

**NATIONAL REPORT FOR THE UNITED NATION CONVENTION TO COMBAT
DESERTIFICATION**

REPUBLIC OF THE FIJI ISLANDS

MAY, 2002.

**3. STRATEGIES AND PRIORITIES WITHIN THE FRAMEWORK OF
SUSTAINABLE DEVELOPMENT POLICIES.**

**3.1 National Plans and Strategies Available in Other Social And
Economic Areas**

3.1.1 National Strategic Development Plan

As a developing nation with a global economy, Fiji, needs to set a clear sustainable path for its development into the future. Therefore after the political distraction of May, 2000, an Interim Government was established and later a Caretaker Government were given a mandate to rebuild confidence and introduce measures for the sustainable economic recovery and for medium term growth.

After the General Election of September,2001 the elected Government continued to build on the plat form set by Interim and Caretaker Governments but to also consider the long term strategies in the process. The outcome of which is the formulation and implementation of the National Strategic Development Plan for 2002 to 2004.

The NSD Plan sets the stage for the future investments in infrastructure, capacity building and resources management which needs to be in place to take advantage of the opportunities while improving quality of life and avoiding degradation of the environment over the long term.

The Plan is a manifestation of policies and strategies assembled together by the Government through participatory dialogue and consultations with relevant private sectors and civil societies in the country. Providing a holistic approach on the key economic, social, environment and political fundamentals that are required by any Government to safeguard and promote.

The policies to achieve government's medium term goals covers eight (8) focal areas and they are as follows;

- Macro- economic stability

- Good governance
- Competitive domestic markets
- Engaging the global Economy
- Efficient and Effective Public Sector
- Education and health
- Affirmative Action for the disadvantaged
- Government and Civil Society partnership
- Policy Implementation

Although concerted efforts are needed to implement policies in all eight focal areas of policy but the key development issues which requires special attention, are as follows;

- Advancement of Indigenous Fijians and Rotumans in commerce and business
- Population and labor market
- Poverty alleviation
- Telecommunication and Information Technology
- Land Resources Development and Management

Sector policies and its strategies must be aligned with the national goals and must be based on government's underlying philosophy that it is the private sector that is the engine of growth. These sectors are very central to the principles of the UNCCD. The sectors are as follows:

- Sustainable Use of Natural Resources
 - ◊ Sugar : The sustainable development and management of the sugar industry to optimise benefits for private sector investment, resources owners and community.
 - ◊ Agriculture: Encouraging the private sector to develop is critical for the sustainable development of agriculture.
 - ◊ Forestry : Fiji is a member of the International Tropical Timber Organisation, committing Fiji totally to sustainable management and development of exotic and indigenous tropical forests with the certification of tropical timber for trading.
 - ◊ Marine Resources: The sustainable development and management of marine resources to optimise benefits for private sector, resources owners and community.

† Mineral Resources: The sustainable development and management of mineral resources to optimise benefits for private sector, resources owners and community.

- Human Resources- based industries
 - Tourism
 - Manufacturing
 - Science and technology
- Physical Infrastructure
 - Transport
 - Water and Sewerage
 - Energy
- Equitable Development and Quality of Life
 - Health
 - Education and Training
 - Housing and Urban Development
 - Rural Development
 - Environment
 - Culture and Heritage
 - Gender and Development
 - Disaster Management and Mitigation
 - Youth and Development
 - Sports Development
 - Protection of Children
 - Law and Order
- Foreign Relations and External Trade
 - External Relation
 - Trade and Economic Arrangement
- Monitoring and Evaluation

3.1.2 National Plans or Strategies in the Field Of Combating Desertification Developed Prior To The UNCCD

It had been reported in the first National Report submitted in April, 2000.

3.1.3 Scientific and Technical Desertification Control Activities

Even though Fiji has yet to formulate its National Action Program but it has been involved with several scientific and technical activities or initiatives which would compliment the NAP. The activities are as follows;

- *Soil Surveys and Soil Correlation Program*

The program was carried out from 1981 to 2001. The national Soils Surveys was carried out from 1981 to 1985 and the soils were classified according to the International Soil Taxonomy based on the USDA system which is currently being used as the international standards as the primary system with soil series. These has also being correlated to Fiji National Soil Classification System which locally known as Twyford and Wright (1965).

After the soil surveys, the soil mapping exercise for Viti Levu, Vanua Levu, Taveuni, and several islands in the Lau Group were carried out and completed at the scale of 1: 50,000. This information will be the basis of land use capability classification and crop suitability assessment where the matching of land use/ crop types and land capability is very important if productivity and sustainable land management goals are to be met.

- *Soil and Crop Evaluation Project.*

The Soil and Crop Evaluation Project was a five year project that had been jointly funded by Fiji, New Zealand and Australia. It began in June, 1993 with an overall objective to contribute to self sufficiency in Fiji of food crops, and an increase in export earnings by definition and demonstration of crop nutrient requirements on the soil suitable for sustainable cropping systems in Fiji.

To achieve its overall objectives the project had five sub-objectives, which were as follows;

- ◄ To strengthen the capability of the Research Division to undertake appropriate farmer oriented research
- ◄ To provide skills necessary for the Research Division and Extension Division of MAFF personnel to be better able to carry out their work.
- ◄ To undertake scientifically rigorous, high quality agronomic research which responds to the need of the farmer.

‘ To transfer appropriate technology from the research to the farmer by the most appropriate means.

‘ To direct and report on the Project to assure the achievement of the project goals.

The project ended in June, 1998 and have achieved its overall objective.

- *Geographical Information Systems*

In 1994 with the assistance of the Ausaid of Australia, the NZODA of New Zealand and the Fiji Government through the Soil and Crop Evaluation Project, established the MAFF Geographical Information Systems with the Land Use Planning Section of the Research Division and now of DLRPD. To date the Land Use Section have digitised and completed Taveuni Island and the two main island of Viti Levu and Vanua Levu and several small islands in the Lau Group.

The Land Use Section have also imported information such as the cadastral mapping systems, roads, river systems, native land mapping systems, forest inventory, geological information and other information from their custodian such as the NLTB, Forestry Dept. and the Fiji Land Information Systems Unit. The stored data base is manipulated and analysed for different outputs according to the needs of clients, to make informed quality decision for the sustainable uses of their resources.

- *National Rural Land Use Policy and Plan*

Fiji does not have a rural land use policy or a national land use plan. This is a major constraint to wise allocation and management of resources in the rural sector. The current administrative and institutional framework responsible for the resources allocation and management is highly sectoralised.

In November, 1998 a review on the rural land use in Fiji began with the assistance of the South Pacific Community/ Pacific German (GTZ) Forestry/Agroforestry Program. This resulted in the formulation of a coherent set of National Rural Land Use Policies which had been documented and yet to be endorsed by government. A sound rural land use policy should manage land for sustainable uses, balance production with protection, create diversity and will leave an enhanced heritage for future generations.

The RLUP document will be used as the guide for the formulation of the National Rural Land Use Plan or National Land Use Plan.

- *Participatory District / Tikina Based Land Use Plan:*

The Department of Lands Resources Planning and Development took the initiative to establish a participatory approach to land use planning as a pilot project in the Bemana District in the province of Nadroga, in collaboration with the Extension Division of MASLR, Native Land Trust Board, Ministry of Fijian Affairs, Ministry of

Fisheries and Forests, civil societies such as the WWF and the Foundation of the People of the South Pacific (USP), resources owners and other stakeholders

This would be the basis of future integrated or holistic approach to land resources planning, development and management programs. It emphasizes the importance of a bottom up approach to land use planning and the empowerment of the people or communities to make quality decision on their land resources uses. One of its main objective is to establish local land care groups, to empower communities to efficiently and effectively develop and manage their resources.

- *Integrated Development Program:*

The program has been endorsed by MASLR and carried out as a pilot project with assistance from Regional Development, Cooperative Dept, Health Dept., Native Land Trust Board, Fijian Affairs Board, Environment Dept. and other stakeholders focusing on bottom up or participatory approach to land development and management.

A pilot project was carried out in the Tikina/District of Toga in the Province of Rewa, Central Division. The program was initiated by the MASLR and is fully supported by the Commissioner Central who is the head of administration in the Division thus the formation of the Central Division Integrated Development Team. The members are from the various Government and Non government agencies in the Division who have seriously viewed that agricultural development needs to be planned, implemented and monitored in an integrated or multi-sectoral way. This is to ensure a more balanced approach to development as well as optimal using of available resources through the mobilising of both human and financial resources to be able to accomplish community development projects within the Division.

- *Soil Loss Research and Development of Sustainable Land Management Technologies:*

The International Board for Soil Research and Management (IBSRAM)/ Pacificland Network Program was established in 1991 to assist in the soil loss research as well as to develop and disseminate appropriate technologies for their sloping agricultural lands. The program was initially funded by the Asian Development Bank and in the later years by Ausaid. It ended in December, 1999. but continued with internal funding by the Fiji government.

The program is a joint effort between the Department of Land Resources Planning and Development, Extension and Research Division of MASLR, resources owners and users. The technologies identified were being assessed against the farmer's current practice, it includes vetiver grass strips, pineapple hedgerows and other crops such as kava or leguminous tree species, that were selected collaboratively by the researchers and farmers.

- *Agroforestry Program:*

The Fiji/German Project supported agroforestry in Fiji under the German bilateral program from 1987-1994. The project focuses on the agroforestry practice with alley cropping and moved to regional multi-lateral program in 1995. The Agroforestry project was established within the MAFFA's Extension Division and then transferred to the Land Use Section of the Research Division and now of Department of Land Resources Planning and Development (DLRPD) in February, 1997 to assist clients to adopt the advocated agroforestry practices.

Regional organizations such as the German Technical Corporation (GTZ) and the Pacific Regional Agriculture Program (PRAP) assisted DLRPD on agroforestry research. The research on *Erythrina subumbrans* (*Drala*) and *calliandra* leguminous tree variety as a soil fertility improvement species was tested out on acid soils of the uplands of Fiji. Other research activities includes the surveys of traditional agroforestry practices in Fiji, of which information was gathered and documented to assist the DLRPD provide a range of technologies that could be adapted to meet the conservation and economic needs of the people.

The focus of the GTZ Regional Program is Sustainable Forestry Management and Sustainable Land Management and they have assisted Fiji in the formulation of the National Rural Land Use Policy which will be used as a guide for the formulation and implementation of a National Land Use Plan for future sustainable land resources development and management.

- *Pacific Regional Agriculture Program:*

In 1993 the PRAP/ European Union Project 1- for Farming System in low lands assisted the Land Use Section of LRPD with the agroforestry research by using *Erythrina subumbrans* as a fertility improvement species. The research was carried out on acidic upland soils. The program also collated information on traditional agroforestry practices in Fiji.

One of the important contribution of the PRAP Project was the capacity building aspect of mainstreaming Participatory Rural Appraisal (PRA) into the agricultural program. PRA is a practical approach to creating a context where local people can identify, discuss and solve their own problems. The involvement of communities or land users or resources owners from the planning to the implementation of the projects is very important if the projects are to be sustainable. Therefore the people's participation is crucial and this empowers them to make good informed decision on the balancing of resources development and conservation.

- *Awareness and Training on Sustainable Land Management.*

The Land Use Section of LRPD, the Research and Extension Division of MAFF/MASLR, other Ministries, NGOs and Civil Societies such as the Foundation of the People of the South Pacific, University of the South Pacific, WWF and others have jointly carried out awareness and training on land degradation, disseminating information and transferring of low cost sustainable land management technologies for sloping land farmers as well as for the school children and other stakeholders. The long term vision is to set up land husbandry/care groups in

various communities in Fiji to empower communities to oversee the sustainable development and management of their natural resources.

