with all stakeholders, ranging from the private sector, local communities, academic institutions, government and non-government organization.

The NBSAP was completed and endorsed by Cabinet in January 2003. After 10 years since its initial beginnings the document is now under review by the NBSAP Steering Committee to incorporate initiatives already being undertaken and will be submitted to the CBD Secretariat by 2014.

The first, second, third and fourth national report on the implementation of CBD objectives in Fiji have been completed in the past and submitted to the Secretariat. Currently Fiji is working on its fifth national report to CBD.

NBSAP stakeholders and Partnerships

Fiji's NBSAP processes have been successful particularly because of its strong stakeholder networking and nongovernmental organization partnerships, effective and efficient coordination and technical support from the South Pacific Regional Environment Program (SPREP) and Round Table for Nature Conservation.

With continuous updating, implementation meetings and reviews, stakeholder participation in workshops and cross sectoral activities the Department of Environment has been able to bring a large cross section of the NGO sector working in environmental related themes under the NBSAP processes.

The relevant government ministries, departments, agencies and academic institutions in Fiji have all gathered the same support and momentum to collaborate on existing initiatives and strengthen on national targets and objectives to halt biodiversity loss and sustainably manage Fiji's rich and diverse natural resources.

- Preparation of Fiji's first ever **Natural Resource Inventory (NRI)** that was launched by Hon. Minister for Environment. Fiji's NRI is a document that will be used by policy makers, economists and national planners in realizing the rich and diverse natural resource that the country offers.
- Fiji's joint stakeholder collaboration between Ministry of I-Taukei Affairs and Ministry of Environment in the form of consultation workshop called the **"Traditional Knowledge and Linkages to Biodiversity**" where resource owners, policy makers, scientists, NGO, students, researchers, traditional knowledge holders and the likes discussed many issues and prepared agreed on various issues and drafted an action plan which was implemented by end of 2012.
- Fiji launched its environment **website** fulfilling the requirements of CBD's clearing house mechanism, a portal that now provides customers information on the work the department undertakes, acts and other laws, application forms and in 2012 the Department established a **Flora and Fauna database**.
- he most important achievement by the Department of Environment for NBSAP in Fiji was the compilation and launch of **NBSAP Implementation Framework 2010 – 2014.** This was proud moment for Fiji since Fiji remains the only country in the Pacific to have walked this far having an implementation framework for NBSAP partners. This document is used by implementing agencies in Fiji which outlines objectives, targets, and timelines and is available in the most understandable format from project perspectives.
- The launch of **Integrated Coastal Management Framework** which in tend later activated the Integrated Coastal Management committee was yet another milestone for the Department. (NB: Coastal developments is one of the key themes of Fiji's NBSAP and now ICM committee is the focal point for the thematic area)
- Since 2010 – 2012 there was a project "**NBSAP Enabling activity"** that was able to achieve its own goals as bolt on under the NBSAP process such as "accession to Nagoya Protocol, setting of clearing house mechanism for NBSAP etc.
- In 2012 a stakeholder meeting was able to establish a **NBSAP steering committee**, their TOR and reviewed outcomes of 2010-2011 and this review was in tend to prepare for activities of 2013.
- The particular emphasis should be drawn to other projects and committee's work that complements NBSAP processes such as **MESCAL, CT Pacific, Wetlands steering committee, CITES** etc which are all thematic areas under NBSAP. Activities under CITES for instance are actually captured and reported under the thematic area "Species Conservation of the NBSAP. Similarly the wetlands steering committee is mandated to undertake work related to inland waters and Ramsar convention which is captured under the thematic area "Inland waters "for NBSAP.
- One of the other key achievements of the Department in implementing NBSAP is the coordination of NGO activities in Fiji. It has to be understood that as the government mandated agency Department of Environment is more of a policy **and administrative arm** and thus does not directly undertake or implement conservation programs and activities. Instead it coordinates and manages them through NBSAP processes. With the existence of MOU's between many stakeholders in Fiji (NGO's) the

Department's role is to ensure that these activities are properly implemented with benefits reaching the communities, are being undertaken in line with government national development plans and meets country's targets. As such achievements of Fiji's NGO sector are also a reflection of Department of Environment's initiative in this regard.

TABLE 2.7: Aligning Aichi Targets with Fiji's National Targets

AICHI TARGET		NATIONAL TARGETS	THEMATIC AREA	POSSSIBLE INDICATORS
Address underlying causes	**By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably**	**Objective 2.3** By 2014, all education institutions (primary, secondary and tertiary) have easy access to biodiversity information.	**Thematic Area 1** Forest Conversion Management	Awareness materials published and distributed to schools Department of Environment Websites up to date
		Objective 6.5 By 2014, conservation messages delivered in religious sermon curriculum.	**Thematic Area 3** Inshore Fisheries	Number of meetings conducted
		Objective 1.1 By 2014, 100 ecotourism agencies to be aware of the guideline for the inter-sectoral coastal development	**Thematic Area 4** Coastal Development	

