

**THE
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ENVIRONMENT
STRATEGY**

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FOREWORD

"Government will review all aspects of our environmental laws with a view to introducing laws which are consistent with international environment law agreements."

Ratu Sir Penaia Ganilau

President of the Republic of Fiji

(Opening Session of the New Parliament, June, 1992)

"I believe that in areas such as agriculture, forestry, fisheries, tourism, industry, commerce, to mention some, we must pay particular attention to environmental protection and inculcate such protection in all related activities.

...while we exploit our resources, we must pursue policies of conservation, reforestation and environmental protection."

Hon. Major General Sitiveni Rabuka

Prime Minister of Fiji,

(Address to Cabinet, June 1992)

"My country was pleased to participate in the United Nations Conference on the Environment and Development in Rio de Janeiro, in June. I reaffirm our full commitment to the several decisions taken at the Conference. Including the Rio Declaration, Agenda 21, the Framework Convention on Climate Change, the Convention on Biodiversity and the Declaration on Forest Principles.

UNCED was a major step forward, but the next step may be more difficult. The spirit in which the various agreements were conceived and adopted needs to be matched by their speedy implementation".

Hon. Major General Sitiveni Rabuka

Prime Minister of Fiji

(Address to 47th Session of the UN General Assembly, October 1992)

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Abbreviations and acronyms:

ADB	Asian Development Bank
ALTA	Agricultural Landlord and Tenants Act
ASPEI	Association of South Pacific Environmental Institutions
CITES	Convention on International Trade in Endangered Species
CPO	Central Planning Office
DOA	Department of Agriculture
DOC	Department of Conservation
DOE	Department of the Environment
DOF	Department of Forestry
EC	Environment Commission
EEC	European Economic Community
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
FCOSS	Fiji Council of Social Services
FEA	Fiji Electricity Authority
FSC	Fiji Sugar Corporation Ltd.
GDP	Gross Domestic Product
GIS	Geographical Information System
GOF	Government of Fiji
IBRD	International Bank for Rural Development
IDA	International Development Assistance
IUCN	World Conservation Union
LA	Local Authority
LCB	Land Conservation Board
MPI	Ministry of Primary Industries and Co-operatives
NEC	National Environment Council
NEMP	National Environmental Management Project
NES	National Environment Strategy
NLTB	Native Land Trust Board
NGO	Non Government Organisation
PAF	Ports Authority of Fiji
PAFCO	Pacific Fishing Company
RSNS	Register of Sites of National Significance
SOE	State of the Environment Report
SPREP	South Pacific Regional Environment Programme
TOR	Terms of Reference
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WMA	Waste Management Authority
WCED	World Commission on Environment and Development
WWF	World Wide Fund for Nature

SUMMARY

FINDINGS

Opportunities and Constraints

Fiji has many positive physical and cultural attributes which it can draw upon on a sustainable basis for its ongoing development. It also has significant environmental constraints which are currently compounded by inadequate environmental policies, legislation and administration.

Fiji lacks the serious demographic, economic and industrial pressures from which the majority of serious environmental problems originate in other countries. But conversely, its small size, young landscape and evolutionary isolation make its natural resources vulnerable to loss or degradation.

Environmental issues of major significance include:

- the inability of Government to manage natural resources on a sustainable basis because of inadequate policies, legislation, forward planning and administration;
- pollution is effectively uncontrolled and emerging as a serious issue;
- municipal waste management is a conspicuous national dilemma;
- serious soil degradation is becoming prevalent in the marginal hill lands which are Fiji's agricultural resource base of the future;
- deficiencies in physical planning are being compounded by significant urban drift resulting in widespread informal development in peri-urban areas which host many environmental and social problems;
- heritage and biodiversity values are inadequately appreciated while losses are increasing through ill-directed development activities and lack of management.

Implications for National Development

Fiji is still fortunate in having the opportunity to focus this National Environment Strategy on addressing the sources of environmental problems rather than addressing the effects with short term curative measures.

Unfortunately, it is the track record of the majority of governments worldwide that they pay insufficient attention to environmental and sustainable resource use issues until the problems are so conspicuous and serious that they need expensive curative measures such as 'clean-ups' and 'rehabilitation'. Fiji has the opportunity to break with this trend, but it is clearly at the threshold and if the opportunity is not grasped, it will soon be lost.

Environmental issues cut across a wide range of sectors and policy variables and therefore environmental management should not be framed in isolation from the development and policy sectors from which the issues emanate. Thus to be successful Government's environmental administration will require a 'horizontal' component as opposed to the 'vertical structure' of Government's normal sectoral management.

Natural resources such as land, forests, marine, minerals and hydro-energy generate the bulk of Fiji's GDP and export earnings. They also provide more employment and direct sustenance to subsistence communities than other sectors. Therefore, development strategies should give due respect to sustainable limits in utilising these resources.

There is an almost universal shift in the policy of international lending and donor agencies from the promotion of unrestrained economic growth to sustainable use. This has come about because of an appreciation that to be economically sustainable, development has to be environmentally sustainable. Fiji's response to this policy switch will increasingly affect its ability to attract financial and technical assistance in any form.

Although sustainable environmental management can require increased capital and development costs, these are rarely significant if viewed over the life and turnover of the projects concerned. More significantly, environmental damage results in high costs for remedial measures, 'clean up' of contaminated sites and rehabilitation of degraded ecosystems are prohibitively expensive. Some environments can never be rehabilitated while the loss of national heritage is, like extinction, forever.

The goal of Fiji's National Environment Strategy should be the achievement of sustainable economic development and resource use, and the conservation of Fiji's natural and cultural heritage.

In achieving this goal, three principal objectives should be distinguished by Government:

- an effective environmental management capability;
- comprehensive heritage protection; and
- meaningful private sector and general public involvement.

RECOMMENDATIONS

1. Developing an Effective Environmental Management Capability

An effective environmental management capability requires:

- formulation of appropriate environmental policies at the national level and by all arms of the Government;
- an appropriate **institutional and administrative structure** with sufficient resources;
- sound environmental and resource use **legislation**;

Environmental Policies

Government

1. Sustainable development be adopted as a national goal.
2. Environmental management policies be drawn up by all Government ministries, departments, statutory bodies, government owned companies etc. which utilise or manage natural resources.
3. GOF should commit itself to fully integrating environmental assessments and considerations into the planning and budgeting process.
4. Environmental assessment be integrated into development planning and project appraisal.
5. Public participation in policy formulation be actively encouraged and facilitated.
6. To promote accountability, sole institutional responsibility for environmental management components be adopted wherever possible.
7. Transparency in environmental management be promoted - policy formulation, availability of monitoring data etc.

Native Land Trust Board

Because of its unique position as custodian on behalf of land-owners and future generations of landowners, it is particularly important that the NLTB has a specific environmental policy.

8. NLTB's Environment Charter be a credible and comprehensive policy document extending to all environmental components of its estate.

Institutional and Administrative Structure

9. The current Department of Environment be combined with the physical and strategic planning and development control functions of the Ministry of Housing and Urban Development, to form a Ministry of Planning and the Environment.
10. A National Environment Council be set up to advise a Minister for Planning and Environment on the views of the public private sector interests, NGOs, local authorities etc.
11. An Environment Commission be set up to oversee implementation of the NES, national environmental policy formulation and ensure smooth co-ordination of Government's environmental management.
12. Current ministerial responsibilities with respect of environmental management be retained but with revised policies, increased resources and heightened capabilities requiring dedicated environmental management units.
13. An exception to 12 being the Ministry of Health which should be relieved of its municipal waste management and pollution control responsibilities. These responsibilities should be incorporated through the introduction of new legislation in the Department of Environment (or Waste Management Authority).

14. The Dept. of Environment should consist of four units:
 - . policy, planning and assessment;
 - . standards, monitoring and enforcement;
 - . awareness, public information and external relations;
 - . secretariat for the Environment Commission and the National Environment Council.
15. GOF introduce a specific programme of scholarships for tertiary study abroad of appropriate environmental disciplines.

Legislation

Environmental Impact Assessment

16. Legislation be enacted recognising the key principles of environmental impact assessment. Aspects of the EIA process to be followed should also be specified in law.
17. That EIA legislation should also make provision for the establishment of a Department of the Environment as the focus of EIA.

Pollution

18. Waste management and pollution control become the responsibility of the Ministry of Planning and the Environment.
19. A comprehensive National Waste Management Strategy be commissioned to provide a practical plan following consultation and a detailed evaluation of the legislative, administrative, managerial, financial and time frame issues.
20. The guiding concepts for pollution control should be 'user pays' and/or 'polluter pays'.
21. Fiji drafts and enacts comprehensive legislation controlling water, soil, air and noise pollution which should be administered by the Department of the Environment.
22. The legislation should make provision for standards as regulations promulgated by an Executive.
23. The legislation should contain civil and criminal offence provisions commensurate with the damage attributable to the polluter.
24. The use of economic instruments to assist in the control of pollution should be actively considered.

Leaded Petrol and Vehicle Emissions

25. A programme for conversion to unleaded or very low leaded petrol be introduced as soon as possible, with financial inducements being offered for quick compliance
26. The existing Vehicle Emission Legislation be enforced on an ongoing basis and strengthened by the inclusion of regulatory standards.

Land and Water Resource Management

27. There is an urgent need for effective legislation for land and water resource management. Several reports have already been prepared on the issue and these should be reviewed with the view to implement the recommendations, or adopt an alternative strategy, whichever is appropriate.

Comprehensive Resource Management Legislation

28. New Zealand's Resource Management Act, Britain's Environmental Protection Act 1990 and other similar legislation be evaluated in the context of Fiji's requirements for new resource management legislation and extensive amendment to existing legislation.

2 Heritage Protection

Administrative Framework

29. A 'dedicated' advocacy institution within Government be set up immediately whose sole mission is to promote heritage conservation and preservation. This should form a Unit within a Ministry of Planning and the Environment but be expanded to a Department of Conservation in the medium-term, with management responsibility for advocacy, protected areas, historic and cultural sites, wildlife protection and animal import/export (trade).

Legislation

30. Fiji's obligations as a Contracting Party to the Convention on Conservation of Nature (Apia Convention) be assessed and legal responsibilities incorporated in protected area and wildlife legislation.
31. Culturally appropriate legislation needs to be enacted for both protected areas and sites, and for wildlife protection.
32. The legislation should eliminate current overlaps in responsibility for protection of the various components of national heritage.
33. The existing 'draft' legislation for wildlife, and for parks and protected areas should be reviewed with a view to implementation if in accordance with 30.31.32. above or the adoption of an alternative course of action.

Documenting and Protecting the National Heritage

34. Resource assessments need to be undertaken and surveys to compile an official 'Register of Sites of National Significance' which include natural areas as well as historic and cultural sites. The Register should have a legal framework and be instituted to provide graded degrees of protection for Sites officially entered on the Register.

Biodiversity

Parks and Protected Areas

35. A protected area system be set up based on ecological selection criteria.

36. Until such time as resource assessments have been undertaken on which such identification can be based, a list of priority areas for complete protection have been selected. The four most important are : the Sovi Basin in Naitasiri Province ; Taveuni Forest Reserve on Taveuni Island ; the Mount Evans Range in Ba Province ; and the Tunuloa silktail reserve in Cakaudrove.
37. GOF review the status and management of the Sigatoka Sand Dunes National Park with a view to providing effective conservation for its internationally significant archaeological site together with the site's ecological and geomorphological values while also developing its tourism potential.

Wildlife

38. In respect of potential introduced species of plant and animal, the entry screening be upgraded to include ecological values, in addition to disease and agricultural criteria.
39. Wildlife values be elevated within the public community through publication of appropriate material and awareness campaigns. This could be initiated by the official adoption of a national bird, fish and plant.
40. Total trade bans be placed on known endangered and threatened species.

International and Regional Conventions

41. GOF carefully examine the benefits of becoming a signatory to CITES, the Convention on International Trade in Endangered Species and other relevant international and regional conservation and environmental conventions.

3 Private Sector and General Public Involvement

Government's role

42. Encouragement and facilitation for the operation of NGOs;
43. Development of a forum(s) and lines of communication to facilitate private sector and general public consultation with Government, in a meaningful manner.
44. Ensuring that Government is 'transparent' in its environmental management.
45. Active promotion of environmental awareness.

National Trust for Fiji

46. Reorganise the National Trust for Fiji so as to create:
 - . an independent body (an NGO) responsible for its own affairs and run by its members;
 - . an organisation with no 'Government' responsibilities;
 - . an organisation which can be registered as a 'Charity';
 - . an organisation which receives Government grants based on management performance.

4 Specific Sectoral Recommendations

Forestry

47. The National Code of Logging Practice be supported by extensive training for both industry operators and DOF officers.
48. The DOF set up an appropriate framework to advise and assist landowners in natural forest management for long term protection (parks and protected areas) or sustainable yield harvesting
49. The current Natural Forest Inventory be succeeded by a permanent forest monitoring system with regular (3-5 year) satellite data analysis.
50. A moratorium be placed on the establishment of hardwood plantations in natural forest, henceforth they be confined to areas of 'non-commercial' or degraded forest.