- *Transfer of Sustainable Land Management Technologies:*

The result of the IBSRAM/ Pacificland and Agroforestry on farm research program have been transferred to farmers throughout the Central, Eastern, Western and Northern Division of Fiji. Recognizing the effectiveness of vetiver grass, pineapple with the inclusion of leguminous and nitrogen- fixing tree species such as calliandra, erythrina and gliricidia on contours to act as living barriers, nutrient pumps as well as hedgerows. Altogether 300 farmers have adopted the low cost sustainable land management technologies all over Fiji and more are awaiting assistance.

- *Watershed Management Master Plan*

In August, 1996 the Japanese International Cooperation Agency (JICA) began a two year study on the watershed management and flood control for the four major river system namely; the Rewa, Ba, Nadi and the Sigatoka rivers. The study was carried out in order to formulate the basis of a Master Plan for the Watershed Management and Flood Control for all the major river system in Fiji. The study ended in October, 1998 with a coherent Watershed Master Plan for the country.

- *Drought Mitigation*

In 1998, Fiji experienced the worst drought since rainfall records began in 1942, it recorded low rainfall than usual in October to April wet season. Damages to agricultural crops was estimated at US\$10 million. Food and Agriculture Organisation assisted with planting material and inputs while the Government of Finland supported the drought mitigation and preparedness training and awareness program. The government of Fiji assisted the sugar cane farmers by providing US\$ 21 Million for crop rehabilitation program.

- *National Plan for Natural Disaster Management:*

The 300 islands of Fiji, of which 100 are inhabited, are susceptible to variety of natural hazards such as the tropical cyclones, floods, storm surges, landslide, drought, earthquakes, tsunami and forest fires. In recognizing the need, the Government of Fiji (GOF) formulated a National Plan for Natural Disaster Management under the Natural Disaster Management Act of 1998. The plan seeks to strengthen coordination, collaboration and resources mobilisation amongst stakeholders in the prevention, mitigation and handling of natural disasters.

Supporting the operating system for disaster management are various other institutions, services, and mechanisms. These includes the Earthquake Seismology Section of the Mineral Resources Department responsible for monitoring earthquakes in Fiji and the South Pacific; the Meteorological Service within which is the Regional Specialised Meteorological Center for the South Pacific; the National Building Code to reduce vulnerability to cyclones and earthquake shocks and extensive Non Government Agencies resources such as the Red Cross,

Foundation of the People of the South Pacific, Fiji Council of Social Services, Salvation Army, Save the Children Fund, churches and others.

The Food and Agriculture Organisation of the United Nations had financially supported the Strengthening of the National Capacity for Emergency Disaster Preparedness and Mitigation in Agriculture Project with US \$45,000.00

- *Climate Change and Variability Scenario Generation/Modeling:*

Climate change is likely to have a substantial and widespread impacts in the Pacific Island Countries, including the Fiji Group, affecting sectors as varied as health, coastal infrastructure, water resources, agriculture, forestry and fisheries. In August, 1999 the South Pacific Regional Environment Program (SPREP) with the assistance of the International Global Change Institute (IGCI)(Waikato University, New Zealand) produced a climate change computer modeling program known as the PACCLIM(Pacific Island Climate Change) proto-type model. The computer modeling is used to create scenarios to predict climate change and sea level rise in the Pacific.

IGCI, SPREP and the World Bank funded the creation of the FIJICLIM an offshoot of the PACCLIM, a computer modeling scenario generator to be used to predict climate changes and sea level rise in Fiji. But the modeling still needs to be further developed for Fiji to have any significant contribution to climate change mitigation.

- *Land Use Options in the Fiji Sugar Industry.*

In light of the ongoing international trade reforms, Fiji faces major challenges as it addresses its obligation under the World Trade Organisation. The challenges are particularly acute in the face of current reforms in the European Union and USA agricultural sector and the expected loss of the preferential access for the Fiji sugar to these markets.

The AUSAID through the Australian Center for International Agricultural Research (ACIAR) funded a project beginning in January, 1999, with an overall goal i to assist Fiji Government, the Fiji Sugar Industry and most importantly the small holder sugar cane farmers to better adjust to expected reduction and eventually loss in the preferential access to EU and USA markets. It also needs to prepare itself to compete with other sugar exporting countries in the world market.

Therefore the assessment of land currently under cane should be carried out to identify land most suitable for sustainable cane production and land unsuitable for cane but suitable for other land uses such as for the cultivation of tropical fruit, establishment of commercial floriculture, livestock grazing, forestry and other uses. In other words, using the land according to its capability for sustainable production. These is to encourage the Fiji Sugar Industry to improve its social and environmental performance through voluntary initiatives, taking into account initiatives such as that is set by the International Organisation for the Standardisation (ISO) standards.

- *Farming Assistance Scheme and Land Resettlement Program*

The Department of Land Resources Planning and Development was established in August, 2000 to continue to advance the role of the Land Resettlement and Development Unit (LDRU),(a project which was created by the Government with an aim to resettle expired Agriculture Landlord and Tenants Act leaseholder, whose leases have expired and will not be renewed).

The Department also extended its term of reference to also include the following;

- ◊ the review and the amendment of the Agriculture Landlord and tenants Act and the Native Land Trust Act legislation

- ◊ the coordination of sustainable land development and management of Fiji's land resources and the amendment of the Land Conservation and Improvement Act

- ◊ the Farming Assistance Program which was approved by the Fiji Government Cabinet in November,2000. It is aimed at assisting the incoming landowner farmer and outgoing tenants of expired ALTA leases.

A total of 13,104 leases will expire between 1997 and 2028. The effect of the expiring of leases and non renewal of it will affect thousands of people. There will be a lot of movement of people from the rural to urban and this will affect infrastructure and also the social and economic wellbeing of the towns and cities.

- *Land Capability Classification:*

In 1977 the Fiji Ministry of Agriculture Fisheries and Forest adopted a Land Use Capability Classification Guideline which was adopted from the New Zealand version of the USDA Land Use Capability Guideline. Land use capability classification surveys are carried out by the Land Use Section, DLRPD for feasibility studies on land resources, to assess the capability of that land to sustain production.

Land use capability is a systematic arrangement of the different kinds of lands according to those properties that determine its capacity for permanent sustained production. The word " capability" is used in the sense of " suitability for productive use" after taking into account the physical limitations the land may have.

This capacity depends largely on the physical qualities of the soil and the environment, these are frequently far from ideal, and the difference between the ideal and the actual is regarded as limitations imposed by these soil qualities and the environment.

These limitations affect the productivity of the land, the number and complexity of corrective practices needed and the type and intensity of the land use. The degree of limitations can be assessed from (a) susceptibility to erosion,(b) steepness of

slope, (c) liability to flooding, wetness, or drought, (d) salinity,(e) depth of soil, (f) soil texture, structure and fertility,(g) stoniness, and (h) climate.

- *Development of integrated farming approaches for sustainable crop production in environmentally- constrained systems in the Pacific region (CROPPRO Project).*

In November, 2001 the European Community CROPPRO funded project was launched in Suva, Fiji, with an overall objective to develop an integrated farming approaches for sustainable crop production in environmentally constrained systems in the South Pacific region, aiming at increasing crop productivity and decreasing land degradation. To address the project objective, seven sub-objectives have been identified as follows;

- i) selection of representative agriculture watersheds and subsequent land inventory,
- ii) execution of a farming system analysis to investigate current farming practices for major crop types,
- iii) monitoring of water, soil, nutrient and pesticide flows within the watersheds,
- iv) simulation of water, sediment and solute flows using a catchment-based, soil erosion and hydrological model, and identification of high loss (low sustainability) areas in the watersheds,
- v) definition, testing and evaluation of prospective farming practices for these areas,
- vi) preparation of guidelines with integrated farming approaches for major soil units, and
- vii) establishment of close links between researchers and end users through the use of a participatory and culture sensitive training strategy for the various community groups living and/or working in the project areas

The research program is being carried out in three Pacific Island Countries namely Samoa, Tonga and Fiji. The Fiji component is being managed by the Department of Land Resources Planning and Development in collaboration with Eco-consultant (Fiji), MAF(Tonga), University of the South Pacific, Alafua Campus, Samoa and METI, Samoa, Alterra Green World Research Institute, the Nertherlands, Hort-Research (NZ) and University of Louvain- Belgium.

- *Integration of Sustainable Land Management and Sustainable Forestry Management.*

The Department of Land Resources Planning and Development of the Ministry of Agriculture, Sugar and Land Resettlement (MASLR) and the Forestry Department

of Ministry of Fisheries and Forests (MFF) have integrated the sustainable land management and the sustainable forestry management technologies with the assistance of the Pacific Regional German(GTZ) Forestry/Agroforestry Program. The program is carried out as a pilot project, in collaboration with the Forestry Dept. Extension Division of MASLR, Cooperative Department, Fijian Affairs Board, Native Land Trust Board, Fiji Forest Industry, land owners and other stakeholders, by using Drawa Block, an area that consists of five (5) villages and covers more than 8,500 hectares of virgin forest in Vanua Levu(second largest island in Fiji)

The project have formed a SFM/SLM Working Committee and they have their meeting on quarterly basis. The members comprises of senior members of the above organisation including the Chairman of the Landowners Committee. The Landowners Committee have began with the advocacy of the formation of Landcare groups within the project area.

The synergies derived from combining the sustainable land management and sustainable forestry management initiatives augers very well with the idea of integrating the UNCCD, UNCBD and the UNFCC principles.

- *Integrated Coastal Resources Management*

The Institute of Applied Science (IAS) of the University of the South Pacific based in Fiji, the University of Rhode Island Coastal Resources Center, USA and the Government of Fiji are working in partnership and have initiated a program known as the Integrated Coastal Management for Fiji which was launched after a National Workshop held in April,2002.

The coastal areas are of vital importance to Fiji society and its national development. Most the urban centers and vast majority of villages are located on the shore, along with much of the population, agriculture, industry and commerce. Therefore as result of population increase, rapid coastal development and increasing utilisation of coastal resources these has resulted in various impacts on the coastal environment which includes; loss of habitat and biodiversity, inappropriate solid waste management, mismanagement of chemical wastes, pollution of air and water ways, land degradation etc.

The initiative includes the involvement of all government ministries such as the Ministry of National Planning, Ministry of Agriculture, Sugar and Land Resettlement, Ministries of Fisheries and Forests, Ministry of Fijian Affairs, Ministry of Lands and Mineral Resources, Ministry of Works and Energy, the Non Government Agencies like the Native Land Trust Board, National Trust, Ports Authority of Fiji, Civil Societies such as the World Wild Fund for Nature (WWF), Foundation of the People of the South Pacific (FSP), University of the South Pacific(USP), resources owners and users. The program have also identified the Coral Coast of Fiji as is pilot project area.

3.1.4 Implementation of the Recommendation of the Committee on Science and Technology.

Fiji has not accessed the recommendation of the Committee on Science and Technology.

4.0 INSTITUTIONAL MEASURES TAKEN TO IMPLEMENT THE CONVENTION.

4.1 Established and Functional National Coordination Body (NCB)

The Ministry of Agriculture, Fisheries and Forest became the National Focal Point for the UNCCD in 1998 when Fiji ratified the United Nation Convention to Combat Desertification. Fiji's first National Report for UNCCD was submitted in April, 2000, but in May, 2000 Fiji went through a period of political distraction where the Government was illegally over thrown in a coupe de tat. Therefore an Interim Government has to be established to move the country forward and later a Caretaker Government was established during the election period from July to September, 2001.