		Objective 2.1 By 2012, 50% decrease in illegal trade confiscation recorded by border/enforcement agencies from 2009 levels	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	Number of confiscation recorded
		Objective 5.4 By 2012, mechanisms are developed for facilitating community development to DoE	**Thematic area 5** Species Conservation: Threatened and Endangered Species	Visitation to community sites Training workshop for community
		Objective 5.1 By 2012, the Fiji public will have a broader understanding of the specific threats to wetlands and the values of wetland services to public health, livelihoods and climate change adaptations	**Thematic Area 7** Inland Waters	Number of Awareness materials submitted to the public Media as a source of information Seminars and lectures on climate change
	1. By 2020, at the latest, biodiversity values have been integrates into local and national development and poverty	**Objective 4.6** By mid-2014, 25% of the communities will have established new management structures for new MPAs	**Thematic Area 3** Inshore Fisheries	Progress reports and implementation reports gathered Analysis of species, recording of number since the establishment of the site

	reduction strategies and planning processes and are being incorporated into national accounting, as appropriate and reporting systems.	**Objective 5.5** By 2014, report will be made best available knowledge for dissemination to management units	**Thematic Area 3** Inshore Fisheries	Progress of the report Submission of draft report
		Objective 3.1 By 2014, regional tourism sustainable task force is in place and chaired by four commissioners	**Thematic Area 4** Coastal Development	Number of officers
		Objective 5.1 By 2011, areas will be identified where existing legislation should be strengthened or new legislation drafted to improve enabling environmental for PA gazettal	**Thematic Area 6** Protected Areas	
		Objective 3.1 By end 2013, all development sectors are aware of national priority wetlands sites.	**Thematic Area 7** Inland Waters	Consultations/ no of meetings held

	2. **By 2020, at the latest, incentives , including subsidies , harmful to biodiversity are eliminated phase out or reform in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national and socio-economic**	**Objective 3.1** By 2014, 50% compliance with the Environmental Assessment Regulatory requirements is achieved	**Thematic Area 1** Forest Conversion Management	Reports and data analysation on the achievement
		Objective 2.4 By 2012, Quarantine committee strengthened to include broader stakeholder input into decision making processes	**Thematic Area 2** Invasive Alien Species	Number of stakeholders included and number of decisions made4 so far
		Objective 2.1 By 2014, all site with biodiversity tourism have transparent accounting	**Thematic Area 3** Inshore Fisheries	Tourism biodiversity sites located and proper analyzation done
		Objective 8.5 By 2014, penalties under the Fisheries Act will be comparable to the Environment Management Act and there will be 50% decrease in noted destructive fishing events by internal and external fishers compared with 2011 levels.	**Thematic Area 3** Inshore Fisheries	Reporting on the number of destructive fishing Analyzing the resources

	conditions.	**Objective 6.1** By 2014, there will be clear mechanisms to provide legal recognition of multiple types of PAs and legislative frameworks to enable good governance and management	**Thematic Area 6** Protected Areas	Protected Areas looked into Purpose of each of the PA notes and what legislations are bound in the particular PA
		Objective 1.1 By end 2011, national wetlands inventory of habitats (as well as their flora and fauna) produced as baseline for national planning	**Thematic Area 7** Inland Waters	Number of flora and fauna added to the species list The status of the flora and fauna
	3. By 2020, at the latest, Government, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	**Objective 1.2** By 2014, all review process for government Policies and Plans takes into consideration Biodiversity (and climate change)	**Thematic Area 1** Forest Conversion Management	Number of policies/decisions made to conserve the biodiversity noted Plans or draft plans to reduce climate changes have been formulated and reviewed
		Objective 2.6 By2010, Fiji is actively involved in regional and international bio-safety debates	**Thematic Area 2** Invasive Alien Species	Number of forums attended regionally and internationally
		Objective 2.7 By 2010, increased coordination between key Government departments	**Thematic Area 2** Invasive Alien Species	MOU signed by government departments

		Objective 6.2 By 2014, cabinet paper submitted	**Thematic Area 3** Inshore Fisheries	Progress on the cabinet paper
		Objective 4.1 By 2010, improved collaboration between the DoE and other line ministries including MAFF	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	Signing of the MOU
		Objective 6.1 By 2014, all wetlands sites of national significance are managed effectively with full stakeholder participation	**Thematic Area 7** Inland Waters	Enforcing wetlands at a PA Number of endemic species recorded and measures put in place
A. Reduce pressures and promote sustainable use	**By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduces.**	**Objective 5.1** By the end of 2010, the existing Mangrove Management Plan is reviewed	**Thematic Area 4** Coastal Development	Drafting MMP

		Objective 2.2 By end 2013, no new development is occurring in national wetlands sites of significance and there have been 10 successful prosecutions of offenders	**Thematic Area 7** Inland Waters	Legislation enforcement on Wetlands All development on wetlands sites terminated
	By 2012, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches so that the overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries on stocks, species and ecosystems are within safe ecological limits.	**Objective 1.1** By 2014, marine inshore biodiversity will be maintained at 2010 levels by increased active management of key species and habitats	**Thematic Area 3** Inshore Fisheries	Priority on species protection and monitoring Data analysis on species and its abundance
		Objective 4.5 By mid-2014, 20% of communities with existing MMAs will have agreed to add additional MPAs	**Thematic Area 3** Inshore Fisheries	Vulnerable sites located and decision made to add its as on of the MPA sites
		Objective 5.4 By 2010, resource managers at 50 selected sites are recording incidents of destructive fishing and by 2014, multi-sectoral enforcement plans developed for MMA sites	**Thematic Area 3** Inshore Fisheries	Sites selected