Land Degradation and Soil Conservation

51. The issue of soil degradation in the marginal hill lands receive Government attention appropriate to its significance as a major threat to the agricultural resource base of the future and to the requirements of future generations of landowners.
52. A nationwide educative initiative on soil conservation amongst landowners is urgently required
53. MPI significantly increase its research into agricultural practices suitable for the marginal hill lands and more importantly, the adoption of sustainable alternatives which are attractive to farmers
54. MPI revitalise its soil conservation management based on a strengthening of the Land Conservation Board.
55. The Fiji Sugar Corporation examine its contractual arrangements and administrative procedures with farmers to determine whether changes could reduce land degradation.
56. The NLTB and Government examine the various types of lease currently being used to determine whether changes to lease conditions could increase commitment to soil conservation and good husbandry.
57. Environmental issues pertaining to sustainable agricultural practices and the maintenance of the capacity of leased land to be productive in the long term, should be prominent in the review of the forthcoming 'ALTA' leases, as well as in the development of Government's overall national environmental policies.

Global warming

58. GOF needs to participate in all relevant international initiatives, research, data collection and evaluations which are currently being undertaken or being proposed with the result that it is fully informed of the current state of knowledge and opportunities.
59. Initiate coastal zone management plans which pay specific attention to the consequences of possible sea level rise.
60. Initiate strategic long term planning for resources which may be affected by climate

change, in particular, sugar cane cultivation and plantation establishment in the dry zones of Viti Levu and Vanua Levu.

IMPLEMENTING THE NATIONAL ENVIRONMENT STRATEGY

Implementation of the NES will require commitment on the part of the Government of Fiji. It will require new positions, new institutions, new laws and, more important than all, a changed focus on the priorities of national development, reallocation of financial and manpower resources and a gradual shift from immediate goals to the longer term.

Fiji is fortunate in that international assistance from donor and lending institutions could play a major positive role in assisting with implementation for Fiji's needs are sufficiently severe to attract attention, and small enough for directed assistance to be effective in the short term. However, it will be necessary first for the GOF to show its commitment to environmental management by initiating action on the NES in a positive and conspicuous manner.

Currently a **Capacity 21** initiative is being undertaken by UNDP to support environmental institutional development and planning in developing countries, in response to UNCED's **Agenda 21**. The UNDP Regional Office in Suva has been selected as one of five offices to initiate programmes under **Capacity 21** in the Asia/Pacific Region. With an endorsed NES Fiji would be well placed to benefit from these programmes.

The possibility of 'kick-starting' Fiji's NES with foreign assistance should be an integral part of the Strategy. Fifteen project outlines have been prepared in the NES. Priority projects suitable for international assistance include:

- Institutional strengthening of the Department of Environment
- National Waste Management and Pollution Control Strategy
- Assessment of Sites of National Significance and Establishment of the Department of Conservation
- Legislation for Environmental Impact Assessment
- Reorganisation of the National Trust for Fiji
- Environmental Education Strengthening
- Directed Public Awareness Programme
- Natural Resource Assessment (terrestrial and marine)

PART I INTRODUCTION

1 INTRODUCTION

1.1 Background to the National Environment Strategy

In line with the growing awareness of environmental issues worldwide, the Government of Fiji considered it appropriate for a comprehensive review to be undertaken of Fiji's environment, together with its own management capability, in order to formulate a National Environment Strategy.

The National Environment Management Project (NEMP), as it was termed, was funded by an Asian Development Bank technical assistance grant. NEMP was managed on behalf of the Fiji Government by the Ministry of Housing and Urban Development's Environment Unit which has subsequently been upgraded to full Department status.

IUCN-The World Conservation Union in association with ESA Pty Ltd Australia was awarded the contract to undertake the technical assistance, which commenced in August 1990 and was completed in October 1992.

1.1.1 National Environment Management Project Activities

The Terms of Reference of the NEMP are provided in full in the project document (IUCN 1990) and were revised in the NEMP Inception Report (NEMP Report 20). In summary, specialists were commissioned to prepare reports on a variety of specific environmental issues with an initial objective of preparing a 'State of the Environment Report' (NEMP Report 15) and an ultimate objective of formulating a National Environment Strategy (NEMP 16).

1.1.2 State of the Environment Report

A key programme of the NEMP was to promote environmental awareness and to meet this objective a well illustrated, non-technical 'State of the Environment Report' was published, following a comprehensive review of the state of Fiji's environment.

1.2 Goal of the National Environment Strategy

The goal of the National Environment Strategy is to provide a framework which will enable Government to assume management of the various emerging environmental issues from a policy and legal base and administrative structure which provides a firm foundation for immediate and future action.

The NES is not a rigid blueprint. Flexibility is essential as certain sectors and issues will receive attention quicker or at the expense of others. Not all arms of Government can be expected to readily embrace the new responsibilities and challenges which the NES outlines. It is to be expected that some will resist the necessary changes, and a continuing dialogue is an essential part of the NES. The NES proposes the establishment of the Environment Commission as the forum for continuing dialogue and NES problem solving.

Thus the NES does not attempt to compile a detailed list of environmental problems and provide an equally definitive list of recommendations on how they should be cured. A comprehensive overview of the issues was presented in the 'State of the Environment Report', this also details positive environmental management initiatives that have already commenced.

The NES, a non-technical document, has purposely been kept brief and readable for the wider non-specialist audience.

Resolution of existing and emerging problems can be expected to automatically flow from an appropriate policy orientation and sound institutional foundation. This is the immediate goal of the NES.

Eight international consultants and 15 locally based resource personnel or organisations contributed to the NEMP with a total of 47 reports or papers. These reports are listed in Appendix 1. The stand alone 'core reports' of the international consultants are to be circulated to relevant Government ministries and agencies and will be available to the public.

The following were the assignments of the principal NEMP personnel:

Government of Fiji

Mr S.Chape	Project Manager
Mr. E. Nasome	Project Administration

International Consultants

Dr.D.Watling	Team Leader, IUCN Consultants
Dr.A.Gillison	Terrestrial resources specialist
Dr.I Irvine	Pollution specialist
Dr.D.James	Resource economist
Dr.P.Lal	Mangrove and coastal zone specialist
Ms M.Pulea	Environmental legislation specialist
Mr D.van Claasen	Remote sensing, data and information specialist
Dr L.Zann	Marine resource specialist

Resource Personnel

Mr S.Weaver	Ecologically Sensitive Area inventories, forestry and nature tourism issues
Dr. T.McBride	Environmental legislation
Prof.J.Morrison	Soil erosion, land degradation
Mr N.Taylor	Environmental education
SPACHEE	Public Awareness and Information Programme

1.3 Endorsement

The National Environment Strategy was endorsed by the Cabinet of the Government of Fiji on 20th April, 1993.

2 THE STATE OF FIJI'S ENVIRONMENT

2.1 People

2.1.1 Population and Demography

Fiji's 1986 population of 737,200 at a density of 39.1 persons/km² can be considered modest, but this average conceals accentuated densities in excess of 170 persons/km² of arable land. Over 60% of the population resides in rural areas, but migration to urban areas is significant and increasing. During the next twenty years the country will be transformed from a predominantly rural residency and lifestyle to a predominantly urban one. This has widespread and profound implications for the environment in urban and periurban localities.

2.1.2 Population Growth

The low population growth of just under 2% per year is largely a result of emigration which increased markedly after 1987, particularly of the Indian component of the population. This situation makes any future population projections uncertain, nonetheless overall growth is expected to be modest. But, there will certainly be a large increase in the potential labour force over the next 20 years as Fiji has a young population structure.

2.2 Fiji's Natural Resource Endowment

2.2.1 Climate and Natural Disasters

Fiji has a mild tropical maritime climate with plentiful rain under prevailing conditions. However, it is subject to potentially catastrophic climatic events such as cyclones, earthquakes, flooding and multiple land-slips which can have a major impact on the economy and infrastructure. The currently predicted sea level rise, as a result of global warming, could have profound consequences for all Fiji's urban centres, agriculture and coastal development.

2.2.2 Land

Fiji is an archipelagic nation consisting of more than 300 islands scattered over 1.3 million km² of the South Pacific Ocean. The two large, mountainous islands of Viti Levu, where 75% of the population resides, and Vanua Levu comprise 87% of the total land area. The mountainous terrain limits the area of land available for extensive development to coastal areas, and is subject to earthquakes and landslides. The larger islands have limited arable soils capable of supporting intensive agriculture (19% of land area), with a further 10.5% capable of being productive with only minor improvements. Nearly 70% requires either intensive land management or is unsuitable for use.

2.2.3 Freshwater

On the larger islands, a relative abundance of annual rainfall, perennial rivers, good surface drainage and numerous springs ensure that there is no fundamental problem in obtaining domestic water supplies. On the low-lying, smaller and outer islands where there are no perennial streams, freshwater is a much scarcer resource. In such situations shortages are of common occurrence not so much as a result of lack of rainfall overall but because of deficiencies in water collection. The Government is then frequently called on to provide water at great expense.

2.2.4 Coastal Zone

The coastal zone is of vital importance. It brings together an unique assemblage of resources such as reefs, mangroves, water, agriculture, seafood and high quality landscapes. Yet it is also the location of every significant town in Fiji, most villages and the vast majority of the population together with industry and commerce. The current estimate of mangrove forest is that approximately 42,000 ha remain of an original resource of about 45,000 ha. Mangroves sustain marine and coastal ecosystems which support both subsistence and a growing commercial fisheries sector.

2.2.5 Marine Ecosystems and Biodiversity

The western Pacific has the highest marine diversity in the world

and Fiji has one of the best developed coral reef systems in the Pacific. All of the major reef types are represented. There is no inventory of Fiji's marine plants, however, it is believed that while species diversity is probably high in most groups the number of species is significantly lower than in the centre of coral reef diversity (Philippines, Indonesia, New Guinea and Great Barrier Reef). Low endemism is expected. Several marine species have become extinct in recent times and several others are now in danger of extinction.

Unique marine features occur such as anchialine pools, marine lakes and caves and landscapes of exceptional beauty, in particular those of Ogea and Vulaga lagoons.

2.2.6 Terrestrial Biodiversity

Fiji's vegetation and wildlife are relatively small in number but are of exceptional scientific and genetic interest because of the high proportion of endemic (unique) forms. Their heritage and potential tourism values are greatly underrated. Rain forest is the dominant terrestrial ecosystem. Its form varies with elevation and rainfall. Today, little if any undisturbed forest remains. The floristic diversity of the forest has not been adequately documented but it is in excess of 100 species/km². Most of the interior forested areas have been scarcely collected while some ecosystems, such as the beach forest, have virtually disappeared through clearing. Loss of forest is the surest way to lose Fiji's endemic wildlife because the vast majority are unable to survive outside it. The area of remaining natural forest is estimated to be 750,000 ha.

The Fiji Petrel *Pseudobulweria macgillivrayi* is Fiji's only indubitably endangered terrestrial vertebrate species but 16 other species are considered vulnerable.

2.2.7 Exotic Species

By comparison with the islands of Hawaii and New Zealand, the number of plant and animal species naturalised in Fiji are relatively few. However, Fiji's origin as an isolated oceanic island makes its fauna and flora very vulnerable to adaptable and aggressive introduced species. The ravages of the mongoose bear vivid testimony to this.

Fiji's agriculture benefits greatly from the absence of many serious diseases and pests, an advantage which requires quarantine regulations and their enforcement to be of the highest standard. Currently legislation and management of quarantine is reasonably well serviced, however, an important omission is the lack of attention afforded to ecological values in addition to economic and agricultural values. For instance it is not sufficient to ensure that exotic bird imports are free of diseases of agricultural importance. They should also be tested for avian malaria which was responsible for destroying Hawaii's native bird life, but which does not affect poultry. Of equal importance, would the exotic species be a competitor of any native species? Ecological values are currently ignored.

2.2.8 Human disease

A further advantage of Fiji's position as an isolated island nation is the absence of many of the

world's serious diseases. Two major ones which do exist, both mosquito born, are dengue fever and filariasis. Fiji's neighbours, Vanuatu and the Solomon Islands both have malaria which causes major economic loss and human suffering.

2.3 Land Use

2.3.1 Land Use Planning

Fiji has no national land use plan and this is a major constraint to wise resource allocation and management. The current administrative and institutional framework responsible for resource allocation and management is highly sectoralised and current attempts at coordination are ineffective. This has constrained the development process, increased inter-ministerial friction and, in certain cases, promoted unsustainable resource use. The preparation of a national land use plan derived through both technical land-capability assessment and consensus, based on full community involvement, is an urgent requirement.