After the general election in September, 2001 a new government was created and a separate Ministry of Fisheries and Forest was established which clearly indicates the importance of the two sectors in the social and economic development of the country. The Ministry of Agriculture also includes Sugar and Land Resettlement (MASLR) in its portfolio. Sugar is the most important agriculture commodity in Fiji, which continues to provide the highest contribution to the nation's GDP and the biggest employer of rural dwellers in the sugar belt.

Included in the MASLR is the land resettlement program which has been part of the Ministry's special program from 1998 when leases under Agriculture Landlord and Tenants Act Agreements began to expire. A total of 13,140 leases will expire between 1997 to 2028. The displaced farmers are being taken care off by the government through a Farming Assistance and Resettlement Program which is also being administered by the newly formed Department of Land Resources Planning and Development of MASLR.

The UNCCD National Focal Point remains with the Ministry of Agriculture, Sugar and Land Resettlement which has also established a new Department of Land Resources Planning and Development to also include the Land Use Section which was being transferred from the Research Division of MASLR. It clearly indicates the government's commitment to the sustainable development and management of its land and water resources. It is also being charged with the administration of the Agriculture Landlord and Tenants Act of 1976, the Land Development Act of 1961 and Land Conservation and Improvement Act of 1953.

The Land Conservation Board of Fiji is the National Coordinating Body (NCB) which is charged to exercise general supervision over land and water resources in Fiji under the Land Conservation Improvement Act of 1953. The Land Use Section of Department of Land Resources Planning and Development of MASLR, provides the secretarial services to the Board as well as technical support in the areas of land resources planning, development and management. While the Land and Water Resources Division of MASLR provides technical services on agriculture water

management and drought mitigation under the Drainage Act, 1961 and Irrigation Act, 1974. The Division also provides the Secretarial services to the three Drainage Boards (Western Division Drainage Board, Central Division Drainage Board and the Labasa Northern) Drainage Board) in Fiji.

4.2 Land Conservation Board

The Land Conservation and Improvement Act (LCIA) of 1953 had established the Land Conservation Board, whose main function is to "exercise general supervision over land and water resources," disseminate information; recommend appropriate legislation; and make general or particular conservation orders or closing orders; or require landowners to execute works for the conservation of land and water resources. The proposed amendment in the early 2002, also includes the formulation and implementation of the National Land Use Plan as one of its core functions.

Its primary concerns since the early 1970's has been drainage but in the early 1990's it has changed to sustainable land and water resources management. The Board has proposed the amendment of the LC&I Act and reformulation of it, as the Land and Water Resources Management Act with its Board renamed as the Land and Water Management Board of Fiji.

The proposed amendment includes the increasing of its membership from the current nine (9) members to fourteen (14) to include the participation of important land and water resources stakeholders. The amendment also includes the need to have an independent human and financial resources for the Board to be able to be more efficient and effective in carrying out its function independently and more importantly its commitment to the provisions of the UNCCD.

4.2.1 Legal Status of the LCB

The formal powers conferred on the Board by the provisions of the Land Conservation and Improvement Act are sufficient to allow the Board to make a substantial contribution to the sustainable management of Fiji's land and water resources and to implement a National Action Plan.

4.2.2 Resources available to the LCB

At present the LCB does not have its own human and financial resources but relies on the Land Use Section's budget to be able to function. The current proposed amendments to the Land Conservation and Improvement Act have taken in

considerations the need for an independent human and financial resources allocation. This is to enable the LCB to efficiently and effectively carry out its function in the overall supervision of the land and water resources of Fiji, the enforcement of its legislation as well as the training and awareness programs for the sustainable development and management of its land and water resources.

4.2.3 Cross-cutting and multi-disciplinary characters

The current members of the LCB consists of various government and non government agencies who are directly involved with the land resources planning, development and management. The members are as follows; the Ministry of Agriculture, Sugar and Land Settlement who is responsible for the agriculture sector of the country and the efficient and effective running of the Board; Native Land Trust Board who is the custodian of all the land that belongs to indigenous people and is responsible for the administration of 90% of the total land in Fiji; Ministry of Lands and Survey General who is responsible with the development and management of State land; the Forestry Department who is responsible for the forestry sector and the sustainable forestry management; Ministry of Works and Energy who is responsible for the road constructions, management of our water supply systems and energy sources ; the Fiji Sugar Corporation which is the biggest foreign income earner for Fiji from the exporting of sugar; and three farmers who are also members of civil societies representative from the respective Divisions (Western, Northern, Central/ Eastern).

The Board has proposed an amendment of its Act, for the inclusion of five new members which includes the Fijian Affairs Board who is responsible for the administration of the Fijian indigenous people and their resources; the National Trust of Fiji who is responsible for the conservation of protected areas such as national parks etc.; the Environment Department who will be in charge of the proposed Sustainable Development Bill; the Department of Town and Country Planning who is responsible for the urban land use planning and its development and management and the Fiji Council of Women who will be representing a very important component of the society and instill gender sensitization in the Board.

The Board usually meet four times a year on quarterly basis but if urgent needs arises a flying minute is used to fast track decision making process. The Board members and its various organisations regularly contact each other by telephone, facsimile and "e " mail networks.

4.2.4 Composition and Mode of Operation

The members are nominated by the various organisations who are the official members as stipulated under the Act. Currently the ratio of members from Government to non-government to civil society is four is to two is to three (4:2:3),

and men to women ration is nine men is to nil women (9 : 0). But the amendment to the Act clearly indicates that more consultation between government, non-government and civil societies is an important factor the proposed amendment advocating for a ratio of eight government representatives, two non government representatives and four civil societies members (8:2:4) with men to women ratio of eleven is to three (11: 3) and there are opportunities for more participation from women in future.

The Board's function is presently being carried out by the Land Use Section of DLRPD which have been endorsed by the Land Conservation Board and the Ministry of Agriculture, Sugar and Land Resettlement. The proposed amendment to the LCI Act advocates for a separate independent organisation, headed by an Executive Director.

4.2.5 Status of Information data

The Land Conservation Board of Fiji presently relies on the Land Use Section for its Management Information Systems. The Land Use Section has a Geographical Information System in place based in headquarters in Suva but will soon be inter-linked with other Land Use Office based in the Northern, Western and Central/Eastern Divisions. The Land Use Section of DLRPD of MASLR is the custodian of the Fiji soils data with other layers being imported from various custodian of other data bases for the unit to be able to carry out data analysis for the required outputs such as the District Based Land Use Plans etc..for its clients to make quality decisions on land use.

MASLR is a member of the Fiji Land Information Council (FLIC) the members consists of government and non-government organisations who are involved with information gathering, storing, manipulation and analysis for the various outputs in their different fields. The Head of the Land Use Section represents MASLR in the FLIC and it meets four times annually on quarterly basis.

The Department of Land Resources Planning and Development provides information on soils, land use capability classification and its analysis to derive land use plans for various clients such as districts councils and individual land users for quality decision making on the various sustainable uses of their resources.

Internally the staff members of MASLR are well aware of the information available within the DLRPD through the MASLR bi-annual newsletter. Externally through the Fiji Land Information Council Newsletter and the quarterly meetings of the GIS/LIS User Groups Forum.

Appendix 1 clearly indicates the various data bases available with their custodians which are very useful for the sustainable development and management of Fiji's land and water resources.

4.3 Institutional Framework for Coherent and Functional Desertification Control.

4.3.1 Measures adopted to adjust or Strengthen the institutional Framework

The Land Conservation Board in its drive for efficiency and effectiveness have proposed an amendment to the Land Conservation Improvement Act where the Act has to be reconstituted as the Land and Water Resources Management Act for better understanding of which resources it is advocating. It has also increased its Board members from 9 to 14 to include important stakeholders and broaden its social, economic and environmental scopes.

The Board has also proposed for an independent financial and human resources to be able to efficiently and effectively carry out its functions. To facilitate wider participation of its stakeholders it has established the Western Division Conservation Committee and have also proposed an amendment to the reconstitution of the Conservation Committee to Land Use and Conservation Committee. The Board have yet to establish the Northern, Central and Eastern Division Land Use and Conservation Committees.

The proposed amendments to the act also takes into consideration the formation of the land husbandry or land care groups, a concept borrowed from Australia and New Zealand with the main purpose to empower resources owners and users to practice good land husbandry and good land stewardship.

Appendix 2 clearly indicates the proposed Land and Water Resources Management Act Institutional Framework.

4.3.2. Measures Adopted to Strengthen Existing Institutions at the Local and National Levels

As clearly indicated in the National Strategic Development Plan that capacity building is a very important issue that needs to be addressed both at national and local level. The Department of Land Resources Planning and Development in collaboration with the Ministry of Fisheries and Forest, Environment Department, Ministry of Fijian Affairs and Non Government Agencies such as the Hardwood Corporation, Native Land Trust Board and Civil Societies such as the World Wild Life for Nature (WWF), Foundation Of the People of the South Pacific (FSP) University of the South Pacific (USP) and the SPC /GTZ Forestry and Agroforestry Project have been carrying out awareness and training both at national and local level, at schools to university level, on the different aspects of sustainable resources uses. These includes the sustainable land management, sustainable forest management, sustainable uses of water, mineral resources and other contentious issues like waste management, pollution and many other environment factors.

Many Government, NGOs and Civil Society Groups have been trained in different aspects of environmental management through in country and overseas seminars, workshops and courses organized by international and bilateral technical assistance agencies. This are the people who have assisted in the capacity building aspects of spreading the gospel of sustainable uses of the resources all over the

country through seminars, workshops, meetings, television programs, on radio and daily newspaper articles.

The Ministry of Education budget for education was increased from F\$39 million to \$217 million. But their Curriculum Unit have mainstreamed different aspects of environmental management especially the sustainable uses of resources, as part of the primary, secondary school curriculum. It has been fully supported by various organisations like Ministry of Fisheries and Forests, Ministry of Agriculture, Sugar and Land Resettlement, World Wild Fund for Nature, University of the South Pacific, the SPC/GTZ Regional Forestry program and others, especially in assistance for printed material for example the SPC/GTZ/MAFF (MASLR) Agroforestry project have prepared technical guide books in Agroforestry and the Soils of Fiji as well as leaflets, posters, video and other material which are used by schools, colleges and the University of the South Pacific for their course material.

Capacity building is indeed a challenging issue in Fiji regarding the sustainable uses of our resources. Sometimes when training programs are in place the problem of funding is a big stumbling block to its sustainability.

4.4 NAP as Part of the National Economic and Social Development and Environment Protection Plan (NESDEPP)

The Fiji Government has not officially formulated the NAP and has not specifically included the NAP in the NESDEPP but in recognising the importance of the sustainable development and management of its land and water resources had established the Department of Land Resources Planning and Development in the Ministry of Agriculture Sugar and Land Resettlement. These is to fulfill its vision for an efficient and effective coordination and partnership with other very important stakeholders such as the Native Land Trust Board, the Ministry of Lands, non-government agencies, civil societies, landowners and tenants for the quality decisions in planning, development and management of their land and water resources.

The government's quest for the sustainable development and management of its land and water resources have identified five key development issues in its National Strategic Development Plan for 2002 to 2004 including the Land Resources Development and Management Sector. The sustainable development and management of all available land for commercial agriculture and other undertakings throughout the nation is one of the principal pillars of the nation's social and economic development.