		Objective 8.2 By 2014, size limit table will be updated with ecologically relevant minimum and maximum sizes for all target species	**Thematic Area 3** Inshore Fisheries	
		Objective 8.3 By 2014, all licensed commercial fishing boats provide catch information on inshore fisheries to DoF.	**Thematic Area 3** Inshore Fisheries	
		Objective 9.4 By 2014, tourists will be educated about what fish to avoid consuming because their stocks are in jeopardy; indicator 2: tourists operators will not sell or provide fisheries product whose stocks are in jeopardy.	**Thematic Area 3** Inshore Fisheries	
	By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity	**Objective 8.4** By 2014, Licensing guidelines are based on stock assessment	**Thematic Area 3** Inshore Fisheries	

		Objective 9.2 By 2014, 50% of MMA site communities will be engaging in best practices for sustainable agriculture, including practicing sustainable animal husbandry	**Thematic Area 3** Inshore Fisheries	
		Objective 9.3 By 2014, 20% increase in sale of sustainable aquaculture products	**Thematic Area 3** Inshore Fisheries	
	By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystems function and biodiversity.	**Objective 1.2** By 2014, 50 5 reductions in effluents discharged by industries	**Thematic Area 4** Coastal Development	
	By 2020, invasive alien species and pathways are indentified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	**Objective 1.1** By 2011, identification of potential pathways of accidental introductions	**Thematic area 2** Invasive Alien Species	
		Objective 1.2 By 2014, a national invasive alien species database is established	**Thematic Area 2** Invasive Alien Species	

		Objective 1.3 By 2012, research conducted on the integration of impacts of invasive alien species on biodiversity and commercial; values	**Thematic area 2** Invasive Alien Species	
		Objective 2.2 By 2014, develop a draft over-arching national invasive alien species management Strategy	**Thematic area 2** Invasive Alien Species	
		Objective 2.3 By 2014, four national control programs for priority species are in place	**Thematic Area 2** Invasive Alien Species	
		Objective 3.1 By 2014, effective implementation of national invasive alien species policies, strategies, programs and initiatives.	**Thematic Area 2** Invasive Alien Species	Number of workshops for the ports officers

		Objective 5.1 By 2015, invasive alien species awareness programs are in place at all ports of entry into Fiji, as well as at major inter-island transport locations	**Thematic Area 2** Invasive Alien Species	
		Objective 7.1 By 2014, there are no new intentional or unintentional releases of non-native species into wetlands sites of national significance	**Thematic Area 7** Inland Waters	
	By 2015, the multiple anthropogenic pressures on coral reefs, and other valuable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	**Objective 9.1** By 2014, family planning guides will in corporate how overpopulation threatens biodiversity and marine resources	**Thematic Area 3** Inshore Fisheries	
Safeguard ecosystems, species and genes	**By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas of particular importance for biodiversity and ecosystem services, are conserved through**	**Objective 2.1** By 2012, at least 3 forest areas are well surveyed with recommended findings.	**Thematic area 1** Forest Conversion Management	
		Objective 2.4 All communities with Pas are aware of the PA benefits	**Thematic Area 1** Forest Conversion Management	

	effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective are-based conservation measures, and integrated into the wilder landscapes and seascapes			
		Objective 3.1 80% of MMAs that existed in 2010 still in existence in2014	**Thematic Area 3** Inshore Fisheries	
		Objective 4.2 By the end of 2011, collect new biodiversity and range information at a national scale for all species cited as important by PAC and SMC	**Thematic Area 3** Inshore Fisheries	

		Objective 1.1 By the end 2010, initial iteration of terrestrial and marine gap analyses complete	**Thematic Area 6** Protected Areas	
	By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly those most in decline, has been improved and sustained.	**Objective 2.5** By 2010, the Bio-security Bill implementation is initiated	**Thematic Area 2** Invasive Alien Species	
		Objective 4.1 By 2014, biodiversity surveys show no decline in numbers related to 2010 levels.	**Thematic Area 3** Inshore Fisheries	
		Objective 4.3 By end of 2011, marine ecological gap analysis completed	**Thematic Area 3** Inshore Fisheries	
		Objective 4.7 By 2014, 100% of all known endemic species from 2010 will be represented within at least one MMA	**Thematic Area 3** Inshore Fisheries	

		Objective 5.3 By 2014, all inshore MMAs will have a management plan that is adaptively managed	**Thematic Area 3** Inshore Fisheries	
		Objective 1.1 By 2012, resource inventories are compiled for at least 10 target species.	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	
		Objective 5.1 By 2014, the Clearing House Mechanism for threatened and endangered species is implemented	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	
		Objective 2.1 By end 2011, complete list of priority terrestrial and marine sites developed	**Thematic Area 6** Protected Areas	
		Objective 4.1 By 2014, best practice guidelines will be collated from and distributed among national protected area	**Thematic Area 6** Protected Areas	