2.3.2 Agriculture

The almost complete utilisation of first class arable land determines that the current expansion of agriculture into marginal hill areas and steep lands will continue and increase. Consequently, even a small increase in the population can be expected to dramatically expand localised land degradation. Some agricultural practices, such as steep land sugar cane and ginger production are not sustainable, they dramatically increase natural erosion rates which are already high and are responsible for appreciable areas of land going out of production annually. This results in loss of topsoil and sedimentation of rivers and streams. The lack of security of tenure for many farmers who must lease land does not encourage careful husbandry of soil resources while the Government's institutional land conservation measures are currently ineffective.

The drive for increased agricultural production has led, in the past, to extensive reclamation of mangroves. This practice has proven to be economically unviable and resulted in considerable national financial losses.

2.4 Forestry

2.4.1 Deforestation

Deforestation in Fiji is moderate but continuing. Since the mid- 1960s, an estimated 90-140,000 ha (11-16%) of the nation's forests have been converted to non-forest land use. These figures are not so severe as to cause immediate concern about the disappearance of the forests of Fiji. However, there is a severe imbalance in the distribution of loss of forest types, with the drier and lowland forests of the larger islands and those of the smaller islands having suffered major losses. The principal causes of deforestation are extensive commercial agriculture development projects, small holder mixed farming and subsistence needs, and wildfire.

2.4.2 Plantations

Fiji has embarked on some highly successful plantation establishment programmes. The softwood (pine) plantations total over 43,000 ha and are established primarily in the dry zones, as reforestation of degraded lands. In contrast, the hardwoods, principally introduced mahogany, have been established with great success within existing native forest. The hardwood plantation programme has certain adverse environmental implications, including site allocation leading to the loss of prime native forest, plantation management and silvicultural practices including the use of arsenic pentoxide, a highly toxic chemical. Monoculture

plantations are highly vulnerable to the chance introduction of insect pests requiring increased national quarantine vigilance.

2.4.3 Logging

Current logging practices cause a great deal of avoidable environmental damage. This is not confined to the natural forest but has occurred in pine plantations as well. The drawing up of a National Code of Logging Practice is a welcome move, but it is only as good as its enforcement. Logging is not a major cause of deforestation in itself but is heavily implicated in initiating a chain of events leading to the degradation of forest into 'non-commercial bush'.

2.4.4 Forest Management

The Dept. of Forestry has no extension division and so the current administrative framework for natural forest management promotes short term exploitation of the natural forest and does not promote or encourage landowners to conserve forest and manage it for multiple use including sustained yield harvesting. This has serious implications for the long term integrity of the natural forest resource.

2.5 Fisheries

2.5.1 Sustainability

The only significant long-term fisheries development prospects for Fiji (in terms of volume) are likely to be in the offshore areas, particularly pelagic. The inshore fishery is of vital importance to the majority of the population who are coastal dwellers. Overfishing is widespread in the more heavily populated localities and management measures need to be improved if this vital fishery is to be maintained. Classic 'boom and bust' exploitation of beche-de-mer and clams has recently occurred in Fiji. These resources should have been managed sustainably for the benefit of coastal villagers.

2.5.2 Marine Pollution

The extent of marine pollution is so severe in the Suva area that the consumption of seafoods from certain areas is a human health hazard.

2.5.3 The Role of Traditional Fishing Rights Owners

Traditional fishing rights owners can be a potent force for fisheries conservation, since the owners of each **qoliqoli** presumably have a paramount interest in protecting the resource for their own future benefit. But, increasingly owners of **qoliqoli** are becoming involved in business and, in certain cases, consider the **qoliqoli** simply a source of disposable income.

2.5.4 Destructive Fishing Techniques

The use of destructive fishing techniques (poisons, dynamite etc.) is increasing and requires greater vigilance and enforce-

ment on the part of the authorities. In addition, greater awareness and increased protection responsibilities for **qoliqoli** owners could be important conservation tools.

2.6 Water Supply

Effectively, Fiji's freshwater resource is not managed. The existing legislation is outdated and inadequate, while its drafted replacement has not been adopted.

In most areas freshwater is regarded by the public as an abundant resource and waste is commonplace. Even in areas subject to frequent shortages, water conservation is sometimes lacking. Supply and quality of water to urban centres is of good standard, although Ba town

is a recent exception due to poor watershed management. Supply and quality in rural areas is less satisfactory.

2.7 Urban Development

2.7.1 Informal Settlements

Informal, unplanned peri-urban development is one of the most visible and pressing environmental problems, with squatting, social disruption and poverty being concurrent issues.

2.7.2 Urban Growth

Almost 39% of the population live in urban areas and the proportion and growth rate are both increasing. In part this is a reflection of the relative deterioration of social and economic conditions in the rural sector. Forecasts indicate that during the coming 15 years, the urban housing stock will have to increase by nearly 19,000 houses in order to accommodate even a modest population growth. This will place increasing pressure on services and infrastructure. Residential subdivisions in the past have often been in appropriately planned and controlled.

2.7.3 Loss of Heritage

In Fiji's older towns and cities there is an accelerating loss of heritage buildings and attractive urban landscapes.

2.8 Tourism

Tourism was Fiji's biggest foreign exchange earner in 1990 and is therefore a major contributor to the national economy. Although responsible for some avoidable environmental impacts, tourism offers considerable opportunities for sustainable development through enhanced linkages with the environment. Recent government and NLTB initiatives in encouraging landowner tourism ventures based on 'secondary' tourism resources are encouraging indicators of the potential that exists but to date the tourist industry has been apathetic in their development.

2.9 Mining

2.9.1 Existing Mining Operations

Only two mining industries are currently operating, the Emperor Gold Mine, which is a major contributor to the national economy, and marine sand mining for the manufacture of cement by Fiji Industries. Only the Emperor Mine has environmental management and monitoring programmes in place.

2.9.2 Expansion of the Mining Industry

Mining, both existing and potential, offers major economic benefits and Fiji has a highly mineralised geology with several prospects, including a potentially Bougainville-sized, open cut copper mine, currently being evaluated. However, mining needs to be carefully planned, evaluated and monitored if the harsh environmental and social lessons of other countries, notably Papua-New Guinea in this region, are to be avoided.

2.10 Energy

2.10.1 Renewable Energy Sources

Fiji has benefited greatly from the commissioning of the hydro-electricity from Monasavu Dam. Industrial diesel oil imports dropped by two thirds, saving \$170 million between 1983

- 1990. The country makes relatively good use of biomass energy. The largest producers of waste, the Fiji Sugar Corporation and Tropik Woods, both use waste to produce power. However, in other areas waste accumulates and disposal methods leave much to be desired.

2.10.2 Energy Conservation

Public awareness of the need for energy conservation is at a low level and requires improvement to increase energy efficiency.

2.11 Economic Development

2.11.1 Structure of the Economy

The Fiji economy is heavily dependent upon international trade and finance. Imports are dominated by food, energy, manufactured goods and chemicals. Importation of automotive fuels are high. Development assistance only represents about 3% of gross domestic product. Income distribution in the community is uneven, with an acknowledged level of poverty.

2.11.2 Policy Framework

The Interim Government introduced new directions in economic development to achieve improved standards of living. It commenced deregulating the economy with an emphasis on an export-led growth strategy and economic diversification. The recently elected Government is supporting the change in direction.

2.11.3 Environmental Perspective

Despite the nature of the policy changes the fundamental basis of national development remains the same from an environmental perspective. That is, significant elements of the national economy (agriculture, forestry, fisheries, mining and to a large degree tourism) depend on exploitation of the natural resource base. Production from this sector accounted for almost 60% of domestic exports in 1990. This implies that planning for economic development cannot ignore the need to conserve and manage those resources in a sustainable manner.

The current push for a larger manufacturing sector will further encourage expansion of urban populations. It is unlikely that 'high pollution risk' industries will be attracted to Fiji in large numbers. However, the diversity of industry will expand, further taxing currently inadequate pollution controls. New industries will require new industrial complexes and the current steady erosion of prime agricultural land to other uses may be accelerated.

2.12 Waste Management

2.12.1 Refuse Disposal

Refuse disposal and management of garbage dumps is a national dilemma which requires a firm new initiative. Not a single local authority managed refuse dump is managed to acceptable standards.

2.12.2 Hazardous Waste

Fiji has no hazardous waste site or management infrastructure, even though there are hazardous chemicals and materials in common use. Unrestricted dumping of such wastes will require very costly 'clean up' in future years. One such site at Walu Bay would be classified as a 'hazardous waste area' in most developed countries and would be a high priority for cleanup. Although less than 2000 square metres in extent, current estimates indicate that this would cost between \$50,000-150,000.

2.12.3 Sewage Waste

In urban areas only 61% of dwellings discharge waste into septic tanks or the sewerage system. In such locations faecal coliform counts in creeks, rivers and nearshore areas are generally way above international standards. Suva's principal sewage treatment plants of Kinoya and Raiwaqa are frequently unable to function efficiently and effluents discharged to surrounding waters have often undergone incomplete treatment.

2.12.4 Pollution

Industrial activities in Fiji are varied and quite robust for a small country in an isolated location. A surprising variety of toxic chemicals and materials are in common use, however, there is a serious lack of data on the types and extent of pollution present. Nonetheless preliminary surveys have shown that heavy metals in Suva Harbour are high and are similar to those in the most polluted harbours in Australia. Levels of TBTs, an exceedingly toxic compound, exceeded those in any port worldwide as reported in the literature. Elevated biochemical oxygen demand, elevated nutrients (nitrates and phosphates), high suspended solids and high coliform bacterial levels were commonplace in discharges from a large number of light and medium industries.

Fiji has no national pollution or water quality standards and no usable pollution legislation. In consequence, with only one or two exceptions, such as the Emperor Gold Mine, which is monitored for compliance with set standards by the Mineral Resources Department, the control of polluters is effectively absent or minimal. Only in the case of new developments is there some control through development or licensing conditions, once in operation, however, there is effectively no monitoring for compliance.

2.13 Environmental Management

2.13.1 Policy in National Development

Environmental policies and objectives, to a lesser or greater extent, have been presented in national development plans since 1971. However, their implementation through practice and resource/funding allocation has been minimal.

2.13.2 Current Environmental Management Capability

Government's current capability for effective environmental management is deficient because of:

- lack of integration of development and environmental policies;
- the predominance of economic and social development goals in national decision making which are isolated from any environmental framework;
- inadequate and highly sectoralised legislation and administrative framework;
- inadequate expertise and resources;
- lack of political will to confront issues.

2.13.3 International Environmental Obligations

Fiji is a signatory to 21 international environmental and resource conventions (Appendix 4). These conventions place considerable responsibilities on the Government at the national and international levels with regard to environmental issues. However, some such as the Apia Convention have not been implemented.

2.13.4 Environmental Legislation

Fiji's environmental laws are many and varied, a relic of the colonial period when environmental problems were limited and clearly sectoral. At least 25 Acts have some important role in what is today perceived as environmental management, and they are administered by at least 14 different ministries, statutory bodies or other agencies. Most of the laws are old and ineffective in a modern environmental management context or suffer from a lack of enforcement of regulations through inadequate staffing, lack of technical resources and funding, or through administrative failures.

2.13.5 Environmental Administration

A specific environmental planning function, the Environmental Management Unit, was initially developed within the Department of Town and Country Planning. One of the first actions of the recently elected Government was to elevate the unit to a full Department with a Minister of State for the Environment. However, a higher level governmental coordinating body is also required to provide the 'horizontal' administrative structure which is essential for effective environmental management.

2.14 Protected Area Management

Although neighbouring Pacific nations have internationally recognised national parks, Fiji has none. The only legally constituted protected areas of conservation significance are the Department of Forestry's seven Nature Reserves (total area 5,647 ha, 0.3% of land area). Ecological attributes were not involved in the identification of these reserves, and they suffer from insufficient development and management. Protection Forests have significant potential for the conservation of biodiversity but they have no legal status and suffer widespread destruction.

The reason for the lack of national parks or equivalent areas is not due to a lack of sites - the country has outstanding potential. It is because of the lack of a functioning advocacy agency for conservation and heritage protection, and the low priority given to this by Government. The National Trust for Fiji has attempted but failed to develop national conservation and heritage protection in the 21 years since its institution.

The Cabinet designated Sigatoka Sand Dunes National Park, a site of international significance, will not be recognised internationally until it is effectively managed. Given its current resources and abilities, the National Trust has no potential to effectively develop and manage the Sigatoka Sand Dunes National Park or its other reserves and national legacies and responsibilities.

Unless a system of protected areas is set up quickly, valuable aspects of Fiji heritage, both natural and cultural, will be lost.

Preservation of historic sites is in a similar situation. It lacks a clearly defined and functioning management authority. There are considerable apparent overlaps in departmental/statutory body responsibilities with the result that:

- there is minimal control of site destruction which is now commonplace and increasing
- legal preservation of sites is not being undertaken despite quite adequate legislation
- the management of existing sites is inadequate and in certain cases, such as the Laucala Ring Ditch Fort, has completely failed.