The Plan has developed a coherent set of policy objectives to move this process forward. The policies are as follows;

- To work with the Native Land Trust Board in consultation with landowners under the Native Land Trust Act for the acceptable arrangement for the productive sustainable development of all native land in Fiji (90% of all the total land in Fiji).

- To strengthen institutional capacity for sound land development and management.
- To acquire and develop for agriculture usage freehold properties and state lands for leasing to the displaced Agriculture Landlord and Tenants Act tenants and to prospective tenants on a more secure tenure.
- To coordinate the optimal utilisation of land for development. This includes the endorsement of the formulated National Rural Land Use Policy which is a prerequisite for the formulation of a National Rural Land Use Plan.
- To promote the consolidation and integration of all land information into database.
- To enhance landowners participation in commercial use of their land resources.
- To encourage foreign and local investment in commercial use of land
- To improve sustainability of land resources use.
- To monitor and control the physical degradation of land.

The land resources development and management strategic plan matrix is clearly indicated on Appendix 3 which consists of the policy objectives, strategies and performance indicators.

4.5 Coherent and Functional Legal and Regulatory Framework.

The Land Conservation and Improvement Act still remains the principal legislation governing the use of land resources and it will be complimented by the Sustainable Development Bill which has still got to go through the parliament processes to be able to be enacted.

The LCI Act has been amended to also include the formulation and implementation of the National Land Use Plan as one of its key functions.

4.5.1. *Analysis of the legislation on environment and related fields.*

There is very poor public understanding particularly in the rural sector about the various legislation's that pertains to land, land use and soil conservation etc. The following twelve (12) pieces of legislation are relevant to the land development and conservation:

- Land Conservation and Improvement Act, 1953
- Drainage Act, 1961
- Irrigation Act, 1974
- Land Development Act, 1961

- Town and Country Planning Act, 1946
- Crown Land ACT, 1946
- Native Land Trust Act, 1946
- Agriculture landlord and tenants Act (ALTA), 1976
- Mining Act, 1966
- National Trust Act, 1970
- Forest Act, 1953
- Forest Decree

The government recognises that most of the above legislation do overlap and have drafted a Sustainable Development Bill which is an omnibus legislation which will support or compliment the existing legislation when the bill goes through the parliament process and passed, it will be known as the Sustainable Development Act..

The Sustainable Development Bill (SDB)I have lots of opportunity for the local people to enhance their participation. For example the Environment Impact Assessment (EIA) as stipulated under the SDB encourages public hearing and

4.5.2. Measure to Adapt Current Legislation or Introduce New Enactments on Land Tenure Reform, Decentralisation and Natural Resources Management.

The Indigenous Fijian Administration institutional structure which had been established several decades ago clearly defines the linkages from the local level to the national level. The villager discusses an issue of importance in the Village Council (Bose Vakakoro) and if it is an important issue, it goes through to the District Council (Bose ni Tikina) then to the Provincial Council (Bose ni Yasana) if it felt that it is a very important issue, it passed on to the Great Council of Chief (Bose Levu Vakaturaga), if the issue is of national importance it is passed on to the Parliament (Bose Ni Palimedi) and vice versa. The discussed issue follows the same channel down from parliament to the villager in the village through this critical path.

The Indo-Fijian communities have their advisory councils which are represented by the district council and it goes to the Divisional Development Committee and then to Parliament and vice versa.

But as reported by Leslie and Ratukalou in the Review of Rural Land Use In Fiji- Opportunities for the New Millennium (2002) that there is very poor understanding in the rural sector about the various legislation that pertains to land, land use practice and soil conservation. This situation results from part from the fact that the majority of the government and corporate field officers responsible are themselves not conversant with the various laws. Also their have

been less public awareness programs to inform the grass-root people about the land husbandry provisions stated in these laws.

The level and standards of technology transfer from official to farmers is inadequate on matters of land use diversification and intensification, farming systems and their development needs, new systems cost of inputs and gross margins, post harvest support and marketing. There is also a lack of clear understanding about the magnitude of the soil erosion problems and very little literature about land use farming practices available in the vernacular.

Government ministries are working in collaboration with NGOs and Civil Societies to enhance the participation of grass-root people in better understanding of legislations that affects them. Very recently the Sustainable Development Bill has been taken back to the local people for final consultation.

The proposal for the formation of landcare groups within the 187 districts in Fiji is a positive direction to alleviate the issue and encourage participation of local people to empower them to make quality decisions process in resources use.

5.0 PARTICIPATORY PROCESS IN SUPPORT OF PREPARATION AND IMPLEMENTATION OF ACTION PROGRAMMES.

5.1 Effective Participation of Actors in Defining National Priorities

5.1.1. Methods of participation of the various actors in regular consultations, meeting and regular exchange of information in mailing and emailing network.

6.0 CONSULTATIVE PROCESS IN SUPPORT OF THE PREPARATION AND IMPLEMENTATION OF NATIONAL ACTION PROGRAMMES AND PARTNERSHIP AGREEMENTS WITH DEVELOPED COUNTRY PARTIES AND OTHER INTERESTED ENTITIES

6.1 Effective Support From International Partners for Cooperation

The Government of Fiji through the Ministry of Agriculture, Sugar and Land Resettlement's annual budget takes care of most of the sustainable land management research and on farm activities in Fiji. But the donor agencies such as the Asian Development Bank, Ausaid, German Technical Cooperation and the European Union have contributed invaluable through bilateral and multilateral

technical and financial support towards the research and development programs for the sustainable land and water resources uses.

Fiji needs the technical and financial support to be able to prepare and implement an integrated National Action Plan or Program to move the process of sustainable land and water resources management forward.

6.1.1 Degree of participation from International Partners.

The Ministry of Agriculture, Sugar and Land Resettlement had submitted a National Action Program Project Proposals to the Food and Agriculture Organisation of the United Nations and the Secretariat of the United Nation Convention to Combat Desertification for them to source funding for the National Action Program for Fiji.

6.1.2. Establishment of the Informal Consultation and Harmonisation Process for the Actions Between Partner Countries.

Consultative mechanisms are already in place such as the quarterly meetings of the Land Conservation Board Meetings and the World Summit for Sustainable Development, the Intergovernmental Panel for Forestry and others but unfortunately we have not formulated a National Country Team for the UNCCD NAP.

7.0 MEASURES TAKEN OR PLANNED WITHIN THE FRAMEWORK OF THE NATIONAL ACTION PROGRAMMES, INCLUDING MEASURES TO IMPROVE THE ECONOMIC ENVIRONMENT, CONSERVE NATURAL RESOURCES, IMPROVE INSTITUTIONAL ORGANISATION, IMPROVE KNOWLEDGE OF DESERTIFICATION AND MONITOR AND ASSESS THE EFFECTS OF DROUGHT.

7.1 Adequate Diagnosis of the Past Experiences

There has been adequate work and recommendation done on the assessment of land degradation in the past and have been adequately reported in the first National Report submitted in April, 2000.

7.1.1 Synthesis and Evaluation of Activities Undertaken

The National Report submitted in April, 2000 had adequately addressed the issues.

7.2 Established Technical Programs and Functional Integrated Projects to Combat Desertification.

Even though Fiji has ratified the UNCCD but has not been able to integrate the various initiative taken by various government, non government organisation and civil societies because it has not formulated its National Action Program. But it had held several multi-stakeholder workshops very currently to discuss on how the various stakeholders could integrate their programs and mobilise resources.

The information reported in the first UNCCD National Report adequately addresses the issues.

7.3 Action Programs Implemented in Compliance with Priority Fields Set Out In the Convention.

Fiji has not formulated its National Action Program and therefore have not accessed measures identified in Article 4 of the Regional Implementation Annex for Asia of the UNCCD.

7.4 Linkage Achieved with Sub-regional and Regional Action Programmes (SPRAP and RAP)

At the Sub regional level, Fiji has taken part in the first Sub Regional Workshop held in Apia Samoa from the

7.5 Effectiveness of Measures in Local Capacity Building.

7.6 Partnership agreements applied

8.0 FINANCIAL ALLOCATION FROM NATIONAL BUDGETS IN SUPPORT OF THE IMPLEMENTATION AS WELL AS FINANCIAL ASSISTANCE AND TECHNICAL COOPERATION INCLUDING THEIR INFLOWS. PROCESSES TO IDENTIFY THEIR REQUIREMENTS, AREAS OF FUNDING AND PRIORITIES.

8.1 Adopted Financial Mechanisms

Direct financial assistance has not been provided by the Government to support the UNCCD. But the Fiji Government indirectly provides funds towards the implementation of sustainable land management programs.

Fiji is fortunate that the Government have recognised that Land Development and Management Sector as one of the special development issue which is recognised in the National Development Strategic Plan for 2002 to 2004 which will be the basis of resourcing funds from the government.

Appendix 1 : Land Resource Information

1. Land resources

Geology, climate, hydrology, landforms, soils, vegetation. Sources include topographical base maps, aerial photographs, satellite imagery, existing surveys and departmental records.

| No | System | Description | Database System | Location |
|-----------|---|--|------------------------|--------------------------|
| 1. | Central Index | The hub that links most of the systems, holds the key data from each, and provides for their maintenance | Advanced Revelation | FLIS Support Centre |
| 2. | Computerised Cadastral Mapping Systems (CCMS) | The GIS database that holds the spatial representation of all cadastral boundaries. | Oracle | Dept. of Lands & Surveys |
| 3. | Titles Journal | A system that captures the details and movement of documents through the Registrar's Office. | Advanced Revelation | Registrar of Tiles |
| 4. | Titles Index | Contains key information for all Certificates of Titles, Crown Leases, Native Leases, Crown Grants, Native Grants, and Sub-leases. | Advanced Revelation | Registrar of Titles |
| 5. | Survey Plan Journal | Holds details of every parcel and every survey plan, and tracks those plans through the approval process. | Advanced Revelation | Dept. of Lands & Surveys |
| 6. | Survey Plan Index | Contains key information for all approved survey plans. | Advanced Revelation | Dept. of Lands & Surveys |
| 7. | Valuation Records | Holds all valuation assessments made by the Dept of Lands & Surveys, as well as details of property sales. | Advanced Revelation | Dept. of Lands & Surveys |
| 8. | Road Index | Textual details of all legal roads in Fiji | Advanced Revelation | Dept. of Lands & Surveys |
| 9. | State Lease Administration | Contains details of registered and un-registered State leases and related actions and file movements | Advanced Revelation. | Dept. of Lands & Surveys |

| | | | | |
|------------|--------------------------------------|--|---|--|
| 10. | State Rental System | Contains Rental details of all State Leases and Native Leases to State. | Oracle | Information Technology & Computers (ITC) |
| 11. | State Land Register | An inventory of all State Land – Sch A, B, State land with Title and without Title. | Advanced Revelation | Dept. of Lands & Surveys |
| 12. | Native Land Register | An inventory of all Native Land, and links to the associated land owning units. | Advanced Revelation | Native Lands & Fisheries Commission |
| 13. | Vola ni Kawa Bula | A record of all indigenous Fijians referenced to the land owning unit – Tokatoka, etc. | Advanced Revelation | Native Lands & Fisheries Commission |
| 14. | Town & Country Planning Applications | Holds details of all planning applications, including processing and conditions | Microsoft Access | Dept. of Town & Country Planning |
| 15. | Census Mapping | Holds records of National Census Boundaries – 1976, 1986 and 1996 | Oracle | FLIS Support Centre |
| 16. | Fiji Topo Database | GIS of fully structured topographic data derived from 1:25,000 scale national mapping and aerial photos | Oracle | Dept. of Lands & Survey |
| 17 | Native Land Mapping System | The GIS database that contains spatial representation of all land recorded on the Native Land Commission (NLC) maps. | Oracle | Dept of Lands and Survey. |
| 18 | Geodetic Database | Holds records of all survey controls in Fiji – first, second and third order. | Advanced Revelation | Dept. of Lands and Survey |
| 19 | Government Rented Buildings | An inventory of all buildings rented by State for office space and staff quarters. | Advanced Revelation | Dept. of Lands and Survey |
| 20 | Native Leases to State | An inventory of all registered and un-registered Native Leases to State. | Advanced Revelation | Dept. of Lands and Survey |
| 21 | Vanuaview (v 1.0) | A viewing package based on CCMS and Fijitopo. | Uses data from Oracle and Advanced Revelation and uses C++ programming language | Dept. of Lands and Survey |

Orthophoto maps (Dept of Lands and Surveys)

These are large scale maps with details of rectified photo images combined with contours, spot heights, grid lines with co-ordinate values. Fiji has had national coverage since 1970.