		<u>Objective 2.1</u> By end 2012, complete list of priority inland waters sites developed	**Thematic Area 7** Inland Waters	
	By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	**<u>Objective 5.2</u>** By 2014, a communication strategy for culturally and subsistence priority species is developed	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	
Enhance benefits	**By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and**	**<u>Objective 2.3</u>** By 2014, mechanisms for selecting high priority protected area sites take into account cultural as well as natural heritage	**Thematic Area 6** Protected Areas	

from biodiversity and ecosystems	**well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.**	**Objective 4.1** By 2013, economic valuations are performed for important wetland ecosystem, species and functions and the value of wetland conservation.	**Thematic Area 7** Inland Waters	
	By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	**Objective 3.2** By 2011, riparian vegetation rehabilitation is underway in 10% of major areas	**Thematic area 1** Forest Conversion Management	
	By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their	**Objective 7.1** By 2010, there will be a clear statement of objectives and agreement on definition of terms	**Thematic Area 3** Inshore Fisheries	
Enhance implementation through planning,	**By 2015 each Party has developed, adopted as a policy instrument, and**	**Objective 1.1** By 2012, 3 cross-sectoral forums have been established to discuss and facilitate biodiversity	**Thematic Area 1** Forest Conversion Management	

knowledge management and capacity building	**has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.**	**Objective 4.1** By 2014, the existing national quarantine surveillance program is implemented to international standards	**Thematic Area 2** Invasive Alien Species	
		Objective 8.1 By 2014, legally gazette 100% of all no-take area nominated by communities depending in the legislation changes on gazettal of no-take PAs	**Thematic Area 3** Inshore Fisheries	
		Objective 8.6 By 2014, 50 successful prosecutions are conducted under the Fisheries Act	**Thematic Area 3** Inshore Fisheries	
		Objective 1.3 By 2014, a national coastal development plan to be develop to regulate/monitor coastal development activities	**Thematic Area 4** Coastal Development	

		Objective 2.1 By 2012, new partnerships are established between Government and communities for sustainable tourism development	**Thematic Area 4** Coastal Development	
		Objective 2.2 By 2012, increase capacity for enforcement and monitoring of EPS Regulations	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	
	By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local	**Objective 5.1** By 2014, 50% increase in number of villages and management units that have undergone leadership training	**Thematic Area 3** Inshore Fisheries	
		Objective 6.1 By 2014, traditional and local knowledge will be collated by cultural sector and made available upon request to traditional owners and Education Department under the conditions of the new legislation for intellectual property rights; indicator and there will be 50 documented examples of traditional and local knowledge being used to support best management practices	**Thematic Area 3** Inshore Fisheries	

	communities, at all relevant levels.			
		Objective 5.3 By 2014, empower communities through knowledge to protect and conserve endangered and threatened species	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	
	By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	**Objective 2.2** By 2012, promote at least 2 case studies on the relationship between forest cover and ecosystem services.	**Thematic area 1** Forest Conversion Management	
		Objective 2.1 By 2011, complete a legislative gap analysis for invasive alien species management	**Thematic area 2** Invasive Alien Species	

		Objective 3.2 By 2014, biodiversity surveys show no decline in numbers relate to 2010 levels and there is a 15% increase (which must be significant difference) in biomass of targeted species inside MPA compared with outside.	**Thematic Area 3** Inshore Fisheries	
		Objective 4.4 By mid-2012, options for MPA networks are produced and consulted on by all external stakeholders	**Thematic Area 3** Inshore Fisheries	
		Objective 6.4 By 2014, al primary and secondary schools' curriculum will include marine resources and biodiversity management	**Thematic Area 3** Inshore Fisheries	
		Objective 1.2 By 2014, resource inventories are systematically stored in databases	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	

		Objective 2.2 By 2014, develop management structures and implement paths to gazettal at highest priority sites	**Thematic Area 6** Protected Areas	
	By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be **developed and reported by Parties.**	**Objective 4.2** By 2014, sustainable funding mechanisms for PAs are in place	**Thematic Area 1** Forest Conversion Management	
		Objective 2.2 By 2014, 20% increase in funds from biodiversity tourism coming into account for management and there is a20% increase in funds (that are directly derived from biodiversity tourism activities) spent on management activities.	**Thematic Area 3** Inshore Fisheries	Activities to promotes biodiversity tourism Eg: deep sea dive, Comparative analysis of tourist interested in biodiversity
		Objective 5.2 By 2014, all inshore MMAs will have been trained in financial literacy and have access to financial mechanisms	**Thematic Area 3** Inshore Fisheries	

		Objective 6.3 By 2014, 50 scholarships per year awarded for marine resources and biodiversity management.	**Thematic Area 3** Inshore Fisheries	
		Objective 3.1 By October (2010-2014) ensure the budget allocations for species conservation is increased by 20% annually over the next 5 years	**Thematic Area 5** Species Conservation: Threatened and Endangered Species	Progress of conservation Activities which needs an increased budget allocation
		Objective 3.1 By 2014, sustainable funding mechanisms are in place to continue PA work	**Thematic Area 6** Protected Areas	funding organization

ACTIONS TAKEN TO IMPLEMENT THE CONVENTION SINCE THE FOURTH REPORT AND OUTCOMES OF THESE ACTIONS

Fiji acceded to Nagoya Protocol in 2012 after much consultation amongst the key stakeholders in Fiji. The consultations led to a report titled as Access to Genetic Resources and Benefit Sharing Guidance document for Policy (ABS Report from the NBSAP Project). In the meanwhile a policy enacted by Ministry of I-Taukei Affairs which was later referred to the Attorney General's Office had also been undertaken that addressed ABS. This policy was called Traditional Knowledge and Expressions of culture Policy (TK&EC). Fiji also established the Fiji Intellectual Property Office.