3 IMPLICATIONS FOR NATIONAL DEVELOPMENT

Fiji has many positive physical and cultural attributes which it can draw upon on a sustainable basis for its ongoing development. It also has significant environmental constraints which are currently compounded by inadequate environmental management, legislation and administration.

Fiji lacks the serious demographic, economic and industrial pressures from which the majority of serious environmental problems originate in other countries. But conversely, its small size, young landscape and evolutionary isolation make its natural resources vulnerable to loss or degradation. In addition, the vast majority of the population, industry, important infrastructure and economic activity is located in the coastal zone, which is an ecologically complex area highly susceptible to both natural hazards and human violation.

In contrast to many developed countries and other developing countries in South-East Asia, Fiji is fortunate in having the opportunity to concentrate its environmental management strategy on addressing the sources of environmental problems rather than addressing the effects with short term curative measures.

Unfortunately, it is the track record of the majority of governments worldwide that they pay insufficient attention to environmental and sustainable resource use issues until the problems are so conspicuous and serious that they need expensive curative measures such as 'clean-ups' and 'rehabilitation'.

Important practical lessons have been learnt by many countries which are directly relevant to Fiji's situation at the present time, amongst these are:

- Environmental damage results in high costs for remedial measures, clean up/rehabilitation efforts are prohibitively expensive.
- To be economically sustainable, development has to be environmentally sustainable.
- Natural resources such as land, forests, marine, minerals and hydro-energy generate the bulk of GDP and export earnings, but they also provide more employment, income and nutrition to subsistence communities than any other sectors. Therefore, development strategies should give due respect to sustainable limits in utilising these resources.
- Environmental problems cut across a range of policy variables and therefore environmental issues, objectives and actions cannot be framed in isolation from the development and policy sectors from which they emanate.
- Although it is important to tackle immediate environmental problems, preventative policies are the most effective and economical in achieving environmentally sustainable development.

(adapted from ESCAP, 1990)

Table 2.1 IMPORTANT ENVIRONMENTAL ISSUES

A summary of environmental issues with an assessment of their significance at the present time.

(Key: C - Critical Issue
E - Emerging Issue

S - Significant Issue
M - Minor Issue)

Land			Urban environment	
Availability	S		Planning and management	C
Degradation/ Erosion	C		Inadequate services	E
			Industrial/manufacturing pollution	E
Water			Loss of cityscapes	E
Rainwater storage/ water conservation	M		Mining	
Lack of a management framework	S		Tailings disposal	M
Pollution	M		Control/forward planning	S
			Energy	
Global warming			Energy conservation	M
Climate change	S			
Sea level rise	S		Agriculture	
			Agricultural practices	S
People			Agric. intensification (pesticides/fertilisers)	M
Internal migration	S		Fisheries	
Poverty	E		Unsustainable inshore fishing	S
Health and nutrition	E		Destructive fishing techniques	M
Loss of traditional/ knowledge	E			
Biodiversity			Environmental management	
Protected area/ gene pool establishment	C		Administrative framework	C
Loss of species/ecosystems			Policy framework	S
Exotic species establishment	M S		Ability to manage and control	C
			Land Use planning	C
Coastal development			Legislation	S
Coastal erosion/ degradation	E		Loss of traditional controls	M
Mangrove destruction	S		EIA process	
Marine pollution	E		- private sector	M
Reclamation	M		- public sector	S
			Monitoring/Data/ Information systems	S
Waste management			Public awareness/ information	S
Solid waste mgmt.	C			
Pollution	E			
Hazardous waste mgmt.	E			
Sewerage disposal	M			

4 POLICY ORIENTATION FOR NATIONAL DEVELOPMENT

4.1 Fiji at the Threshold

Fiji is definitely at a threshold, environmental problems :

- are sufficiently advanced to be easily appreciated by any decision-maker who cares not to dismiss them; and
- have the potential to escalate rapidly both in extent and severity.

Nonetheless, Fiji is fortunate in having the opportunity to focus on a preventative approach that aims to minimise future costs from environmental degradation, and to pursue an overall strategy which integrates environmental concerns into its development process. Certainly, support for sound environmental management and sustainable development at the political level by the newly elected Government is an encouraging sign that positive action will be taken. The Prime Minister's address to the UN General Assembly reaffirmed the Government's commitments made at UNCED (see Box 2).

4.2 Sustainable Development

4.2.1 Recognition of Limits to Growth and Resource Exploitation

It is now generally accepted in principle, but not necessarily in practice, that there are limits to the extent to which natural resources and environmental systems can be exploited. Growth cannot continue forever and there are limits to the levels of exploitation of such resources.

The Fiji Government is charged with the responsibility of promoting development to improve the quality of life of all Fiji citizens. Fiji is fortunate in having a wide natural resource base, it is endowed with a rich variety of natural resources and ecosystems which have historically and which continue today, to form the basis of national development.

However, development is currently being promoted without due respect for the limits of renewal and replenishment of Fiji's natural resources. Fiji's 'natural capital' is being depleted while measures to manage this 'capital' are poorly developed and generally ineffective. There are several vivid examples of this depletion of 'natural capital':

- 'soil mining', the accelerated loss of soil through erosion in the ginger industry and on the marginal hill lands within the sugar cane perimeter;
- heavy metal pollution in Walu Bay exceeding the Bay's capacity of absorption and assimilation;
- unsustainable rate and probably method of exploitation of natural forest resources;
- the 'boom and bust' exploitation of sandalwood, and more recently beche de mer and clams
- the extinction of at least two species of clam as a result of uncontrolled exploitation

- increasing scarcity of fish in certain inshore and lagoon areas
- the almost complete loss of certain forest types, in particular 'beach' or 'littoral' forest through the widespread development of the copra industry which is now in apparent terminal decline
- the loss of forest cover over much of the dry zone on the larger islands;
- the extinction of ground nesting birds and reptiles as a result of the introduction of the mongoose to 'assist' development of the cane industry.

BOX 1

Extract from the address by the Honourable Sitiveni L. Rabuka, the Prime Minister of the Republic of Fiji, to the 47th session of the United Nations general Assembly

October 1992

My country was pleased to participate in the United Nations Conference the Environment and Development in Rio de Janeiro, in June. I reaffirm our full commitment to the several decisions taken at the Conference. Including the Rio Declaration, Agenda 21, the Framework Convention on Climate Change, the Convention on Biodiversity and the Declaration on Forest Principles.

My Government supports the proposed Sustainable Development Commission, which is to be discussed later in this Session. We particularly support the proposal that this Commission be the main forum for consultation and leadership on the implementation of Agenda 21 at the global, regional and national levels.

The Commission should be able to review progress in implementation of Agenda 21, as well as provide a forum for further development and updating in the light of all future developments in technology, legal, economic, financial and other areas. To be effective, the Commission must be supported by a small a small and well organised Secretariat.

Global-warming and sea level rise pose serious threats to the very existence of a number of our neighbouring small island states in the South Pacific and I dare say, in other parts of the world. We welcome, therefore, the Framework Convention on Climate Change as an important first step towards addressing these threats. We want to see the Convention put into effect as early as possible. Negotiations of protocols should commence soon, especially on targets and timetables for the reduction of carbon dioxide and other greenhouse gas emissions.

We also welcome UNCED's call for a series of meetings and conferences on the sustainable development of small island countries. Fiji supports the convening of the Global Conference for Small Island States on Sustainable Development and its Implications, and we will eagerly follow progress on the arrangements for this conference.

Agenda 21 also called for conferences on the conservation and management of fish resources, one of the main sources of livelihood for many of our small island countries. Fiji endorses the Agenda 21 Chapter on Marine Living Resources and in particular, the proposed United Nations Inter-governmental Conference to address the issue of straddling fish stocks and highly migratory species in the context of the Convention on the Law of the Sea.

UNCED was a major step forward, but the next step may be more difficult. The spirit in which the various agreements were conceived and adopted needs to be matched by their speedy implementation.

We are pleased that a good start has been made with the recently-announced "Capacity 21" initiative by the UNDP, which aims at providing support to developing countries in the preparation and management of their development plans. This initiative will go a long way towards translating Agenda 21 into effective national programmes.

4.2.2 The concept of sustainable development

Currently, sustainable development is considered in some quarters in Fiji, as a fashionable catch-phrase with little real substance. However, it is clear that the developed nations and the major lending and development agencies have largely adopted the concept and will be promoting it vigorously in the future, just as they promoted rapid economic development and unrestrained growth in the past. For this reason, sustainable development policies will be high on the agenda of international relations, foreign aid and development assistance.

This is a valid reason alone for Fiji's development policies to be re-examined and to be re-focused to achieve a sustainable utilisation of natural resources. However, a more valid reason is in consideration of future generations. The underlying premise is to leave future generations a similar or better resource endowment than that which we inherited. Thinking about the well-being of future generations is not merely a theoretical exercise. Any generation can maximise its present consumption of resources at the expense of the future by devastating resources now, by depleting non-renewable resources, by removing more than the sustainable yield of renewable resources (such as timber or fish) and by disposing of wastes into ecosystems that cannot assimilate them. Sustainability means taking only that yield from renewable resources that does not jeopardize their ability to replenish their natural stock, and honouring the environment's limited capacity to receive waste. It also means using non-renewable resources, such as gold wisely and applying the profits from their use to identifying materials substitution and technologies for reusing and recycling resources, (UNDP, 1992).

Fiji's predominant land tenure, communal ownership, is a manifestation of the Fijian cultural concept of 'vanua', a concept of inseparability of the Fijian and his land and surroundings, now and forever. It is a concept which more than any other should readily embrace sustainable development, the assurance that the capacity of the land will be maintained for the benefit of future

There is evidence for this in:

- . the manner in which certain traditional fishing rights owners are exploiting their **qoliqoli**;
- . the increasing tendency for the compensation for loss of non-proprietary fishing rights to be viewed as opportunistic income;
- . the drive to lease, or for landowners to utilise, land irrespective of its subsequent agricultural capacity; and
- . in the case of landlords, failing to enforce the lease provisions concerning 'good land husbandry'.

4.2.3 Problem with Gross National Product (GNP)

The degree of development of a society is traditionally measured by the growth of the economy, using the size of the gross national product (GNP) as an indicator of growth and levels of consumption, even if the increases entail the generation of waste and pollution.

It is a matter of international concern that national accounts have failed to identify the effects of development on natural capital. It is now widely acknowledged that economic growth has been pursued in the past without due attention to the environmental destruction that accompanies many forms of economic activity. This blind spot to environmental damage is reflected in the absence of measures of the damage in standard national income accounts. Environmental

impact, whether in the form of removal of natural assets, in the form of pollution, or soil degradation, or in other forms, is in principal a charge against the gross national income.

The incorporation of measures of environmental depreciation in national accounts raises difficult problems of valuation. These are compounded by the common use of changes in national product, rather than its absolute level, as a short term indicator to the general public of economic performance. The identification of relatively small year-to-year changes in levels of environmental depreciation may not be possible at reasonable expense.

The United Nations Statistical Office is working on an Environmental Accounting Framework. This should be available early in 1993. Fiji should consider adopting the framework for estimates of the impact of environmental depreciation on national income.

4.2.4 Natural Resource Accounts

In physical form, natural resource accounts have immediate practical application in development planning. They can be used for example in assessments of impacts on natural resources of broad sectoral policies. They can also be used in simulation models for the economy as a whole, for particular resource sectors or for specific regions. GIS technology, computer simulation models and mathematical programming models are some of the tools that can be combined with physical natural resource accounts to support development planning.

BOX 2 Sustainability: a Question of Definition

The National Environment Strategy uses the word 'sustainable' in several combinations, such as 'sustainable development', 'sustainable economy', 'sustainable society', and 'sustainable use'. It is important for an understanding of the Strategy to know what we mean by these terms.

If an activity is sustainable, for all practical purposes it can continue forever.

When people define an activity as sustainable, however, it is on the basis of what they know at the time. There can be no long-term guarantee of sustainability, because many factors remain unknown or unpredictable. The moral we draw from this is: be conservative in actions that could affect the environment, study the effects of such actions carefully, and learn from your mistakes quickly.

The World Commission on Environment and Development (WCED) defined 'sustainable development' as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The term has been criticised as ambiguous and open to a wide range of interpretations, many of which are contradictory. The confusion has been caused because 'sustainable development', 'sustainable growth' and 'sustainable use' have been used interchangeably, as if their meanings were the same. They are not. 'Sustainable growth' is a contradiction in terms: nothing physical can grow indefinitely. 'Sustainable use' is applicable only to renewable resources: it means using them at rates within their capacity for renewal.

'Sustainable development' is used in this Strategy to mean: improving the quality of human life while living within the carrying capacity of supporting ecosystems.

A 'sustainable economy' is the product of sustainable development. It maintains its natural resource base. It can continue to develop by adapting, and through improvements in knowledge, organisation, technical efficiency, and wisdom.

A 'sustainable society' lives by the nine principles outlined in Appendix 3.