Geological maps (Mineral Resources Dept)

National coverage at 1:50,000 scale in hard copy format only. A non-spatial database includes rock sample analysis and seismic data.

Soil maps (Land Use Section, MAFF)

National coverage at 1:126,720 scale are available in hard copy format. More recent digital soil maps with 8 slope classes are available for Viti Levu, Vanua Levu and Taveuni. Field mapping was conducted for the latter at 1:25,000 scale. Other spatial layers include vegetation, digital terrain model, climate (rainfall and temperature) and vegetation. Supporting non-spatial database includes climate, soil properties (laboratory and field), and a crop growth model.

Land classification maps (Land Use Section, MAFF)

National coverage at 1:126,720 scale are available in hardcopy format.

Spatial geoscience database (Mineral Resources Dept)

This database provides a record of aeromagnetic surveys; bathymetry; reefs; digital elevation model; coastlines and rivers. Coverage is national but at variable scales. Data is available in both digital and hardcopy forms.

Fiji Topo database (Dept of Lands and Survey)

The Fiji Topo database is a record of topographical data with details such as contours, manmade and natural features, river systems, administrative boundaries, coastline, urban areas and villages, transportation and other infrastructure. Hard copy and digital format maps are available at 1:25,000 and 1:50,000 scales; coverage is national.

Forest Management Information System (Forestry Department)

The FMIS provides national forest cover data divided into forest types plus hardwood and software plantations and mangrove areas. It also holds further spatial information such as digital terrain model, soils, slope, rainfall, declared reserved areas, forest functions and logged out areas. Non-spatial information about woody plants, biomass, species, regeneration potential, medicinal plants is also stored in the system. Much of the mapping was from satellite imagery and is available in digital and hardcopy (1:50,000 scale) formats.

2. Present land-use

Surveys and departmental records of land-use, farming systems, forestry, production levels and trends.

Land-use maps (Land Use Section, MAFF)

National coverage land use maps are available in hardcopy for 1958, 1968 and 1978 at a scale of 1:50,000.

Agricultural Census (Economic, Planning and Statistics Section, MAFF)

Reports provide statistics about farmers, farms, crops, farming systems etc. Censuses were conducted in 1968, 1978 and 1991.

3. Present infrastructure

Roading, other transport systems, settlements and services to rural sector.

Road Index (Department of Lands and Survey)

The Road Index provides a national record of all roads and their status with details such as road name, length, width, class, legalities, locality, surface make, maintenance authority. Information is available both as hardcopy reports and digital maps.

Note that roading, settlements and other infrastructure are provided by Fiji topo database

4. Population

Numbers, demographic trends, location of settlements, ethnic groups.

Census mapping system (Bureau of Statistics)

Based on the Fiji Map Grid, the system provides records of national census-enumeration area boundaries for 1976, 1986 and 1996 with their enumeration numbers. Digital and hardcopy (1:50,000 scale) data available on approval of the Government Statistician. An extensive non-spatial record of housing and population data supports the mapping system.

Provincial Profile Database (Ministry of Fijian Affairs)

The Provincial Profile System is a record of summary findings of rural Fijian villages within provinces and tikinas with population, their religious affiliation, housing and toilets, transportation means and communication, economy, power supply, village access, primary waste disposal and primary water supply and new businesses. The coverage is national and recording started in 1992. Information outputs are hard copy reports and digital data.

Vola ni Kawa Bula (VKB) System (Native Lands and Fisheries Commission)

The System provides a listing of all native Fijians according to tokatoka. The VKB is a record of native ownership of all Native Land with such details as tokatoka, koro, yavusa, vanua, tikina, mataqali and provincial names. Hard copy reports are subject to the approval of NLFC.

5. Land tenure

Legal and traditional ownership and user rights for land, forest reserves etc.

Cadastral maps (Department of Lands and Survey)

Hard copy cadastral maps provide a record of all surveyed land parcels with their appellations. Areas are compiled at various scales. Data also available digitally (CCMS below).

Computerised Cadastral Mapping System (CCMS) (Dept of Lands and Survey)

The CCMS is the GIS database that holds data about land parcels in Fiji with respect to their geographic location, shape area and legal description. Other details also shown are administration unit, map label, native reserve, native land owning unit, parcel, reserves, roads, shoreline, crown land, tiri land, title, villages and water courses. Digital copy on computer tape/disk; hard copy maps and dyeline prints are available.

Final Reports System (Native Lands and Fisheries Commission)

The final reports contain details such as head of yavusa, yavusa name, NLC sheet and lot reference, area and same for matanitu, mataqali, tikina, tokatoka and vanua plus village, date and place of sitting, and commissioner. Hard copy and digital copies are subject to the approval of the NLFC.

Land tenure maps (Dept of Lands and Survey)

The land tenure maps contain graphical representation of land ownership with details such as title references and general notings of new lease applications and new subdivisions. Hard copy only available.

Native Land Management System (Native Land Trust Board)

The System will be an interface of the existing graphic (LIS/GIS system) and the non-graphical (LADS system) records of Native Land leases (both surveyed and unsurveyed), with landowning unit information now available, and data from other agencies such as Forestry, Land Use Section, Fiji Pine Ltd. Hard copy and digital reports are subject to the approval of NLTB and a Licensing Agreement.

Native Land Commission Maps (Dept of Lands and Survey)

These maps are records of Native Land showing surveyed mataqali land boundaries with lot numbers, areas and sheet numbers. The same information is now in a GIS database, known as the Native Land Mapping System. Digital and hard copies are available.

Parcel Plan Index (Dept of Lands and Survey)

The Index contains survey plan and land parcel details such as plan number, description, tikina, land type, surveyor's name plus a complete inventory of all survey plans and all parcels created by the survey. Available in hardcopy or digital format.

State Land Register (Dept of Lands and Survey)

A comprehensive register of all land held by the state. It contains details of State-owned land such as type, NLC lot number, NLC sheet reference, area, title reference, name of land, tikina, province, and purchase information. Available as hardcopy reports but subject to Licensing Agreement.

Titles Index (Register of Titles)

Records details of all registered titles and are available in digital or hardcopy format.

Vanuaview System (Dept of Lands and Survey)

This is a computerised map viewing system for speedy delivery and easy access to land information. The package is based on the CCMS and Fiji Topo on a single continuous map comprised of more than 90,000 land parcels. Information is available either in hardcopy or on compact disc.

6. Economic

Town and Country Planning Scheme Plans (Dept of Town and Country Planning)

The scheme's paper maps are records of all city and town boundaries with various zoning and their designated use and land-use within each zone. The hardcopy maps are subject to Crown Copyright Laws and the approval of Director, DTCP.

Valuation Maps (Dept of Lands and Survey)

The maps are records of properties, their dimensions with valuation assessment numbers based on cadastral maps. Hardcopy maps are available on the approval of the Chief Valuer. The Valuation Records System is a database in support of the map system. The database is a record of valuation data such as local authority, assessment year, unimproved value, title reference, lease reference, parcel description, street, zone, owner, lessee, area and ward.

7. Legislation

Laws and regulations that affect land-use; traditional law and custom; law enforcement:

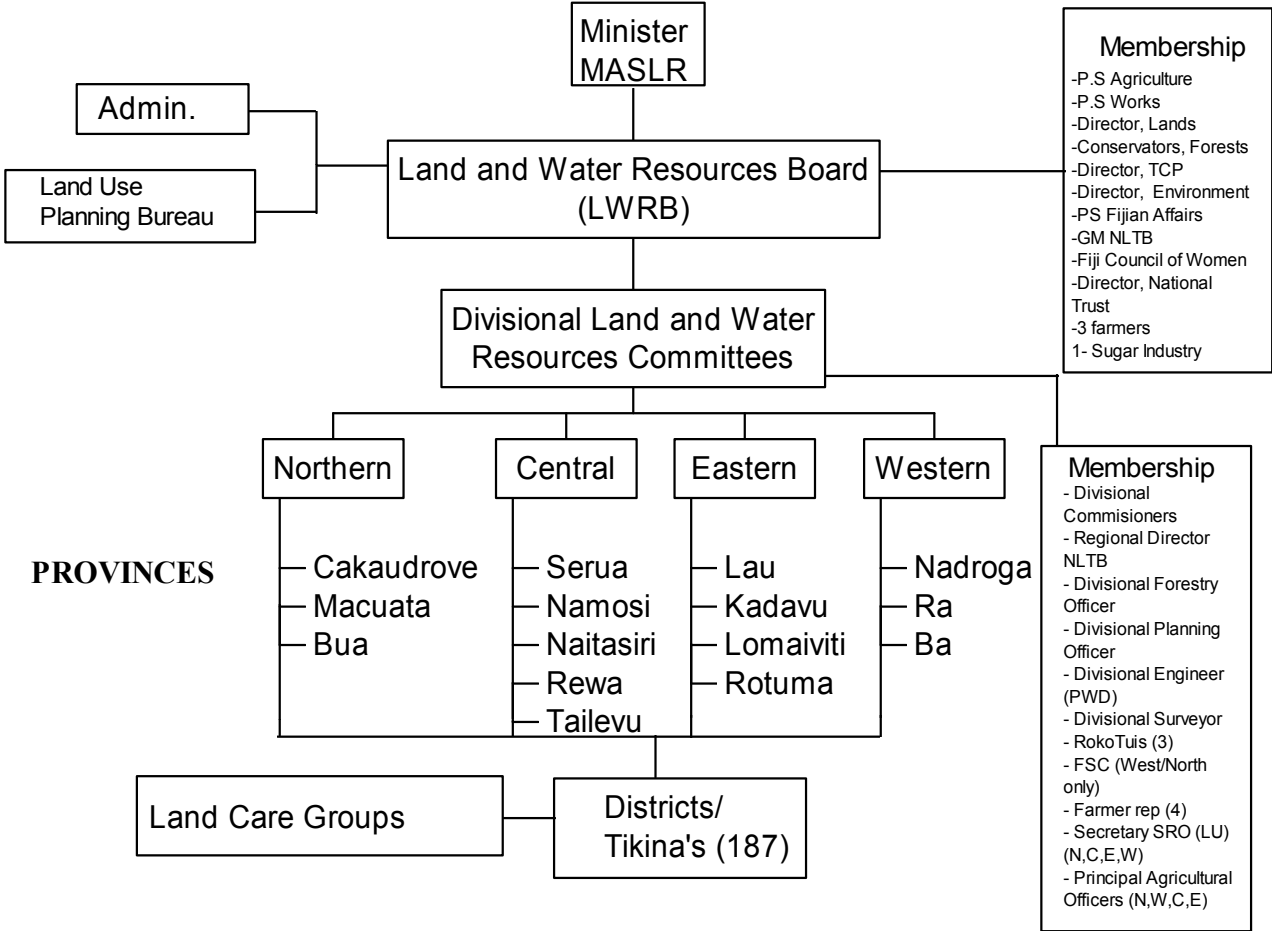
(i) *Legislation*

The key legislation for Fiji that is of relevance to rural land-use is discussed in detail in Chapter 3 and is as follows:

- Land Conservation and Improvement Act
- Drainage Act
- Rivers and Streams Act
- Subdivision of Lands Act
- Agricultural Landlord and Tenant Act

Appendix 2:

PROPOSED LAND WATER RESOURCES BOARD STRUCTURE



Appendix 3: Policy Objectives, Strategies and Performance Indicators

| POLICY OBJECTIVES | STRATEGIES | PERFORMANCE INDICATORS |
|--|---|--|
| 7.1 To work with native Land Trust Board in consultation with landowners under NLTA for acceptable arrangement for the productive development of native land in Fiji. | ◆ Collating, processing, and analysing of data on ALTA expiry leases and other potential development areas. | ❖ Compiled ALTA data accepted by Relevant Authorities and documented by 2004. |
| | ◆ Strengthening community participation in land resources development | ❖ Increased number of properly titled leases issued by 2004 under NLTA/ALTA. ❖ Acceptable level of compliance on lease conditions by tenants. |
| | ◆ Facilitating the provision of suitable residential, commercial and industrial land development. | ❖ Increased numbers of land owning units involved in commercial development of their land. |
| | ◆ Assisting NLTB in amendment of relevant legislations – ALTA & NLTA; Land Conservation & Improvement Act, and consolidation of the Wetland Legislative clauses into a new Act. | ❖ Relevant amendments endorsed by Cabinet in 2002. ❖ Land Conservation Board review completed by 2003. ❖ Draft Wetland Development & Management Act completed by 2004. |
| | ◆ Assisting agricultural diversification and intensification by making available suitable land. | ❖ Additional new native lands are brought into effective production. ❖ Increased land-use intensity index. |
| | ◆ Strengthen linkage with other stakeholders through participation in the integrated land development programs. | ❖ Appropriate Sectoral Development Taskforce, e.g. Agri-Tourism Taskforces, established by 2003. |
| 7.2 To strengthen institutional capacity for sound land development and management | ◆ Consolidating the established “peak” coordinating agencies within Government in facilitating the identification, monitoring, supervision and co-ordination of land utilization for the sustainable expansion of agriculture and non-agriculture sectors, e.g LRPD, LDA, LCB, etc. | ❖ Relevant Agencies are adequately technically equipped, staff establishment are fully filled and full operation by 2003. |
| | ➤ Strengthening the capacity of the existing institutions in land assessment and evaluation, land husbandry practices, farm and forest productivity and land use planning. | ❖ Specialised expertise are in place with relevant agencies, e.g. Assessment & Evaluation expertise in NLTB. |
| | ➤ Supporting NLTB and FLDC in technical and other assistance available in its land development policies | ❖ Effective smart-partnership established between all concern agencies, e.g. NLTB/FLDC/LRPD |
| | ➤ Promoting investment prospects for land developers. | ❖ New land developers enter the real estate market. ❖ Appropriate incentives and concessions are in place |

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|--|---|--|
| <p>7.3 To acquire and develop for agricultural usage freehold properties and state lands for leasing to the ex-Alta tenants and to prospective tenants on a more secure tenure.</p> | <ul style="list-style-type: none"> ➤ <i>Make available new farm lots in the potential growth areas.</i> | <ul style="list-style-type: none"> ❖ <i>New agricultural sub-division developed with basic infrastructures completed.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Resettle ex-Alta tenants and landless citizens.</i> | <ul style="list-style-type: none"> ❖ <i>Increased numbers of farmers resettled with completed ownership status.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Provide farming assistance/options to replacement farmers in both cane and non-cane areas.</i> | <ul style="list-style-type: none"> ❖ <i>Increased on-farm activities and productivity.</i> |
| <p>7.4 To co-ordinate the optimal utilisation of land for development.</p> | <ul style="list-style-type: none"> ➤ <i>Completing the on-going Land-use Survey exercise, forerunner to the “National Land-use Plan” Project.</i> | <ul style="list-style-type: none"> ❖ <i>Present Land Use Survey completed by 2004.</i> ❖ <i>A land resources Web- site developed by 2002.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Undertaking a “Participatory National Land Use Plan” Project- 2002 – 2004. With preparatory work initiated in 2001.</i> | <ul style="list-style-type: none"> ❖ <i>Participatory National Land Use Plan documented and available for public use by 2004.</i> ❖ <i>Increased investment in terms of new land development and farm entities.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Implementing an extensive public awareness and education programmes amongst all stakeholders & land users of respective sectors.</i> | <ul style="list-style-type: none"> ❖ <i>A well informed custodians of natural resources and optimal utilization of resources. e.g. Volunteer Community Land-care (husbandry) Groups in strategic areas formed by 2003.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Ensuring Fiji’s commitment to the international conventions on the sustainable use of our land resources, e.g. UNED-Agenda 21, UNCCD, Kyoto Protocol</i> | <ul style="list-style-type: none"> ❖ <i>Committed to the international conventions and fully utilising its opportunities.</i> ❖ <i>Exchange information with the international communities enhanced.</i> |
| <p>7.5 To promote the consolidation and integration of all land database and information.</p> | <ul style="list-style-type: none"> ➤ <i>Integration of land information infrastructure by all agencies dealing with land-related information in order to support the socio- economic development, and environmental management of Fiji’s land and water resources.</i> | <ul style="list-style-type: none"> ❖ <i>Integration and computerization of all land related information by 2003, Dept. of Lands & Survey as the principle co-ordinator.</i> ❖ <i>On-going MAFFA administered Geographical Information System (GIS) consolidated by 2004.</i> |
| <p>7.6 To support and enhance Landowners participation in the commercial development of their land resources.</p> | <ul style="list-style-type: none"> ➤ <i>Reviving land development assistance scheme, e.g. ex-LDA under reverted customary ownership.</i> | <ul style="list-style-type: none"> ❖ <i>Increased numbers of properly titled leases issued.</i> ❖ <i>Accessibility to credit improved.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Facilitating subdivision of customary land and assist in the efficient use of native lands.</i> | <ul style="list-style-type: none"> ❖ <i>Increased numbers of land users assisted by 2004.</i> ❖ <i>Improved collateral equity status.</i> |
| | <ul style="list-style-type: none"> ➤ <i>Encouraging strategic involvement of landowners, through their active participation in commercial dealings and through equitable sharing of benefits.</i> | <ul style="list-style-type: none"> ❖ <i>Increased number of Landowners involved in land development micro-business.</i> ❖ <i>Increased Landowners shareholding equity in private Companies commerce industry development sited within their land resources.</i> |

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| | | |
|---|---|--|
| | <ul style="list-style-type: none"> ➤ Encouraging diversification from subsistence economic activities to commercial, industrial and service sectors. | <ul style="list-style-type: none"> ❖ Landowners considered as principal stakeholders in commercial entities and development undertakings. |
| 7.7 <i>To encourage foreign and local investment in Commercial use of land.</i> | <ul style="list-style-type: none"> ➤ Identifying potential areas for land development and its associated investment prospectus package. | <ul style="list-style-type: none"> ❖ Potential areas for land development identified and investment prospectus package documented, |
| | <ul style="list-style-type: none"> ➤ Consolidating existing strategic public infrastructure and expanding new infrastructure such as roads etc., into potential areas. | <ul style="list-style-type: none"> ❖ New infrastructure upgraded and constructed (roads, marketing facilities, electricity, water supply, tele-communications etc.....) ❖ Reduced urbanisation trend. |
| | <ul style="list-style-type: none"> ➤ Enhancing FITIB current investment promotional activities and efforts. | <ul style="list-style-type: none"> ❖ Increased investment in champion sectors, e.g. Eco-tourism, hotel development, wetland investments, etc. |
| | <ul style="list-style-type: none"> ➤ Developing strategic alliances with foreign multi-nationals companies to invest and actively commit in Fiji's socio-economic development agenda. | <ul style="list-style-type: none"> ❖ Increased investment by 10% towards 2004. ❖ Intellectual capacity in the field of commerce and business achieved by the rural population and local entrepreneurs. |
| 7.8 <i>To improve sustainability of natural resource.</i> | <ul style="list-style-type: none"> ➤ Implementing sustainable land management principles in land development. | <ul style="list-style-type: none"> ❖ Sustained resource refurbishment and reduced level on degradation of land-based resources. |
| | <ul style="list-style-type: none"> ➤ Implementing integrated watershed management programs in the major Catchment Basins | <ul style="list-style-type: none"> ❖ Reduced Govt. expenditure on dredging operations on the Fiji's major rivers. ❖ Appropriate mitigation measures (infrastructure) constructed. ❖ Watershed Management Master Plan completed by 2004. |
| | <ul style="list-style-type: none"> ➤ Directing research and development in land use intensification programme, e.g. re-forestation efforts and supporting on-going land conservation programmes, e.g. GTZ conservation scheme. | <ul style="list-style-type: none"> ❖ Increased numbers of land users adopt new diversified land-use systems. ❖ Increased numbers of land users adopt low cost appropriate sustainable land management technologies. ❖ A Code of Practice for resource utilization adopted |
| | <ul style="list-style-type: none"> ➤ Providing efficient legal system of addressing land disputes, breaches of conditions and other landlord and tenants relationship. | <ul style="list-style-type: none"> ❖ Land Tribunal Court established in the medium term. ❖ Reduced back-log of cases and efficiency improved. |
| 7.9 <i>To monitor and control the physical degradation of land.</i> | <ul style="list-style-type: none"> ➤ Implementing effective management, assessment, monitoring and surveillance programmes in the development/utilisation of agricultural land and water resources. | <ul style="list-style-type: none"> ❖ Cost-effective engineering programmes developed and sustainably adopted by relevant authorities, e.g. MAFFA. |
| | <ul style="list-style-type: none"> ➤ Consolidating current efforts on coastal degradation spearhead by Geoscience & SOPAC. | <ul style="list-style-type: none"> ❖ Environment-friendly coastal development (tourism & industrial) sustained. |

Appendix 4:

PROJECT PROPOSAL

Country:

Republic of Fiji

Project Title:

National Action Programme for Land Degradation and Desertification

**Counterpart Institution
Responsible for project
Execution:**

Department of Land Resources Planning
and Development, Ministry of Agriculture,
Sugar and ALTA

**Contact Information
For Counterpart Institution:**

Lotus Building, Nabua
P.O. Box 5442, Raiwaqa, Suva
Phone – (679) 338 4900
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1. BACKGROUND AND JUSTIFICATION

AGENDA 21 of the United Nations Conference on Environment and Development emphasizes the need, and proposes a wide range of activities, to address land degradation in general and desertification in particular. As a response to this challenge, more than 100 countries have signed the Convention to Combat Desertification (CCD) in 1997. A key point of the CCD deals with scientific and technical cooperation on investigation, collection, evaluation of the processes and factors involved in land degradation leading to desertification.