The Ministry of Environment produced Fiji's first ever Natural Resources Inventory, a comprehensive 7 volume document that has information on resources derived from Land, Water, Marine, Forestry and Minerals in Fiji. The Natural Resource Inventory (NRI) is set to assist policy makers and decision makers in planning and executing programs pertaining to environment in Fiji. The NRI was a requirement under the Environment Management Act and was thus completed to fill both legal obligation as well as to assist in environment decision making process in the future. The report which was approved by Cabinet highlights key biodiversity resources in Fiji which is now exported into an electronic database under the biodiversity clearing house mechanism project.

Fiji also progressed towards completing its NBSAP streamlining which resulted in various consultation workshops and meeting. Fiji's NBSAP is broad and would be very useful with a supporting implementation Framework. Therefore in 2010 key stakeholders got together to draw up an implementation Framework of the NBSAP (NBSAP 1f 2010 – 2014) based on National properties and regional biodiversity conservation strategies. The NBSAP IF was not a duplication of the NBSAP process but rather a step to bring all implementing partners together with their priorities and develop action item as part of one key strategy. This strategy itself was the NBSAP. The Department of Environment undertook the responsibility of coordinating this process.

In the due processes, the department of Environment also drove way forward to develop reporting structure for NBSAP by establishing smaller reporting committees using the existing ones such as Technical committees that were established under the EMA eg. National Integrated Coastal Committee (ICM) to lead the Coastal development thematic area for NBSAP, Fiji Invasive Species Task force to lead the Invasive Alien Species thematic area, Fiji Wetland steering Committee to lead on the Inland Waters, Fiji Scientific Council for CITES to lead Species Conservation and Protected Areas Committee to lead on the PA thematic area of the NBSAP. Similarly the Fiji Locally Managed Marine Areas (FLMMA) took the lead for inshore fisheries under the NBSAP. Small assistance for coordination was provided by UNDP NBSAP Project while the Department took the responsibility of organizing regular meetings for these thematic areas to overseas their implementation and progress.

Apart from establishing a reporting structure for NBSAP, a monitoring framework was also established based on the Implementation framework. A BBSAP Steering Committee was also formed to ensure that the stakeholders regularly meet and plan on activities for each year. The annual NBSAP meeting also allows stakeholders to make presentations on outcomes and lesson learnt and share experiences with others.

Fiji also enacted Endangered and protected Species act, established Fiji CITES Scientific Council and Management Authority to deal with species conservation which is one of the thematic areas under the NBSAP. There are related

laws that at least assist indirectly (if not directly) to managing biodiversity related programs in Fiji such as Waste regulations, EIA Regulations, ODS Acts and regulations and the Litter Decree. Currently process is being followed to review some of these laws specially the EPS act to streamline operations and also bring a better way of managing our resources in Fiji.

Fiji is also in the process of completing the State of Environment Report, part of which from the draft has been used to compile this report. The State of Environment Report looks at the drivers of change, state of the environment, the impacts caused and responses taken. It is a report that have being completed after a decade and will be very helpful in planning and implementing conservation programs.

Based on the recommendations from the SoE, Fiji will be preparing the National Environment Strategy and this shall be done by the end of 2014. NES will dress most of the concerns raised in the SoE. Both the documents will be submitted to Cabinet to ensure that Policy Makers take note of important reports and include them in decision making and resource allocation for Fiji.

PART III: PROGRESS TOWARDS THE 2015 AND 2020 AICHI BIODIVERSITY TARGETS AND CONTRIBUTIONS TO THE RELEVANT 2015 TARGETS OF THE MILLENNIUM DEVELOPMENT GOALS.

Table 3.1: Assessment of progress towards Aichi Targets and MDGs

Aichi Biodiversity Target	Part 1 Biodiversity status, trends, and threats and implications for human well-being		Part 2 The NBSAP, its implementation, and the mainstreaming of biodiversity		Part 3 Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals.			
	State of relevant biodiversity component or pressure	Impacts on or implications for human wellbeing	Implementation Actions/Case studies	Action Effectiveness	Assessment of progress towards Aichi Targets and MDGs	Proposed National Target	Indicators/Other information	Stakeholders
Target 1- By 2020, at latest, people are aware of the values of biodiversity ad the steps they can take to conserve and use it sustainably ***Awareness***					**Assess the activities executed under the Communication strategy.** **Collaborative work with NGOS and Nature Fiji. And Live & Learn.**	**By 2014all education institutions (primary, secondary and tertiary) have access to biodiversity information.** **All communities with Pas are aware of PA benefits.**	**Number of biodiversity programs established in schools.** **Number of schools taking part in these programmes.** **Number of communities involved in PA management.**	**Live & Learn, MOE, DOE, Nature Fiji, Forestry & Fisheries,** **Media Ministry of Information, disseminating**

increased					Gauge the progress of this towards Aichi targets and MDGs. **Awareness has been increased** International Awareness Regional National Awareness campaigns Community level awareness campaigns on biodiversity loss in Fiji		Number of community Management Plans for Pas. • International conference proceedings, scientific publications, magazine publications, internet • Regional meetings, and conference reports, • Media coverage Annual reports from thematic areas (for NBSAP • Communication records • Publications by stakeholders	NGOs: Wildlife Conservation Society, World Wildlife Fund, Nature Fiji Mareqeti Viti, National Trust of Fiji, Fiji Locally Managed Marine Area, Conservation International, Birdlife International Institutions University of the South Pacific, Fiji National University, Secretariat of the Pacific Community, University of Fiji Government agencies Biosecurity Authority of Fiji, Department of Environment, Department of Fisheries,