(Source: adapted from IUCN, 1991)

4.2.5 Sustainable Development - Posing Questions

To clarify the interrelationship between environment and development, it is important to ask:

- Is it necessary for Fiji to pay the price of a degraded environment in order to attain material improvement ?
- Is there a basic incompatibility between sound environment and sound development policies ?
- Does sustainable economic growth require the conservation of natural resources as the fundamental base for productive activity ?

Today there is wider acceptance of the view that the development model appropriate for industrial and developing countries alike should be compatible with the environment, sustainable and economically feasible. A component necessary to achieve this is the integration of environmental assessments and considerations into the planning and budgeting process.

5 ACHIEVING SUSTAINABLE DEVELOPMENT

5.1 Objectives of the National Environment Strategy

In the process of achieving sustainable development, the National Environment Strategy adopts the following major objectives:

- to protect ecological processes and life-support systems (such as freshwater and coastal systems, soil, forest, urban and agroecosystems) on which human survival and development depend;
- to provide for cultural, spiritual and other non-material needs of society by protection of, and development of diversity in the use of, natural resources;
- to preserve genetic diversity (the range of genetic material found in organisms) on which depends the functioning of many life-support systems and actual and potential commercial, medical and scientific uses;
- to ensure the sustainable use of renewable resources (especially fish, forests, freshwater and arable lands) on which the Fiji economy is overwhelmingly based;
- to ensure that non-renewable resources are depleted at a rate that enables transition to the use of more abundant materials and ultimate sustainable use of renewable resources.

In achieving these objectives the National Environment Strategy distinguishes three components which the Government will need to develop. They are:

- an effective environmental management capability;
- effective heritage protection;
- meaningful public involvement.

5.2 Environmental Management Capability

The Government's environmental management capability is poorly developed and this should be regarded as the nation's most critical environmental issue.

Environmental management is the Government's ability to mould those human activities that affect the environment to the maximum benefit of society, both present and future.

Appropriate environmental management is achieved when resources are used efficiently for the benefit of human development and when they are conserved because of their important ecological role in sustaining ecosystems. Inappropriate environmental management takes place when resources are misused by requiring too many inputs to produce outputs, by over-utilising resources or by not conserving those resources that form the basis for the ecological functioning of local and global ecosystems (UNDP 1992).

The key components of an environmental management capability are:

- . Policies
- . Laws
- . Institutions and Administration

5.2.1 National Environmental Policies

Although Fiji has presented some environmental policies and objectives since 1971, there have been no national environmental policies which have formed the basis of practical application. Those that have been published in development plans and economic summits do not appear to have been adopted following careful, cross-sectoral appraisal and have resulted in minimal implementation.

There is a clear need for GOF to develop and adopt a comprehensive policy for environmental protection and natural resource management which provides the goals, directions, and guidance for Government action.

National environmental policy needs to be based on the essential interdependence of the environment and successful economic and social development and it should provide the guiding principles for the nation's legislative framework for the environment.

In the absence of such a policy, GOF's intentions with respect to the environment cannot be appraised nor its record monitored. Policies are an essential first step for management and are a prerequisite if Government is to be transparent to both the national and international community with regard to its intentions for environmental management.

Environmental policies need to be introduced in all government ministries and departments which have natural resource management or utilisation functions. Government associated institutions, statutory bodies, government owned authorities and companies (such as the Native Land Trust Board, Fiji Development Bank, Fiji Trade and Investment Board, Fiji Sugar Corporation, Fiji Pine Limited, Fiji Electricity Authority, Housing Authority and others) also need to have explicit environmental policies in line with Government's own. Such policies need to include environmental assessment as an integral component of their management activity.

5.2.2 Environmental legislation

Fiji's environmental legislation has been reviewed in great detail (NEMP 13) and found to be highly sectoralised, and generally old and ineffective in a modern environmental management context. However, there is much legislation which could be used to good effect but nearly all the relevant legislation suffers from lack of enforcement through inadequate staffing, lack of technical resources and funding, because of totally deficient penalties, or through administrative failures.

Legislation in isolation of effective administration and institutions will always be ineffective and special consideration in Fiji needs to be given to the widespread lack of law enforcement which necessitates greater emphasis on eliciting public compliance by other means.

Subjects for priority environmental management legislation include:

- . Environmental impact assessment;
- . Pollution;
- . Land and water resource management;
- . Natural and cultural heritage protection.

5.2.3 Institutional Change

The Government's current institutional and administrative structure for environmental management has only an embryonic capability. It needs extensive restructuring and upgrading, but it is essential that this is not undertaken in isolation. Environmental management and planning cuts across many disciplines and sectors of Government, some such as land use planning and development control are intricately involved and they need to be considered in unison with reform of environmental institutions.

If the environment is institutionalised as an isolated, 'stand alone' sector without massive legislative and institutional reform (similar in nature to New Zealand's Resource Management Bill), then it will more likely develop as an irritating bureaucratic hurdle in planning, development and progress.

The following are necessary components of an appropriate institutional framework :

- . a high level institution with a 'horizontal structure' of the appropriate ministerial representation to provide effective, co-ordinated decisions/advice on environmental policies, problems and land use allocation;
- . the existence of institutions within government with legal power to enforce environmental laws, disseminate information and undertake monitoring;
- . the presence of individuals capable of designing environmental policies and regulations, and of technical experts who can mitigate environmental problems and monitor environmental performance;
- . reliable laboratories, equipment, information systems (land use plans, ecologically and environmentally sensitive areas, databases etc.), infrastructure and economic resources for monitoring, assessment and research;
- . effective forum(s) and channels of communication for government to consult landowners, the private sector, NGOs and other interested groups.

5.2.4 Recommendations for Developing an Appropriate Environmental Management Capability

1. Environmental policies need to be drawn up by all environmental management or natural resource users of Government and its associated bodies (wholly owned companies, statutory bodies etc.)
2. Sound environmental and resource use legislation is needed, priority requirements are for environmental impact assessment, pollution, institutions and administrative struc-

ture, land and water resource management and heritage protection.

3. An appropriate institutional and administrative structure with sufficient resources is needed to effectively oversee the nation's environmental management requirements.

5.3 Heritage Protection

5.3.1. Issues of Concern

Fiji's cultural, historic and natural heritage is inadequately known and protection is poorly developed and lacking any significant management. The principle issues are:

- . inadequate documentation of all facets of Fiji's heritage;
- . the lack of a system of protected areas;
- . inadequate preservation of cultural sites and historic buildings and their increasing loss through development activities;
- . the inadequacy of wildlife protection, trade and exploitation laws.

5.3.2 Protected Area System

Fiji has no internationally recognised national parks. There has been inadequate identification, development, management and protection of the Ministry of Forestry's nature reserves, which are the only legal conservation areas of significance. Their contribution to the conservation of a representative sample of Fiji's varied ecosystems is, at present, minimal.

Marine protected areas are even more poorly developed than their terrestrial counterparts, with no institution having any prescribed responsibility, although DOF has taken the initiative here.

Experience worldwide has shown that it is almost impossible to develop a successful conservation institution if its position is compromised by conflicting 'missions' within its Ministry or Department (for instance marine parks within a Department of Fisheries or forest nature reserves within a Department of Forestry)

In respect of protected area management, Fiji lags behind many of its Pacific island neighbours and it has failed to implement some of its international commitments, such as the Convention on the Conservation of Nature in the South Pacific (Apia Convention).

5.3.3 Register of Natural and Cultural Sites of National Significance

There is no register of sites of national significance either natural or cultural and 'development' activities are increasingly destroying or eroding potential sites. There appears to be little realisation that the development of a system of protected areas and sites will greatly enhance Fiji's tourism assets, the nation's principal foreign exchange earner, as well as conserve the natural and cultural heritage for future generations.

5.3.4 Endangered Species Conservation and Trade in Wildlife

Responsibility for endangered species protection and the management of trade or import/export of wildlife and wildlife products is either absent, or scattered through various ministries and departments, none with commitment, expertise or resources. Exploitation of some species, such as turtles and sago palm, is reaching critical levels without any meaningful attempt at sustainable use. For at least two species of clam, exploitation has led to extinction in Fiji. Some endemic species are very rare and possibly in danger of extinction (for example the Fiji petrel, long-legged warbler, Fiji burrowing snake) but their plight is being ignored.

Trade in wildlife is an increasingly serious issue with a high international profile. Fiji is

completely ill-equipped in legislation and institutional development to provide any meaningful control or management of its many species of wildlife and plants.

5.3.5 Conclusions on Measures Required for Appropriate Heritage Preservation

1. The need for a 'dedicated' advocacy institution within Government whose sole mission is to promote heritage conservation and preservation.
2. The need for a management institution(s) for protected areas, historic and cultural sites, and wildlife protection and import/export (trade).
3. Official registration of all 'Sites of National Significance', to include natural areas as well as historic and cultural sites.

5.4 Public Involvement

Public and community involvement in environmental protection and resource management activities is vitally important. It is a prerequisite for developing 'home-grown' or appropriate environmental planning especially where land tenure is predominantly communal. Meaningful public involvement requires adequate awareness, consultation and consensus.

5.4.1 Consultation

Fiji's consultative process on natural resource management issues is poorly developed and this has led to resource management problems and discontent amongst landowners, particularly in the fisheries and forestry sector. It has contributed to:

- the lack of development of a protected area system;
- lack of compliance with legislation;
- lack of protection for culturally important species such as turtles whose exploitation is no longer controlled by established cultural methods and which have now entered the commercial/income generating sector;
- unsustainable agricultural and fishing practices;
- unsustainable landuse;
- problems in mining developments;
- problems in the forestry sector.

Experience in many countries indicates that unless resource users (whether they be landowners or sectoral operators from industry, agriculture, manufacturing, tourism etc.) are involved in dialogue with Government on environmental policy, legislation and management issues, then they will tend to do all in their power to ignore Government initiatives. This is likely to be even more significant in Fiji where communal tenure predominates and landowners are effectively uncontrolled in their land use activities. Much of the current unsustainable resource use practices of landowners is a result of ignorance of the longer term consequences. There is a great need for more awareness in the rural communities of resource exploitation issues. The NLTB has a major responsibility here.

Existing forums such as Provincial and Advisory Councils as well as District and Divisional Development Committees should be considered for use in developing the consultative process.

5.4.2 Non-government Organisation Involvement

With few, if indeed any, exceptions Fiji's non-government organisation (NGOs) operating in

the environmental field are comparatively poorly developed and resourced, and generally ineffective at the grass roots level. As yet they are poorly involved in both community-level and public environmental advocacy roles and they also have minimal involvement with Government in environmental policy and management dialogue.

Constructive community involvement is difficult without sufficient environmental awareness and motivation. To engender this requires appropriate environmental education and information dissemination.

Environmental education is quite well integrated into the school curriculum but awareness and, especially, motivation in the community is poorly developed and needs special attention.

Developing public awareness and motivation is likely to be more efficiently undertaken by NGOs rather than Government. NGOs invariably have more commitment, are more readily accepted by the majority of communities, are more flexible and responsive in their work mode and often more experienced in small scale and 'appropriate' projects. Government needs to facilitate and encourage the operation of NGOs.

Government's direct involvement should be to ensure that environmental education is well established in the various formal curricula and that teachers are properly trained to teach it. In addition Government needs to ensure that its policies and environmental management are 'transparent' which requires the dissemination of information. For instance environmental monitoring data (Vatukoula Gold Mine, sewage treatment plants) should be made public.

5.4.3 Negative Aspects of Public Involvement

There are negative aspects of public involvement which need to be guarded against. Public consultation can be abused and result in consultation primarily with 'interest' groups and 'vocal minorities'. Few people attend public consultation meetings simply on a basis of communal duty. It is necessary therefore to develop procedures to guard against this. Important amongst these would be traditional consultative processes and proven existing forums.

5.4.4 Recommendations for Initiating Effective Private Sector and General Public Involvement

1. Encouragement and facilitation for the operation of NGOs.
2. Development of a forum(s) and lines of communication to facilitate public-government consultation, in a meaningful manner.
3. Ensuring that government is 'transparent' in its environmental management.
4. Active promotion of environmental awareness.

PART IV ACTION PLAN

6 THE CHALLENGE

In achieving sustainable development the GOF requires:

- an effective environmental management capability;
- effective heritage protection;
- effective public involvement.

Framework requirements to achieve these goals are summarised in Charts 1-3.

Virtually all aspects of a nation's governmental endeavours affect the environment, and in turn are affected by it. Environment is not a 'vertical' sector, like agriculture, transport or fisheries but instead is 'horizontal', cutting across all sectors. Therefore Government **cannot** deal with environment in the same way that it does the other aspects of governmental business. This is an important concept which should not be ignored.

Environment, as such, is a relatively new concern for all governments, developing and developed alike. Twenty-five years ago no government had specific environmental institutions or a specific environmental legislative framework. The recent realisation that governments worldwide must deal effectively with environmental issues has instigated major governmental reassessments and restructuring in developed and to a lesser degree, developing countries worldwide. Fiji's legislative and administrative framework is little changed from that instituted in colonial times and based on the British system, but today Britain's environmental management framework bears little resemblance to that of a quarter of a century ago.