Land degradation is a universal problem and not necessarily one for the developing countries. It is not merely an agricultural problem but has ramifications in all aspects of society. Land degradation, either natural or induced by humans, is a continuing process. It has however, become an important concern affecting the wealth of nations, food security, and is impacting on the livelihood of every person on earth. Food security is directly related to the ability of the land to support the population. Due to declining quality of the land, urban migration is on the rise in almost every country in the world. Biodiversity is directly impacted as farmers increasingly move onto steep lands.

The natural resources of the ecosystem, including lands, have come under increasing pressure in the past few decades as they are being utilized at levels which may be higher than their inherent carrying capacity. Moreover, many lands are being misused and/or polluted. Therefore, extensive land areas in many countries are subjected to degradation, and the life-support system of an increasing world population is threatened. This situation is particularly accentuated in the arid and sub-arid regions of the world, where land degradation is equated with desertification.

Land degradation is something that everybody agrees is bad. Producing a generally acceptable definition of the term is another matter. Just as there seem to be endless definitions of “desertification” and “sustainability”, there probably are many ideas of the details of the land degradation process and what it means to humanity. As used here, land degradation consists of deterioration of the biological potential of the land due to human activities. The word “land” refers to all the components of the landscape. That includes vegetative cover, soils, slope, geomorphic surfaces, hydrological systems, and animal life.

Land degradation can be defined as ‘the decline in the biological productivity or usefulness of land resources for their current predominant intended use caused through the use of the land by humans’.

Fiji does not have a rural land use policy or national land use plan. This is a major constraint for wise resource allocation and management in the rural sector. The current administrative and institutional framework responsible for resource

allocation and management is highly sectoralised. Attempts at coordination have been ineffective. These factors have constrained the development process, increased inter-ministerial friction, and in many cases promoted unsustainable resource use.

In 1993 the National Environment Strategy (NES) of Fiji (Watling and Chape, 1983) recognized that Fiji needed a national land use plan that was based on the capacity of the land; this to assist in determining appropriate land use and resource allocation for the sustainable development of Fiji's natural resources. In 1995 Cabinet approved the concept for a comprehensive and integrated new sustainable development bill that would revise and consolidate existing environmental and resource management legislation, and created new legal frameworks, among others, for integrated resource management. This legislation would give effect to the goals identified in the NES which recognized that without a national mechanism for matching land to appropriate land uses, there would be increased land degradation and continued exploitation of the natural resource base.

At one time Fiji was virtually covered with forest (Twyford and Wright, 1965). The present plant cover forms a complex mosaic comprising fernland, open grassland, reed grass, shrubland, a savannah-like transitional vegetation and tall forest. The areas of open grassland, fernland and reed grass and savannah are largely man-induced and, when given complete protection from fire and other interference (particularly by humans), the ecological succession shows a slow but steady return towards a forest cover. However, the extensive areas of the introduced mission grass seen in the dry zones are considered to be a fire climax association and will therefore not return to forest unless there is some intervention such as re-forestation.

Apart from the commercial crops (sugar, ginger, yaqona, dalo) most farmers are locked into subsistence production or root crops, pulses and rice, not a diverse farming system involving a mix of crops (perennials, fruit and nut trees, plus the subsistence crops) that would increase income and self-reliance. Market crops have higher value and perennials are more appropriate for erosion prone soils.

Because of competition and pressure for land, subsistence gardens are increasingly being forced onto steeper slopes because of the expansion of cash cropping and grazing on the flatter lands. Some gardens experience soil loss, especially when traditional mulching is not practiced and fallow periods are too short.

Soil loss measurements clearly demonstrate that the agricultural productive base in many sugar cane areas, and with ginger on slopes, is running down at a rate that is well above what would be regarded as economically acceptable.

The country's high dependence on the sugar industry and its quota and incentive system encourages cane farmers to move onto slopes greater than 11°, and commonly not practise any soil conservation measures. Over a short period of

time many of these areas experience soil depletion, soil moisture deficits and decreasing productivity. Where land degradation has become extreme, farmers are forced into growing non-cane crops or foregoing leases.

The burning of cane trash, while illegal, is a widespread practice, and over repeated years combined with long fallows every 4-5 years, results in serious depletion of fertility and soil loss. Estimates point to 15,000ha of cane land on Viti Levu being in urgent need of soil conservation works, and a further 6,500ha that should not be in cane.

Mission grass areas are burnt each season. The grass “brown off” early and when fired at late growth stage, the entire cover is lost due to total combustion and extremely hot fires. This results in a high percentage of bare ground (mission grass dominates with other species smothered) and exposure to rainfall impact. There is a widespread culture of burning and a growing incidence of wild fires in the indigenous forests and pine plantations.

In the 1960s, up to 140,000ha of Fiji’s forests were converted to non-forest land use with loss of forest cover leading to serious soil degradation. This is particularly so where logged areas have had no subsequent management. Here the incidence of mass movement and soil erosion is high. Forest logging practices have in many cases caused avoidable environmental damage.

Because of the predominantly poor adoption and application of land husbandry practices and the resultant degradation of the land and water resources, the impacts from natural disasters are becoming increasingly more acute, in particular, vulnerability to droughts and flooding.

Pressures on land indicate an urgency to increase sustainable production per unit area. However, there is poor understanding throughout the agriculture sector about a much closer matching between land use/crop type and land capability if productivity goals are to be met. There is very low farmer participation in technology generation.

Poverty can be seen in all communities. The impact of poverty is offset by the relatively high level of subsistence and food security, but 25% are living below the poverty line and this has probably increased as a result of the impact on land use from the recent droughts and subsequent floods. Clearly rural incomes have been reduced (both for farmers and those on wages) and greater rural unemployment exists as a result of these climatic events. Rural poverty is greatest among those farming degrading and/or marginal land for agriculture and for those without access to the land. The significant increase in rural-to-urban migration has reduced the food security buffer and traditional (rural) family support mechanisms.

The natural geological erosion rate in Fiji is high because of the youthful landscape, lithologies and the uneven topography. Swartz and Galletly (1974)

calculated the erosion index (EI) to be very high – 700 for the dry zone and 800 for wet zone – and high by world standards where EIs average between the 200 and 400. Where EIs exceed 500, extreme care is required in agricultural land, irrespective of soil type. In general, erodibility increases from the dark coloured Inceptisols and swelling clays to the red, strongly weathered Oxisols at the other extreme. “By world standards, land with slopes greater than 8° would be considered incapable of growing sugar without unacceptable damage”.

Reliable information on land resources – including soils, climate, vegetation and topography – is needed if sound land use and conservation policies are to be developed. Some of these data are more widely available in Fiji than is generally realized. However, the data is of different scales and reliability, and are stored in different ministries. In planning for sustainable land use the first major task is to find out what data are available and where they are located. The second is to gather existing data together, arrange them in a usable form, assess their utility and decide what additional data still need to be gathered.

Soil conservation legislation is not being used due to poor understanding of issues in both planning and implementation levels. Resources devoted to soil conservation are inadequate for applying significant measures either for information or incentives. The Land Conservation Board (LCB) does not have available information and publicity material for land users/farmers about soil and water conservation and land management.

There is a lack of clear guidelines on what constitutes ‘bad’ land husbandry practices, and poor institutional understanding about the magnitude of the soil erosion problem. There is also very little literature about land use farming practices available in Hindustani and Fijian.

There is serious under-resourcing by Government for line Ministries having responsibility for agriculture, forestry and land use in general. The public sector commonly lacks effective funding, resources and trained technical staff to undertake environmental planning, management and enforcement. Expertise in the areas of agricultural extension, soil conservation, land use planning and environmental planning, management and enforcement is below critical mass in the responsible line ministries. The resources devoted to soil conservation are inadequate for the implementation of significant measures, either in terms of providing information or incentives.

A major limitation to sustainable rural development in Fiji is the lack of a National Land-use Plan and an institutional responsibility for the land use planning to facilitate the national plan. Land resources are limited and finite. If the demographic trends continue there is an increasingly urgent need to match land systems, soil types and land uses in the most national way possible, to maximize sustainable production and meet the needs of society. Land use planning is fundamental to this process.

The Soil Taxonomic Unit Descriptions (STUDs) published in two volumes, describe in detail the soil series identified and mapped for Fiji, and provide the supplement to the NZODA funded national soil survey of Fiji (Seru and Leslie, 1997) mapped at a scale of 1:50,000. The STUDs include comprehensive information about the physical, chemical and mineralogical properties of soils with geographical information about their occurrence and distribution, plus climatological and topographical aspects of Fiji soils.

A major review of rural land use in Fiji (Leslie and Ratukalou) was undertaken in 1999. This review included an analysis of important previous studies about the environment, natural resources, land use and conservation; the appropriateness of current land use policy, legislation and institutional responsibilities; land use practices, issues and impacts; type and availability of basic information required for rural land use planning; and the required processes to facilitate change, in particular for land use planning. A draft national rural land use policy statement (Leslie and Ratukalou) has been prepared as an outcome of the review of rural land use in Fiji.

2. OBJECTIVES

2.1 To analyse the status of land degradation and desertification

2.2 To develop a National Action Programme (NAP) for Fiji

3. OUTPUTS

3.1 Spatial Assessment

A spatial assessment (classes of erosion severity) of land degradation and desertification based on the GIS generated national (1:50,000 scale) soil map and the published STUDs for the 227 soil series classified according to Soil Taxonomy. The output product would include GIS generated land degradation class maps and a report describing methodologies and a description of each erosion class, etc. The output would provide comprehensive first approximation of the type, degree and extent of land degradation in Fiji. As it is building on modern reliable information, this is the recommended cost-effective option compared with a time-consuming and expensive ground survey.

Tasks included with this output are to:

- Develop procedures to assess future degradation at different scales – national and local;

- Initiate tasks to generate a national database and GIS maps depicting current and potential land degradation
- Conduct technical land degradation workshops that will address the following topics.
 - Tools for identification, assessment and monitoring (processes, resilience characteristics of land system, use of information technologies);
 - Land cover and land use (deforestation, shifting cultivation, peri-urban encroachment, soil pollution, land use mismatches);
 - Land management and land use policies (economics, societal role, indigenous knowledge);
 - Mitigating technologies;
 - Food security, biodiversity, and environmental impacts;
 - Effects of global climate change; and
 - Research and development issues/early warning indicators, monitoring networks.
- Conduct a number of regional and district participatory planning workshops to ensure the support and involvement of public and community groups. The form and degree of their participation will determine the rate at which the objectives of sustainable development are realized;
- Conduct a needs assessment and identify human resource development and capacity building needs; and
- Initiate a programme to educate officials of all levels to improve their understanding of land degradation and improve their ability to promote sustainable developments.