							• Technical reports and publications from:NGOs • Local Institutions • Academic institutions	
Target 2 – By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting system ***Biodiversity values***					Still in progress		• Fiji REDD+ Policy • MESCAL reports • Natural Resource Inventory • FLMMA Economic Valuation – Nicholas • Total Economic Value of Navukavu Local Marine Manage Area (LMMA) • Total Valuation for Sovi Basin • MACBIO project_GIZ • Green Growth Draft Policy for Fiji	NGOs Institutions Government Agencies

integrated								
Target 3 – **Incentives reformed**					**Still in progress** **ODS** **Waste management methods/ practice for Municipal Councils** **Change in village toilets along coast** **Composting in municipals**		• **HFC phase-out management plan** • **Sugar Industry Fertilizer Incentive** • **Movement of Rubbish dump from Suva to Naboro Land Fill;** • **Waste management plan for Naboro Landfill** • **Compost toilet reports (see WWF, FLMMA)** • **Lautoka and Suva City composting initiative reports**	**Department of Environment** **Department of Environment, Municipal councils** **World Wildlife Fund Fiji Locally Managed Marine Area** **Municipal council**

					EIA (Environment Impact Assessment) process for development		• EIA reports • Environment management plan • Stakeholder monitoring reports (DoE) • Fiji Forest Harvesting Code of Practice • Fiji Land Capability Guidelines	Department of Environment
					International Border Control		• BAF intervention reports • Customs intervention reports	Biosecurity Authority of Fiji
					Inter-island biosecurity		• Publications at the international border • Fiji Yacht Guide… etc • Green iguana Biosecurity promulgation zone notices (BAF)	Biosecurity Authority of Fiji

Target 4 – Sustainable consumption and production					**In progress** **Government Policy** **Forestry:** **Reforestation** **NBSAP thematic area** **Aquaculture** **Agriculture:**		• **Fiji Green Growth Framework document and consultation reports** • **1 million trees data sheet** • **Annual reports from stakeholders (CI, Fiji Pine, Fiji Mahogany, Future Forests, DoF extension services)** • **Fisheries Aquaculture Strategy document, and annual reports** • **Fisheries annual report (coral farming)** • **Fisheries Reef enhancement initiative reports** • **Naduruloulou Grass carp annual report**	**Ministry of Fisheries and Forest)** **Ministry of Fisheries and Forest (DOFish)** **Ministry of Primary Industries**

Target 5 – Habitat loss halved or reduced **(Historical observation by local communities and observation analysis in the absent of information and scientific data but needs to identify expertise to verify observation analysis)**	Initiate Matching of NBSAP obj with Aichi Targets. Identify different types of habitats (Marine/Terrestrial) Current status of habitats Identify pressures (indirect/direct) Quantify as much as possible	Impacts to be discussed in the context of the current status of each habitat. Get partners to validate impacts on human well-being through projects implemented. Government reports. BOS, MOH, CBH, NGOS, Fisheries, Academic institutions, etc.	Mention the new NBSAP structure, and how implementation Identify actions from NBSAP and Review the quarterly updates from the 7 thematic areas. PA, Wetland Committee, FIST, CITES SC& MA, REdd++, Request from other NGOs, Researchersinformation and data and case studies. -	Identify actions of from thematic groups Assess from updates on what activities that have been implemented and undertaken. -	**Identify MDG Aichi targets related to Aichi targets.** **Assess implementation progress through MDG reports.** **Rate percentage of implementation depending on execution of activities.** **SAME THROUGH OUT THE REST OF THE TARGETS**	**By 2011, riparian vegetation rehabilitation underway in 10% of major areas.** **By 2014 marine inshore biodiversity** **80% of MMAs that existed in 2010 still in existence in 2012.**	**Forest cover, Number of MMAs and terrestrial protected area.**	**Forestry, Fisheries, FLMMA, REDD++**

	Analysis	-			**<u>Not achieved, but progress is reported here:</u>** **Measurements of Deforestation rates in Fiji** **Change shown in Forest Cover Maps** **Growth of LMMA sites** **Mangrove habitat mapping**		• **Forestry Resource Assessment Report (2013) –** • **Forest cover maps 1993, 2007** • **LMMA reports and maps (showing area coverage of sites) 2000 – 2010.** • **Mangrove management plan** • **Marine Managed and Priority Terrestrial Protected Areas for Fiji Map.**	**Fiji Locally Managed Marine Area** **Department of Environment and International Union of Conservation of Nature**
Target 6 – Sustainable management	Inshore Fisheries (target 18) /Offshore fisheries/Aquaculture Deepsea mining	Extraction modes, Management Practices -	FImma activities, Dept of Fisheries, SOPAC Identify all stated activities from the NBSAP.	Identify activities from NBSAP related to this target. Reconcile with quarterly reports on actions undertaken	MDGs report to assess. -	**By mid 2014 20% of communities with existing MMAs will have agreed to add additional MPAs.**		