Thus Fiji's legislation and administration can be viewed as doubly unfortunate; firstly it is effectively a colonial imposition and secondly, and more importantly, it has not changed with changing circumstances.

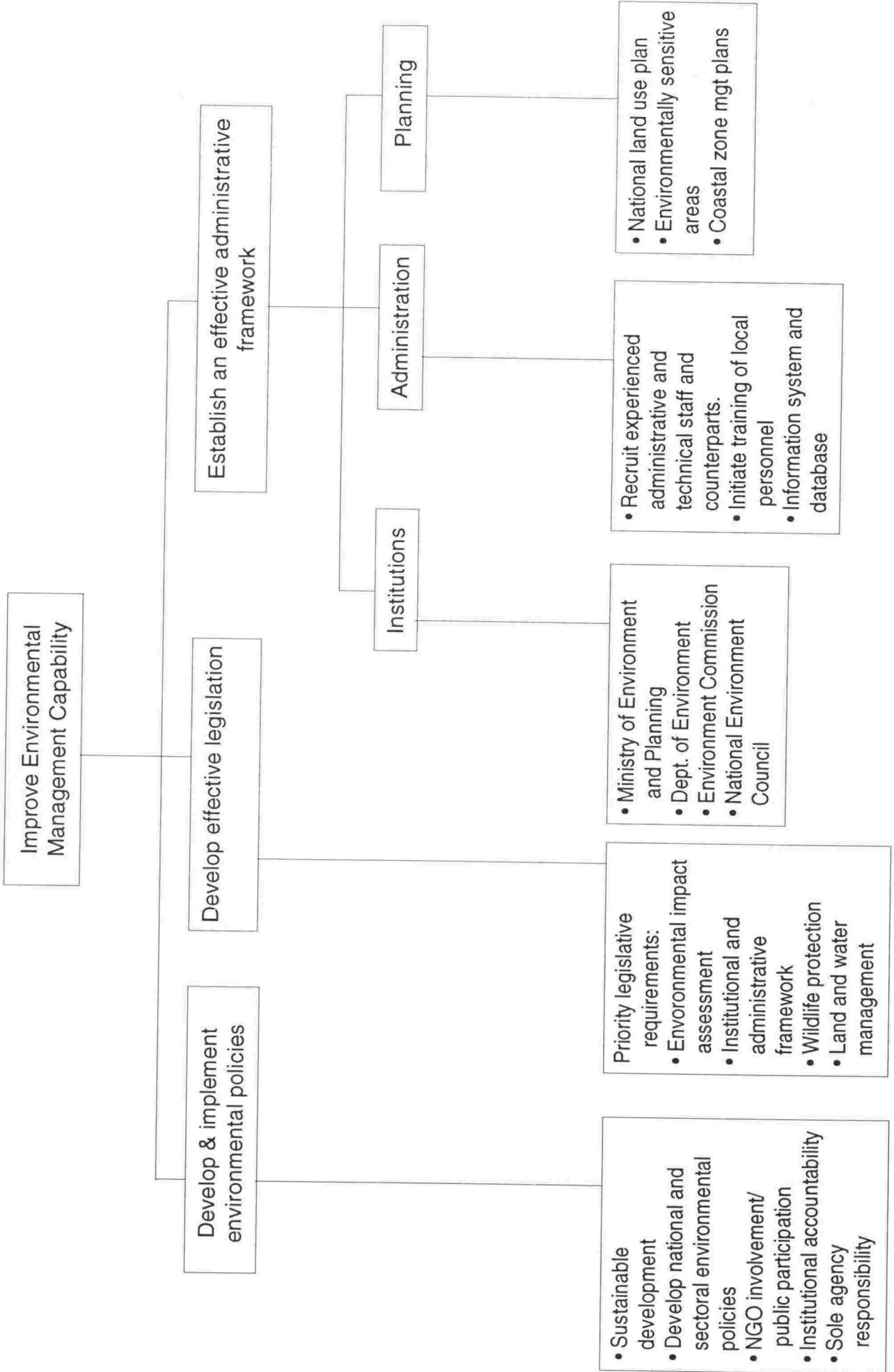
The challenge is to create an effective management capability largely within the existing legislative framework for the short term, while more fundamental reviews of all the resource management legislation are undertaken.

Government's policies with respect to its activities and the civil service have been actively considered in the preparation of the NES. These are:

- maximising private sector involvement; and
- minimising Government's activities.

The recommendations of the NES will be consistent with the first two of these, however, there will need to be additional positions if any meaningful attempt at protecting the nation's environment is to be undertaken. Nonetheless, minimising expansion of the civil service has been an important consideration in the determination of the institutional recommendations. Agenda 21 following from UNCED calls on governments to reallocate resources from other sectors for environmental management.

CHART ONE



GOAL:

OBJECTIVES:

ACTION REQUIRED:

CHART TWO

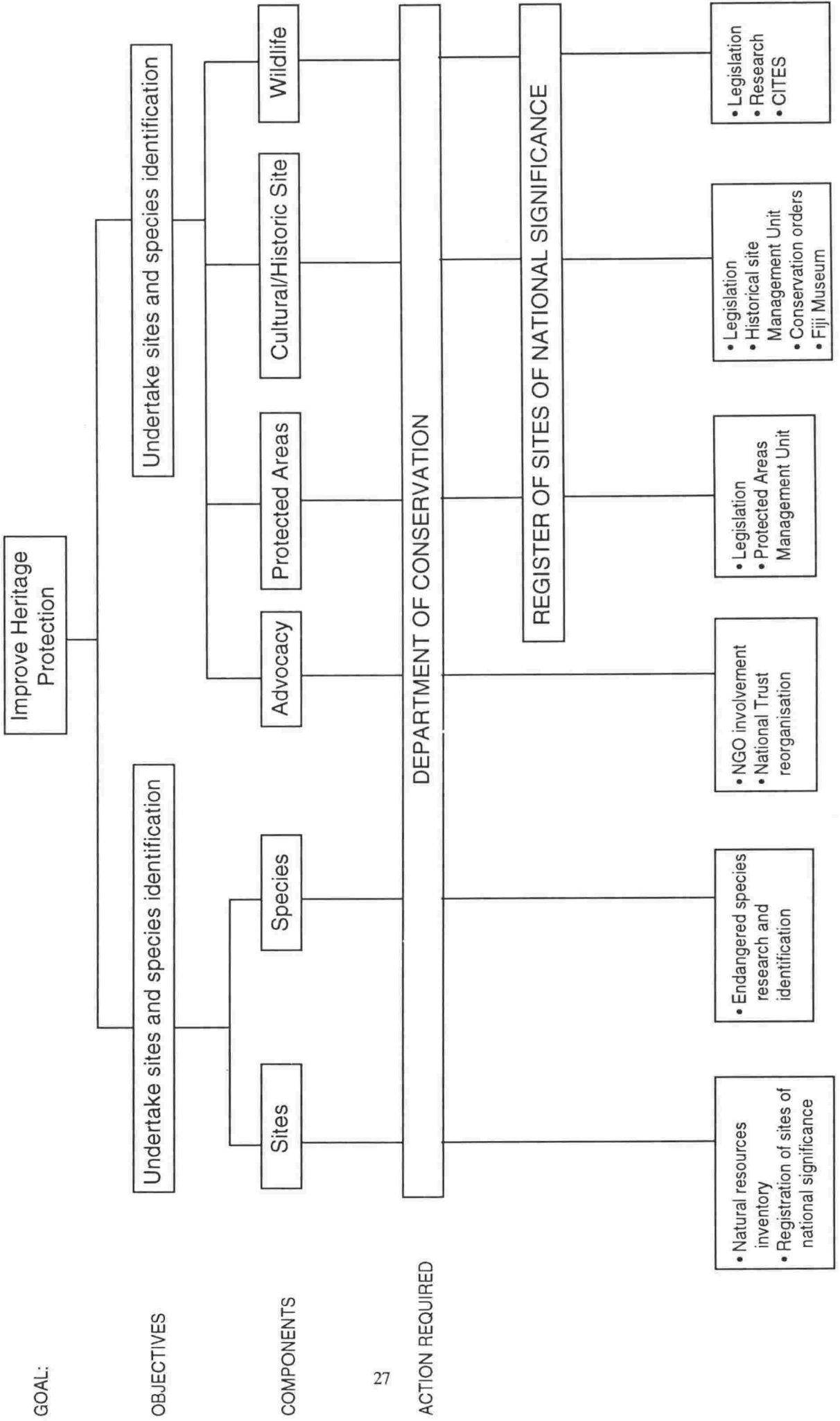
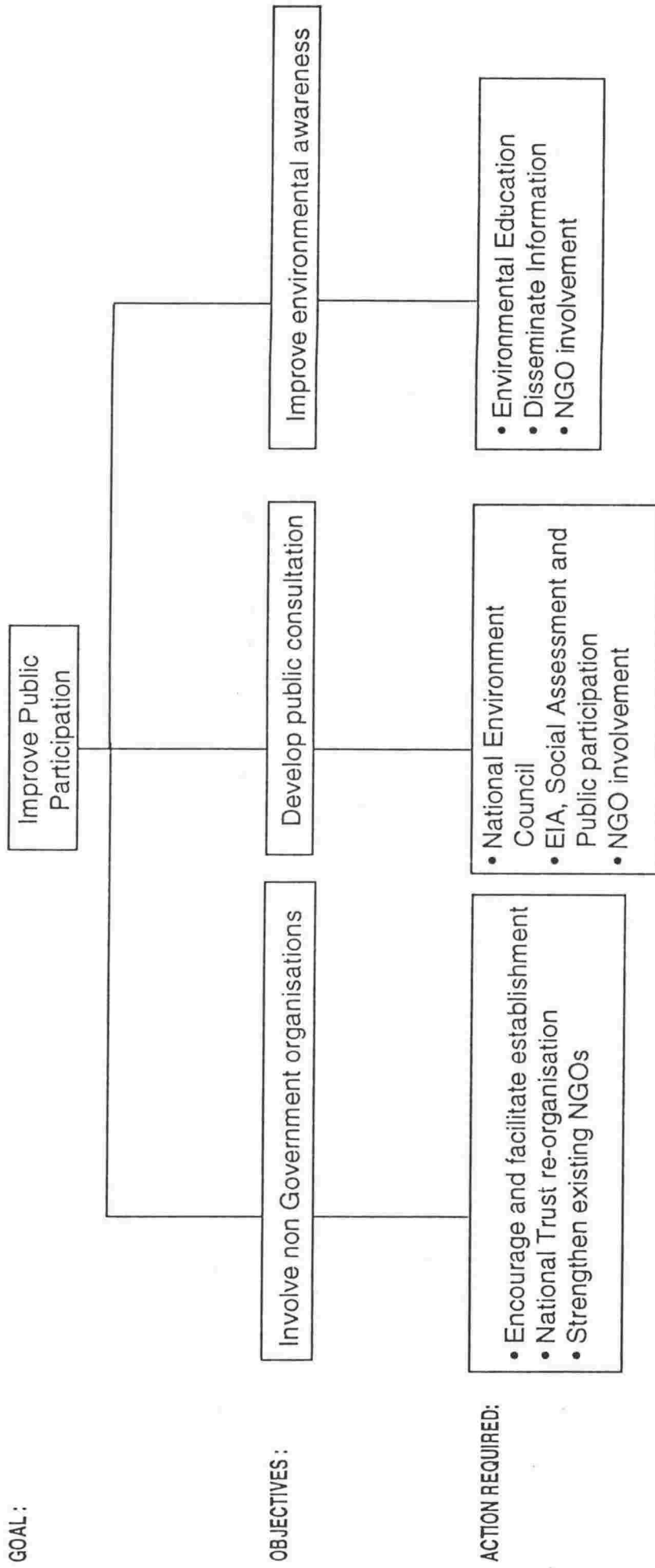


CHART THREE



7 THE FOUNDATION - APPROPRIATE ENVIRONMENTAL POLICIES

7.1 Sustainable Development

7.1.1 National Policy

Acceptance of sustainable development as a national policy will be more easily incorporated in rhetoric than effected in practice, for whereas economic development can be easily measured, there is no convenient measurement of sustainable development. Governments tend to measure 'development progress' by production figures and economic statistics but these rarely, if ever, indicate whether development is occurring on a sustainable basis or at the expense of depleting the nation's natural capital. To ensure that sustainable development is being achieved or approached will require a modified process of monitoring and evaluation of national development. A difficulty is that sustainable development practices may vary, it is a dynamic concept, what is regarded as sustainable today, may not be so in years to come. Public involvement is an essential ingredient of such an evaluation.