3.2 Land Degradation Report

A Land Degradation Report that Complements and supports the spatial assessment (3.1 above) would be derived from the STUDs and involves developing an Extended Legend. The latter, in spreadsheet format, describes each of the more than 1,000 soil mapping units (SMUs) identified with the 227 soil taxonomic units for Fiji. In a series of vertical columns each SMU will be described/assessed according to the following criteria:

- | | |
|-----------|--|
| Output 1. | <u>Soil Mapping Unit (Symbol):</u> Names and symbols relate to those on the national soil legend (1:50,000 scale Soil Map of Fiji, Seru and Leslie, 1986). |
| Output 2. | <u>Slope Class/Microrelief:</u> Slope classes as defined by Kafoa (1978). |
| Output 3. | <u>Profile Textural Pattern:</u> Describe the moist consistence and soil textural changes by horizon down the described profile for the SMU. |
| Output 4. | <u>Potential Root Depth:</u> Capacity for soil to retain available water and supply nutrients. |
| Output 5. | <u>Plan Available Moisture Storage:</u> Describe available water capacity in the root zone. |

- Output 6. Soil Water Deficit: Indicates number of days in the year for normal years when plants are under stress (recognizing soil moisture regime criteria prescribed by Soil Taxonomy).
- Output 7. Water Logging and Soil Aeration: Cumulative days for normal years when the soil may waterlog and depths at which the water table fluctuates seasonally.
- Output 8. Rock Outcrops and Surface Stones: Describes classes of rockiness and classes of surface stoniness.
- Output 9. Workability: Describes soil workability classes, propensity of soils to form clods or crust after rainfall, and also trafficability at different moisture conditions.
- Output 10. Acidity: Describes pH rating and pH pattern with depth.
- Output 11. Salinity: Describes sodium rating levels and salinity pattern with depth
- Output 12. Known Limiting Nutrients: Rates soils for phosphorus, potassium, calcium, magnesium, nitrogen, organic carbon availability, their variation pattern within the profile. Also (where determined) trace element deficiencies and/or toxicities.
- Output 13. Susceptible to Flooding: Describes the condition under which flooding occurs, time of flooding and duration; days under water; and type of flooding (e.g. sediment or water body).
- Output 14. Susceptibility to Erosion: describes risk category, zone of erosion, casual factors and erosion type.
- Output 15. Fiji Land Capability Class: Classification according to Kafoa (1978).

National single factor maps for any of the 15 categories in the Extended Legend could be generated by GIS.

3.3 Report Prepared

A report recommending measures to prepare for and mitigate the effects of drought would be prepared and would include the following main sections:

- Requirements to strengthen national facilities and systems for predicting droughts;
- National and provincial drought hazard contingency plans and needs to strengthen drought preparedness and management;
- Identification of alternative cropping, farming systems and overall land use in drought prone areas of Fiji. This to include potential for supplementary irrigation and soil moisture retention practices.

Tasks included with this output are to:

- Document how soil, water and nutrient management contribute to food security and income generation;
 - Initiate efforts to develop appropriate systems to evaluate degree and extent of land degradation, assess potential impacts of land management practices and research/demonstration leading to mitigating technologies;
 - To provide the basic information on which decision about crop, farming systems and general land use options could be made, more information about soils, climate and crop requirements is required. To facilitate these needs, produce reports that include the following components.
- Crop Suitability Tables

Using PLANTGRO software, soil mapping units are classified into 4 classes of suitability within 5 groups of 'like' crops as follows:

- Table 1. Soil Suitability Ratings for Root Crops and Cereals:
Yagona, Via/Dalo, Kawai/Yam, Cassava, Kumala, Potato, Carrot, Cardamon, Ginger, Turmeric, Maize, Sorghum, Dryland Rice, Rainfed Rice, Irrigated Rice, etc.
- Table 2. Soil Suitability Ratings for Vegetables, Fruits, Pulses and Miscellaneous Crops :
Onion/Garlic, Lettuce, Cabbage, capsicum, Chilli, Eggplant, Orka, Cucumber, Gourd, Karela, Melons, Pumpkin, Tomato, Pulses, Beans, Peanuts, Duruka, Sugar Cane, Pineapple, Banana, Papaya, Vanilla, Tabacco, Passion Fruit, etc.
- Table 3. Soil Suitability Ratings for Commercial Tree Crops:
Coconut, Coffee, Cocoa, Ta, Mango, Oranges, Lemons, Limes, Guava, etc.
- Table 4. Soil Suitable Ratings Pasture and Forestry Species:
Nadi Blue, Batiki Blue, Guinea grass, Kornivia Grasss, Vaivai, Siratro, Het=ero, Stylo, Seteria, Mission Grass, P. caribbaea, Eucalypt Species, Mahongany, Teak, Conservation Indigenous Afforestation, etc.
- Table 5. Soil Suitable Ratings for Hill Country (slopes > 11°) Subsistence Agriculture:
Yaqona, Dalo, Yam, Kawai, cassava, Tania, Kumala, Papaya, Bele, Banana, Vudi, etc.

- Soil Moisture and Temperature Regimes
National maps of regimes support by climate data from key representative sites.
Regimes according to Soil Taxonomy (Soil Survey Staff, 1975).
- Key to the Identification of Fiji Soils

Follows the key to identification format presented in the Introduction To The Souls Of Fiji (Leslie, 1997).

- Laboratory Analytical Data for Soil Series
Results of Soil chemistry, physics and mineralogy analyses presented in tabular format for each soil series. This component will exceed 500 pages and will be supported with analytical/interpretation guidelines/tables.

Evaluate and strengthen demonstration project designed to mitigate land degradation.

3.4 National Action Plan

A National Action Programme (NAP) that identifies the respective roles of government institutions, provincial government, local communities, mataqali and land users, including the resources available and required to implement the NAP. The Programme will emphasise the following:

- Incorporation of long-term strategies to combat desertification and mitigate the effects of drought; ensuring these relate to national policies for sustainable development;
- Preventive measures for lands that are not year degraded or which are only slightly degraded;'
- Requirement to predict drought through enhancing national meteorological and hydrological capabilities;
- Institutional framework to promote sustainable land use policies and practice;
- Processes to create awareness and improved access to appropriate information and technology; and
- Mechanisms to ensure the maximum participation in policy planning, decision making and implementation of the NAP of the public, NGOs and land resource users.

Tasks included with this output are to:

- Introduce indicators of land degradation for use at all planning levels;
- Introduce technologies for mitigating land degradation and desertification;
- Assist the integration of appropriate national policies with existing and proposed legislation, in particular, the Sustainable Development Bill;
- Address mechanism whereby information about land degradation can best be provided to decision makers, which enables them to make assessments on locations and rates of degradation and target appropriate technology;
- Identify needs for manuals and/or guidelines for standardizing approach, methods of assessment and monitoring, and interpretation of data;

- For the assessment of the status for the land degradation there is a need to decide what to monitor and how to do it. The key to land degradation monitoring will be identifying indicators that are quantitative, sensitive to small changes, easy to measure, small in number, and reasonable unambiguous;
- Strengthen the institutional capabilities for the collection of land degradation and desertification data and information.
- Identify, introduce and publicise various sets of technology which can meet social, economic and ecological demands in areas experiencing land degradation;
- Facilitate international and regional co-operation for sustainable development in degraded lands;
- Initiate a unified co-ordinate plan of water and soil conservation, including scientific research plans and developments plans for agriculture and forestry by bringing together representatives of relevant ministries and organisations; and
- Encourage a review and assessment of current administrative policies, laws and regulations relating to land degradation and sustainable development.

4. WORKPLAN

The project activities will be implemented in a modular way. The project work will be carried out by Fiji MAFFA staff, with the technical assistance of two international consultants and FAO staff. The international consultants will provide specific inputs to the project in the area of land evaluation/land use planning and Geographic Information Systems/databases. The international consultants will make 5 visits to Fiji during the project period.

The above approach described in Section 3 has been found to be the most cost-effective in terms of consultant time, and more importantly, the most effective in terms of developing the outputs, in particular the National Action Plan. This is so because a significant part of the work is carried out by local staff who, in the process, themselves become expert in the methodology and who fully understand and appreciate the concepts.

The time schedules for the consultants for each of 4 outputs in the project will be as follows:

4.1 Land Evaluation/Land use Planning Specialist

Output 1. (3 weeks) – Project start-up; planning and awareness workshops; training.

Output 2. (6 weeks home time) – Preparation of Extended Legend, developing legends for single factor maps.

Output 3. (6 weeks – 2 home, 4 field) – Preparation of crop suitability tables, soil moisture and temperature regimes, laboratory analytical data and key to

the identification of Fiji soils; preparation of the land mitigation report; participatory planning workshops.

Output 4. (8 weeks) – Preparation of the National Action Programme; workshops.

4.2 GIS/Database Specialist

Output 5. (3 weeks) – Generation of nation Land Degradation and Desertification map; training.

Output 6. (3weeks) – Generation of single factor maps; training.

Output 7. (2 weeks) – Application of PLANTGRO to generate crop suitability tables and maps.

The specialist would make two visits – the first to conduct tasks associated with Output 1 and the second visit to conduct tasks associated with Outputs 2 and 3.

5. BUDGET

[NOTE: NO PROVISION FOR LOCAL COSTS (Fees, Travel, Hardware/Software etc.) – PLEASE ADD IN]

(i) Personal (Fees)

International consultants provided by FAO

| | | |
|---|--------|---------|
| • Land Evaluation/Land Use Specialist 23 weeks (6 home) @ US\$2,800/week | 64,400 | |
| • GIS/Database Specialist 7 weeks @ US\$2,625/week | 18,375 | |
| • Wood processing 3 weeks @ US\$1,050/week | 3,150 | |
| | | 171,850 |

(ii) Per diems

| | | |
|-------------------------|--------|--------|
| 27 weeks @ US\$700/week | 18,900 | |
| | | 18,900 |

(iii) Travel

| | | |
|-------------------------------------|-------|-------|
| 5 return airfares NZ-Fiji @ US\$800 | 4,000 | |
| Rental car – 4 weeks @ US\$350/week | 1,400 | |
| | | 5,400 |

| | | | |
|------------------------------------|--|-------------|-----------------------|
| | | | 5,400 |
| (iv) Materials and Supplies | | | |
| | GIS consumables etc. | 5,000 | |
| | | | 5,000 |
| (v) Miscellaneous | | | |
| | Printing, postage, communications, report Preparation. | 2,000 | |
| | | | 2,000 |
| | TOTAL | US\$ | <u>203,150</u> |

**International Consultant, GIS
(7 weeks)**

The consultant will work in close collaboration with the land resources evaluation/land use specialist, the Fijian projector co-ordinator and the project staff. Specifically he/she will have technical responsibility for the following project activities:

- Assist in designing the land resource information system (LRIS)
- Using GIS, generate maps depicting current and potential land degradation.
- Participate as a resource person in a number of the participating workshops.
- Conduct a training needs assessment and recommend needs in a brief capacity building plan
- Provide training in the use of LRIS for future M&E and updating of system.
- Prepare brief progress reports on completion of mission and a technical report.

Essential qualifications

At least 15 years experience in the design and implementation of GIS-based land resource information systems. Knowledge of GIS and remote sensing techniques and their practical use in land resource information systems. Experience in training staff in GIS use and applications.

International Consultant, Land Resources Evaluation/Land Use Specialist (23 weeks)

The consultant will act as team leader and will be responsible to FAO for the successful execution of the project. The consultant will work in close co-operation with the GIS consultant, the Fijian project co-ordinator/land use planner and the project staff. Specifically he/she will have the technical responsibility for the following project activities:

- Undertake a spatial assessment of land degradation and desertification and compile data required for generating 1:50,000 scale maps
- Prepare report describing methodologies and descriptions of erosion type and severity classes
- Develop procedures to assess and monitor future land degradation
- Initiate and facilitate divisional and district planning workshops
- Provide on-the-job training and make recommendations for capacity-building and institutional change (if required)
- Co-ordinate the preparation of the national Action Programme (NAP)
- Prepare brief progress reports on completion of each visit, three technical reports, and a draft project terminal statement.

Essential qualifications

At least 15 years experience in the application of land resources assessment methodologies, including the FAO methodology of land evaluation and FAO approaches to land use planning. Sound knowledge of Fiji land resources, including land use practices and status and trends in soil erosion. Experience in on-the job training of counterpart staff and general capacity building and institutional development.