	Define status Identify pressure (direct/indirect) FFA, SPC, SOPAC Identify threats Current Management approaches/tools/ CMS Status			and which actions. Identify other related activities Gauge where execution of activities Analyze activities as per execution. -	**<u>Sustainable management in progress</u>** **Marine species management** **Threatened species** **Off shore fisheries**		• **Number of new MMAs.** • **Communities participation** • **CITES annual reports** • **CITES annual quota** • **Site based inventory reports.** • **Marine species information toolkit for communities** • **Campaign reports (SeaWeb, FLMMA)** • **Shark campaign reports and videos** • **Bech-de-mer survey reports** • **Dept. Fisheries Annual Report (check for inventory survey reports)** • **Offshore fisheries legislation**	**Minstry of fisheries** **Department of Environment** **Ministry of Fisherie** **Fiji Locally Managed Marine Area** **Department of Fisheries**

Target 7 – Sustainable agriculture, aquaculture and forestry	- Matching of NBSAP objto Aichi targets. Identify area for agriculture/aquaculture/forestry How they currently managed, whether management	- Implications will depend on status of these diffe	AS PER ABOVE	AS PER ABOVE	- **REdd++ activities, Forestry activities** **Aquaculture development status.** **<u>Has progressed</u>** **Policies**	- **By 2014 20% of increase in sale of sustainable aquaculture products.**	- **Volume of fertilizer imported 7 used.** - **Feed used determine.** - **Number of managed forestry** • **Fiji Forest Policy (2007)** • **Fiji Rural Land Use Policy (2012)** • **REDD+ Policy** • **Dept. Agric. Tikina based land use plans** • **Land use capability guidelines** • **Model farms (WWF, NFMV, CI)** • **Forest Harvesting Code of Practice** • **Agroforestry booklet**	**Ministry of Fisheries and Forest** **World Wildlife Fund, Nature Fiji Mareqeti Viti, Conservation International, Ministry of Fisheries Forest**

	practices sustainable, isbiodiversity conservation considered in the management. Potential threats	rent activities, Social, economic, health, livelihood, cultural, security (food, environment, human) Applicable to all targets.						
Target 8 – Pollution reduced	Matching of NBSAP objectives and Aichi targets Utilizing EMAct Waste & Pollution Unit to coordinate responses to	These will be determined on the status of pollution analysis. Health, Livelihood,	AS PER ABOVE	AS PER ABOVE	**Current status for pollutions.** **Analysis of whether reduction or increase in pollution level.** **Asses and reconcile with Aichi targets and**			

	Target 8. Identify pollutant sources (all companies registered to emit and or pollute), Agriculture, Tourism, Chemical ingredients of pollutions Monitoring system, Compliance Status, . Any form assessment on detrimental effect to the immediate and or long term to the environment. CBH, EIA, Waste, T&				**MDGS**. **<u>In progress</u>** **Health and Sanitation** **Agriculture**		• **Compost toilet distribution report (IAS, WWF, Mins. Health, PACE-USP)** • **DoE pollution complaints files and quarterly reports** • **Ministry of Health annual reports on health and sanitation** • **Kinoya sewerage treatment upgrade report** • **Dept. Agriculture annual report on organic fertilizers**	**Institute of Applied Science, World Wildlife Fund, Minstry of Health, PACE(Pacific Centre for Environment and Sustainable Development –University of the South Pacific** **Ministry of Primary Industries**

	CP							
Target 9 – Invasive alien species	Through the FIST committee to drive the process of addressing this target. List of all invasive species in Fiji. Identify current initiatives in place that address issues of invasive. Identify list of all invasive species pathways of introduction	Impacts of Current Status of invasive species on health, livelihood, culture, and environmental.	AS PER ABOVE	AS PER ABOVE	**Assess the activities undertaken by FIST** **Assess where organizations are with execution and implementation.** **Analyze in accordance with Aichi targets.** - **Report as in-progress** **<u>Probably not achievable</u>.** **Copy from NBSAP IF**	**Identify definition of Invasive alien species** **Establish Invasive Alien Species Database**	• **Green iguana eradication campaign reports** • **BAF reports and media releases** • **BirdLife International Rat eradication reports** • **Scientific**	**Biosecurity Authority of Fiji, BirdLife International, National Trust of Fiji**

							publications • NatureFiji-MareqetiVIti 5 years strategy (2013 – 2018) • National Trust Waisali Forest Reserve monitoring reports	
Target 10 – Pressures on vulnerable ecosystems reduced	Identify all human activities/pressure that related to coral reefs and associated ecosystems (coral harvesting, agricultural activities, fishing) Identify vulnerable ecosystems to CC. (Coral bleaching, rising in sea level, coastal inundation, coastal erosion) -	Status of vulnerable ecosystems on health, livelihood, food security, human security and environment and culture)	AS PER ABOVE	AS PER ABOVE	**PAC, Inland Waters, Inshore Fisheries task forces.** **Asses activities and implementation.** **How the activities have contributed to the Aichi targets.** **<u>In progress</u>** **LMMA networks**		• **FLMMA Annual reports and maps** • **IBA – Site support groups capacity building (NFMV,**	**Fiji Locallly Managed Marine Area** **Nature Fiji Mareqeti Viti, Birdlife International**