Fully integrating environmental assessments and considerations into the planning and budgeting process is a prerequisite for pursuing sustainable development. Thus the standard procedures of the CPO, the FTIB, the Aid Co-ordinating Committee, formulation of Ministry of Finance's capital and operating budgets etc. should include environmental considerations and their satisfactory resolution before approval of local or donor funding.

Concurrent with this should be the promotion of improved understanding and the application of the concepts and techniques of resource and environmental economics within all the the resource utilising ministries and agencies of Government.

7.1.2 Environmental Policies

National and sectoral environmental policies cannot be expected to be successful unless Government accepts a policy of sustainable development as one of its principal socio-economic goals .

Policy formulation for those Government ministries, departments and associated institutions with resource management or utilisation functions will need to be undertaken in a coordinated manner for environmental linkages are the key to understanding sustainable policy formulation. Environmental policies designed in isolation of other sectoral and national goals are difficult to implement and frequently fail. Similarly, environmental policies designed without the involvement of the department or institution concerned have little future.

7.1.3 Public Involvement

Government needs to be transparent in its approach to environmental management. Environmental policies should be formulated with public involvement, they should be widely publicised and open to public scrutiny. Environmental management activities need to be accountable and the results, such as monitoring data should be available to the public.

7.1.4 Institutional Accountability

Much of Government's environmental and conservation management activities are currently dogged by shared or, poorly defined, responsibilities. To ensure efficient environmental management and conservation, Government needs a policy of sole agency accountability. Everyone in both Government and the private sector needs to know exactly which institution is responsible.

7.1.5 Recommendations

1. Sustainable development be adopted as a national goal.
2. GOF commit itself to fully integrating environmental assessments and considerations into the planning and budgeting process.
3. Environmental assessment be integrated in development planning and project appraisal.
4. Environmental policies be drawn up for all Government bodies which utilise or manage natural resources.
5. Public involvement in policy formulation be actively encouraged and facilitated.
6. Sole institutional responsibility for environmental management components be adopted wherever possible, to promote accountability.
7. Transparency in environmental management be promoted - policy formulation, availability of monitoring data etc.

8 THE INSTITUTIONAL AND LEGISLATIVE CHALLENGE OF ENVIRONMENTAL MANAGEMENT

8.1 Outline of an Appropriate Institutional Structure

Two principal components of an appropriate institutional structure can be distinguished:

- a high-level component (the Environment Commission) which develops environmental policy, monitors and maintains oversight on the status of the Government's efforts to manage Fiji's environment, and which co-ordinates Government's activities which affect the environment; and
- management components which are institutionally and legislatively responsible (and accountable) for specific aspects of environmental management.

The former does not exist at present, although the Environment Unit/Department of Environment is attempting to undertake the role. The latter components are inherent in the legislative framework of line ministries and departments ie agriculture, forestry, fisheries, minerals, health etc., but in general these environmental protection activities are not well developed.

8.2 Management Components of the Institutional Structure

Any attempt to remove the many management components from their current ministerial and departmental locations would be too disruptive (massive legislative requirements and administrative and personnel changes) and cause too much inter-ministerial friction to be considered in the short term, although there is one exception (9.5.2).

Thus, the current sectoral (ministry, department, statutory body) environmental management responsibilities should, in general, be retained. However, increasing emphasis needs to be placed on integrated resource/environmental management which would see the gradual replacement of individual sectoral responsibility in terms of national environmental policy development and coordination.

Current sectoral responsibilities need to be concisely defined and clarified and the departments held to be entirely responsible and accountable for their management activity. Transparency and accountability should be an important part of the Government's environmental management policy. In order to undertake this, ministries should be expected to establish their own environmental management functions which in some cases might be little more than committees, but in others, specific units or even departments would be required. Such moves are already under way, for example, in Forestry, Health and MPI. An outline of the proposed initial environmental management structure is presented in Chart 5.

In consequence, the envisaged line responsibilities would not be greatly different from the current situation with one important exception. Departments and ministries would not be responsible for developing their own policy which would govern their activities, this would be determined by a proposed Ministry of Planning and Environment, through the Environment Commission. Current areas of overlapping responsibility will need to be identified and eliminated.

The environmental management responsibilities of an expanded Department of Environment would be determined by the Environment Commission like all other Government bodies.

8.3 Proposed Environment Commission

It is recommended that a high level, Government coordinating body be set up and called the Environment Commission.

8.3.1 The Environment Commission in Transition.

It is envisaged that the function of the Environment Commission will evolve during the implementation of the NES. Initially the Environment Commission would:

- be responsible for coordinating implementation of the NES by establishing priorities and procedures;
- provide a forum for discussion and resolution of problems arising from implementation of the NES;
- undertake periodic reviews of NES direction and implementation.

During the transition period composition of the EC might have to be quite large to ensure that it actually provides a sufficiently wide forum for all the appropriate ministries during NES implementation. Initial composition would be the same or similar to the current National Environment Steering Committee.

8.3.2 Prospective Role of the Environment Commission

The normal responsibilities of the Environment Commission would include the following duties:

- formulate national and sectoral environmental policies for sustainable development;
- monitor and maintain oversight on the status of Government's efforts to manage Fiji's environment;
- coordinate Government's activities which directly affect the environment;
- be responsible for the review of EIAs undertaken by Government ministries;
- to settle any disputes within the Government's environmental management framework;
- provide the Government's 'political will' which is required if environmental problems are to be solved.

The EC needs to be comprised of Permanent Secretaries or equivalent. While it would be appropriate for all ministries with some connection with the environment to be represented, this would result in a Commission of over 15 representatives, far too large to function efficiently. The Commission should consist of no more than 8 members with other members being co-opted or invited when there is an appropriate agenda. All the appropriate Ministries should be kept informed of the workings of the Commission and they should be able to apply to present papers to the Commission. The annual work of the EC should be reported in the Ministry /Department of Environment's Annual Report to Parliament.

Recommended composition:

Chair : Permanent Secretary of the Ministry of Planning and Environment

Core members : Permanent Secretaries of:

- . Primary Industries, Forestry & Cooperatives
- . Finance (CPO)
- . Lands and Mineral Resources
- . Infrastructure, Public Utilities & Marine
- . Tourism ; and
- . General Manager, NLTB.

Secretary : Director, Department of the Environment

8.3.3 Secretariat

The EC would certainly not be able to function efficiently without a secretariat. An independent secretariat would be an advantage, but the function could be undertaken by the Department of Environment. Heading the secretariat would be a Deputy Director, a person with considerable environmental, coordinating and organisational skills.

9 INSTITUTIONAL STRENGTHENING FOR THE DEPARTMENT OF THE ENVIRONMENT

9.1 A Ministry of the Environment ?

As noted above (8.1) environmental management requires a distinctive approach because of its multisectoral nature. If the environment is institutionalised as a 'stand alone' sector, then it is most unlikely to affect appropriate environmental management.

Given the current interest in the environment, there will be considerable pressure to create a Ministry of the Environment. This is **only** recommended if it is undertaken with a concurrent reorganisation of the Ministry of Housing and Urban Development, with all planning and policy functions of the Ministry being relocated together with environmental concerns in a **Ministry of Planning and Environment**. The recommended structure is outlined on Chart 4.

If Government chooses not to create a Ministry of Planning and Environment, there would still need to be found a suitable location and structure for the DOE.

The DOE needs to be located in a Ministry which has no development responsibilities, otherwise conflicts of interest will arise which will inevitably be to the detriment of its environmental responsibilities. Thus its present position in the Ministry of Housing and Urban

Development is not suitable as the housing portfolio is very much a 'development activity'. The only two appropriate alternative locations are:

- **Ministry of Finance.** In theory a 'sister' Department to the Central Planning Office is the correct location for an environmental department which is concerned essentially with planning and co-ordination, as well as development and promotion of sustainable development policies and programmes.
- **Prime Minister's Office.** This could be an appropriate location to ensure that the Department did not reflect any sectoral interests other than the protection of the nation's environment.

9.2 Envisaged Functions of a Department of Environment

9.2.1 Environmental Protection Agency ?

It is not envisaged that the DOE should develop into a US-style Environmental Protection Agency, an agency which has complete in-house expertise and capability to undertake environmental management measures itself (for instance: EIAs, pollution monitoring, environmental audits). This would require a major resource allocation and expansion in terms of both qualified personnel and finance. Government simply does not have the ability to commit such resources and it would be unjustifiable to attempt to.

It is recommended that in the public domain these functions continue to be undertaken by the relevant ministries/departments, although increasingly by local authorities (though their capabilities need to be vastly improved) and where necessary the private sector (laboratories, consultants etc. commissioned by ministries).

In all sectors, the principle of 'polluter-pays' should be applied to pollution monitoring. Each potential polluter, be it a ministry (sewage treatment), local authority (municipal dump) or private company should be obliged to monitor themselves at their own expense according to a programme and conditions laid down in the development approval or operating license. However, their TORs and data would be reviewed by the DOE and spot checks would be commissioned by the DOE if necessary and carried out by existing Government or private laboratories as a commercial service.

9.2.2 Policy, Planning and Assessment Unit

Duties of this unit within the DOE would include:

- formulate Government goals and strategies for environmental protection and natural resource management;
- evaluate environmental implications of other major economic and sectoral policies;
- evaluate environmental impacts of existing and proposed projects in both the private and public sector and in conjunction with ministerial environment units (public projects) and developers (private projects) determine environmental assessment requirements;
- review Environmental Impact Assessments.

9.2.3 Standards, Monitoring and Enforcement Unit

Duties of this unit would include:

- formulate and review all environmental standards;
- draw up pollution monitoring programmes for the public and private sectors and local authorities;

- provide technical advice on pollution control methods;
- prepare codes of practice;
- review environmental, specifically pollution data, from the private sector (self-monitoring programmes) and other ministries;
- issue notices for spot checks/audits of suspected pollution monitoring irregularities;
- issue notifications of violations;
- initiate legal action against offenders where appropriate and assist ministries in legal action under their own legislation, if necessary;

9.2.4 Environmental Awareness, Public Information and External Relations Unit

Duties of this unit would include:

- production of public information materials;
- liaison with NGOs;
- liaison with international organisations and agencies;
- monitoring of compliance with international treaties to which Fiji is a signatory;
- compile resource material and establish a reference library;
- obtain copies of all pertinent research undertaken in Fiji by foreign researchers.

9.3 Training and Technical Resources

There is currently a conspicuous lack of environmental planning and technical expertise within the GOF. In the absence of Fijian institutions offering appropriate tertiary qualifications, there needs to be a specific programme of scholarships for training overseas. In addition a programme of workshops on environmental management needs and practices should be instigated.

9.3.1 Recommendation

GOF introduce a specific programme of scholarships for tertiary study abroad of appropriate environmental disciplines.

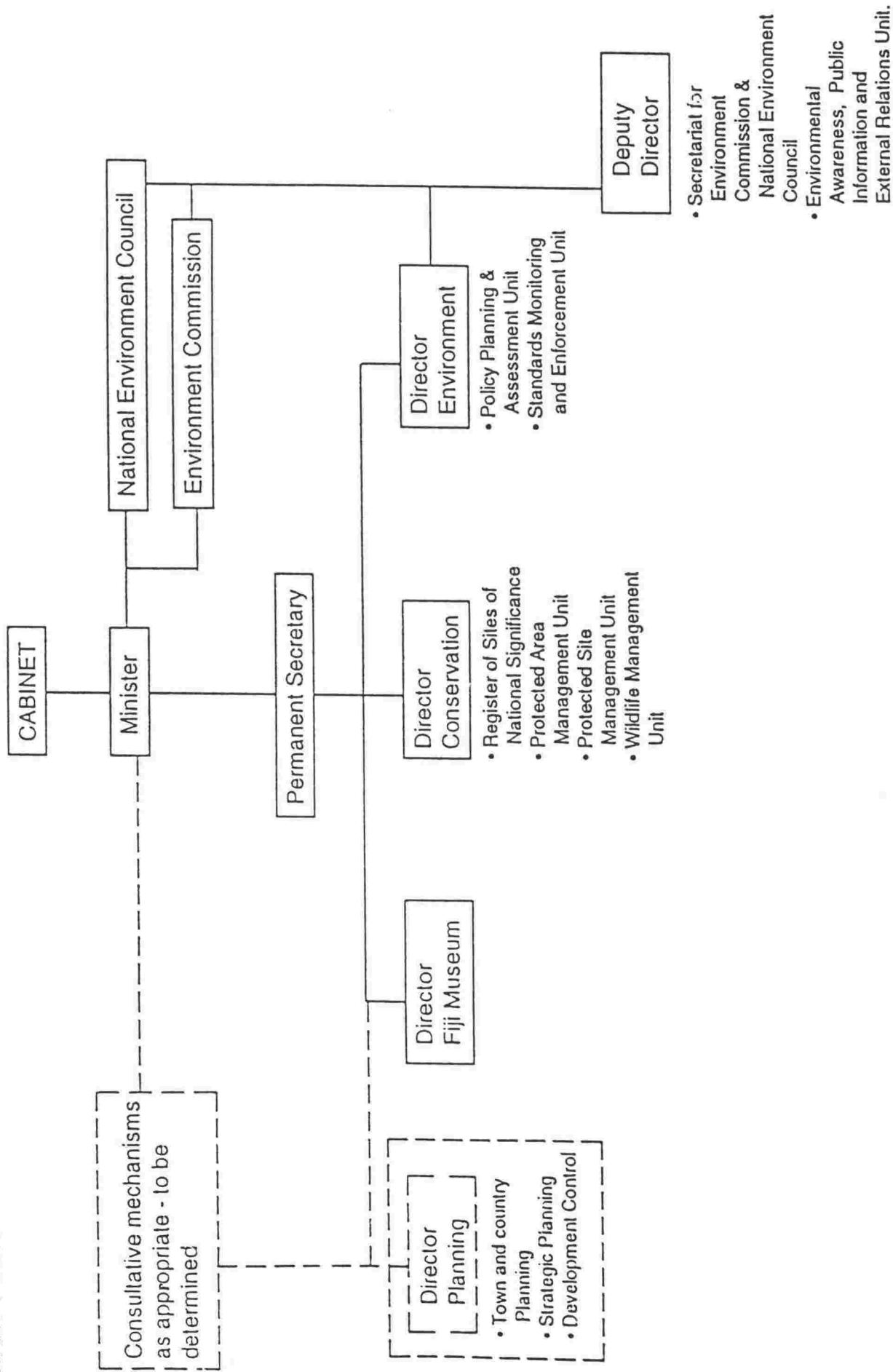
9.4 The Proposed National Environment Council

9.4.1 Concerns

Environmental management impinges on nearly every sector of the public at one level or another. Well developed public consultation processes need to be actively encouraged and should become a statutory obligation. It is the experience elsewhere that if resource users are not actively consulted on management measures which affect them, then they do everything in their power to ignore them, usually effectively.