							Birdlife International)	
Target 11 – Protected areas	Match NBSAP obj with AicihiTargets . Identify marine and coastal, inland and terrestrial wetlands. Identify management approaches and or protection status. Effectiveness of management systems. How representativ eness they	Status of protected areas will determine the impact son health, livelihood, food security, human security, cultural.	AS PER ABOVE	AS PER ABOVE	**Work on PAC to assess the progress with baseline from the 4th NR.** **<u>Yes achieved</u>– NPAC figures and data.** **Sustainable financing for PAs** **Terrestrial PA network** **Marine**		• **Sovi Basin Trust Fund Mechanism – reports** • **Sovi Basin PA management plan** • **NEC endorsed map: Marine Managed and** • **Priority Terrestrial Protected Areas for Fiji Map.** • **NEC endorsed map: Marine Managed and Priority Terrestrial Protected Areas**	**National Trust, Fiji Locally Managed Marine Area**

	are. Indentify integrated approaches and or mechanisms, PAC, Ramsar, IWP, CT						**for Fiji Map (note seascapes and ecoregions).**	
Target 12 – Extinction prevented	Identify list and or sources of threatened species, management plans, effectiveness of these plans, conservation status. ID near extinct species, and stats on recovery (in numbers)	Status of extinction will determine the impacts on health, livelihood, food security, human security, culture, environment)	AS PER ABOVE	AS PER ABOVE	**CITES SC & MA and other works undertaken by Nature Fiji** **Assess the progress of activities In achieving the Aichi targets.** **<u>Target has almost been reached</u>** **Traded species** **Non-traded species**		• **CITES quota and annual reports** • **EPS Act 2002 list** • **Fisheries Annual report** • **Species Recovery Plans (check NFMV, NTF)** • **List of proposed terrestrial PAs for legal**	**Department of Environment** **NatureFiji- MareqetiViti**

							protection.	
Target 13 – Genetic diversity maintained	-				**Yes SPC** **Germ plasm Bank**		• **SPC Annual reports** • **Agriculture annual reports (Koronivia research station)**	**Secretariat of the Pacific Community** **Ministry of Primary Industries**
Target 14 – Ecosystems and essential services safeguarded					**Yes**		• **NFMV reports on Ecosystem services awareness with local communities** • **FLMMA workshop attendance registration** • **FLMMA operations manual (50% participation of women)** • **Women specific workshops (WWF, NFMV, FLMMA)** • **Women's group establishment in Village Committees (Provincial reports)** • **Gender issues in current**	**Natue Fiji Mareqeti Viti, World Wildlife Fund, Fiji Locally Managed Marine Area, Minstry of . Women**

							Environment related policies (check Mins. Women, REDD+ policy) • **Workshop reports showing non-itaukei** • **local communities participation (NFMV)**	
Target 15 – Ecosystems restored and enhanced					**In progress – seeking funds.** **See REDD+ work** **See CI work.** **Degraded ecosystems**		• **CI report from 2009 – 2014** • **Dept. Forestry report on Plant a million trees campaign** • **Sago palm rehabilitation report (NFMV)** • **Coral Farming Initiative report (FLMMA?)**	**Conservation International, Ministry of Forest, Nature Fiji Mareqeti Viti** **Fiji Locally Managed Marine Area**
Target 16 – Nagoya Protocol					**In progress** **Policies development done.**		• **Secured funding from GEF.** • **Research Policy (Mins. Education)** • **DNA/ tissue export permits for research (DoE)**	**Ministry of Education** **Department of Environment**

Target 17 – NBSAPs adopted					**Yes- achieved**			
Target 18 – Traditional knowledge respected					**<u>In progress</u>** **Policies**		• **Traditional Knowledge and Expressions of Culture Policy (DRAFT)** • **Fiji Intellectual Property Rights Policy** • **FPIC awareness workshop reports (Mins. iTaukei Affairs)** • **FLMMA social contracts** • **Organisational policies on TK (are aligned to National Policy). See all NGO policies.** • **DNA/ tissue export permits for research (DoE)**	**Minstry of. iTaukei Affairs, Department of Environment**

Target 19 – Knowledge improved, shared and applied					**In Progress** **Capacity building** **Professional technical reports produced by local experts** **Curriculum**		• **BioRap Reports (CI/ USP)** • **EIA reports** • **Peer reviewed scientific journal articles** • **Habitat/ species modeling papers** • **Number of MSc graduates from Year 1 to Year XX** • **Incorporation of climate change issues into Fiji curriculum development (Report)**	**Conservation International, University of the South Pacific, Department of Environment** **Ministry of Education,** **Tertiary Institute** **Curriculum Development Unit**
Target 20 – Financial resources increased					**On-going**		• **NBSAP annual reports** • **Fiji Green growth framework** • **NGO annual reports** • **GEF progress reports**	**Department of Environment**

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