It is recommended that a National Environment Council (NEC) be set up to advise the Minister for Planning and Environment on the views of the public, private sector interests, NGOs, local authorities etc. Consideration should also be given to expanding the recommended NEC to a National Planning and Environment Council, since planning is a sector directly related to environment (hence the rationale for the dual Ministry) in which public involvement should be more effectively developed than it is at present.

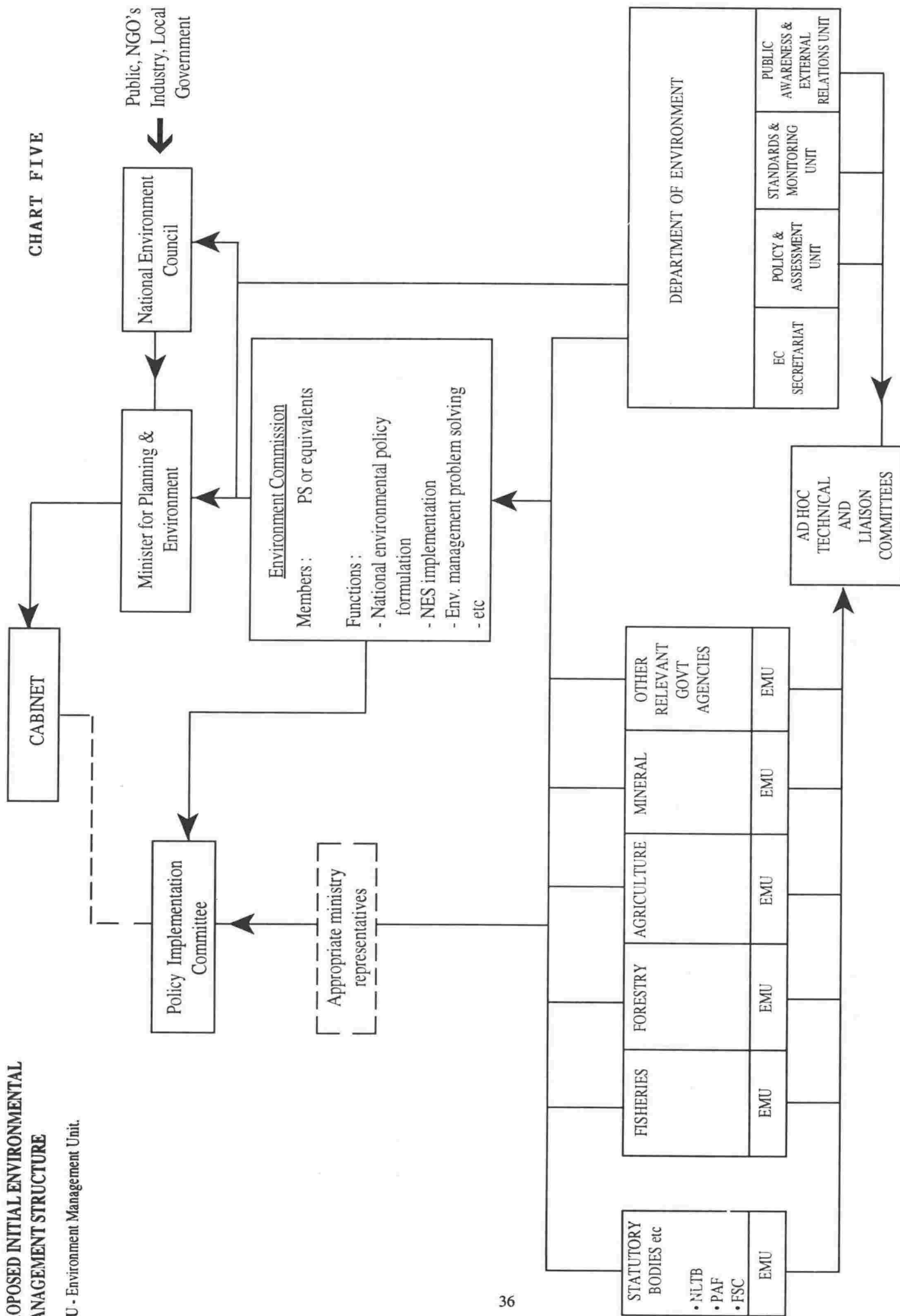
CHART FOUR PROPOSED ORGANISATION OF THE MINISTRY OF PLANNING AND THE ENVIRONMENT



PROPOSED INITIAL ENVIRONMENTAL MANAGEMENT STRUCTURE

EMU - Environment Management Unit.

CHART FIVE



9.4.2 Mode of Operation

The NEC needs legislative support and would meet three or four times a year. A secretariat to support the workings of the NEC is essential and this could be combined in the DOE with the secretariat of the EC (8.3.3).

9.4.3 Composition

Composition of the NEC requires careful consideration. Ideally it should reflect all those groups affected by environmental management measures as well as those with environmental or conservation interests. Government representation should be minimal but the Council should have the power to ask appropriate Government personnel to be present at specific meetings for clarification or advice.

Recommended composition:

Chair: Minister for Planning and Environment

Secretary: Director, Department of Environment

Members could include (listed here for example only):

- . Statutory Authorities-
NLTB, PAF, FEA etc
- . Government-owned companies-
FSC, Fiji Pine, PAFCO etc.
- . Non-Government Organisations-
FCOSS, Soqosoqo Vakamarama, SPACHEE, Consumer Council,
Food & Nutrition, National Trust, National Council of Women etc.
- . Chambers of Commerce and Industry
- . Local Government Representatives
- . University of the South Pacific

9.5 Pollution and Waste Management

9.5.1 Current Status

The lack of control of waste disposal and pollution is currently a serious environmental issue and one that will inevitably increase unless effective measures are introduced.

Of principle concern are:

- . the poor standard of municipal waste management;
- . the lack of any 'hazardous waste' facility in the country;
- . the ability of existing polluters do so without any obvious constraint;
- . the inadequate level of pollution monitoring.

9.5.2 Current Management Responsibility

Waste management and pollution are, in principle, currently controlled by Health Officers attached to Municipal or Rural Authorities under the direction of the Central Board of Health of the Ministry of the Health. There is general dissatisfaction with the effectiveness of this administration in many sectors.

Such an administrative framework was fine at the time it was instigated in colonial days. However, issues of pollution and waste management have intensified and multiplied out of all recognition to those of two or three decades ago. Management of these issues is now highly sophisticated and very firmly in the realm of engineering rather than health as such.

There is no logical reason for the Ministry of Health to be involved in municipal waste management and pollution control other than for public health issues and it is strongly recommended that these become the responsibility of the Ministry of Planning and Environment.

9.5.3 National Waste Management Strategy

Relocating the responsibility for waste management and pollution control in the Ministry of Planning and Environment together with the major legislative requirements for the sector (10.3), should not be undertaken in a piecemeal fashion. A comprehensive National Waste Management Strategy should first be formulated and it is recommended that this be a priority follow-up to the NEMP (see Project 2 - 15.2 for the recommended scope of the Strategy).

Two options could be considered for the administration of pollution control and waste management:

- Local Authorities develop their own management capabilities under the standards/monitoring directions of a unit within the DOE.
- A Waste Management Authority be set up to administer waste disposal and pollution control on a national basis.

9.5.4 Local Authorities Controlling Pollution and Waste Management

In line with Government's aims of minimising its activities and decentralisation, it can be considered appropriate for local authorities to be responsible for pollution control and waste management.

Pollution and waste disposal may be national dilemmas but they are manifested locally, therefore the Local Authorities should be:

- responsible for day to day management; and
- totally accountable to the local community.

If this was the case, there would be no evasion of responsibility through ill-defined Government/local authority responsibilities. Government would set the standards and monitoring programmes, and would conduct spot checks, if necessary.

The weak link here is the variable level of assistance which Government might provide. LAs cannot be expected to develop their capabilities and undertake the management functions in the absence of realistic levels of financial assistance from Government. Levels of assistance would be a clear indication of Government's commitment to the issue.

Government should also facilitate the revenue (rates) earning capacity of the local authorities.

Vitally important would be the need for 'call-in' powers for Government to take over management of local authorities' waste management activities, if required.

9.5.4.1 Duties

In this option Government's duties would be:

- to set design and management standards for municipal waste dumps and hazardous waste facilities;

- in conjunction with local authorities draw up monitoring programmes for municipal waste dumps and hazardous waste facilities;
- spot check the monitoring programmes to be undertaken by local authorities;
- provide adequate levels of financial assistance and facilitate LAs increasing their revenue generating capacity;
- invoke 'call-in' powers if required and then undertake management at the expense of the local authorities.

9.5.4.2 Location of Government Control

Control would be centred in the Standards, Monitoring and Enforcement Unit of the Department of Environment (9.2.3).

9.5.4.3 Feasibility of the Local Authority Option

Given the currently demonstrated waste management abilities of LAs, there will be considerable scepticism as to the feasibility of this option. Nonetheless it is the more appropriate given Government's policies and the local nature of the waste management issue.

9.5.5 Waste Management Authority

The alternative option would be the institution of a statutory Waste Management Authority (WMA). The WMA would have officers stationed in the LAs and who would act in a similar manner to the existing Health Officers.

9.5.5.1 Duties of the Waste Management Authority

The WMA would have the following duties:

- In conjunction with the Local Authorities manage the municipal waste sites and hazardous waste facilities to the standards set by the Department of the Environment.
- Introduce revenue earning and cost-recovery measures (polluter pays principle, recycling etc.) to ensure that waste management and pollution control is adequately financed.

9.5.5.2 Advantages/Disadvantages of a Waste Management Authority

The advantages of a WMA would be:

- single authority responsible for all waste management (including pollution);
- revenue earning capacity;
- no expansion of the civil service.

The disadvantages of a WMA would be:

- waste management is removed from being a local issue;
- revenue earning potential may not be sufficient to cover costs, necessitating continued Government resource allocation which questions the need for a WMA;
- shared responsibility with Local Authorities;

Because Fiji's waste and pollution management is in need of a completely new direction, the feasibility of the WMA should be thoroughly evaluated in a priority project of the NES (Project 2, 15.2).

9.5.5.3 Recommendations

1. Waste management and pollution control become the responsibility of the Ministry of Planning and Environment.

2. A comprehensive National Waste Management Strategy be commissioned to provide a practical plan following consultation and a detailed evaluation of the legislative, administrative, managerial, financial and timeframe issues.

9.5.6 Ports Authority of Fiji

Under its 1990 Act, the Ports Authority of Fiji is currently the sole industrial and urban pollution monitoring agency. PAF's monitoring is confined to designated port areas where the it is attempting to enforce its own standards. This is a remarkable development and deserves every encouragement. However, conceptually it appears quite inappropriate.

PAF is a GOF-owned corporation which is expected to be run at a profit, with a proportion of its profit being returned to Government. To undertake its pollution control mandate, PAF will have to either:

- receive funds from Government to cover its pollution management costs; or
- increase its revenue to cover pollution management costs by charging its customers.

Since PAF's customers (port users) are not the major polluter (although ship's discharges and fuel leakages are a small source of normal pollution in port areas) charging them to raise revenue for pollution management is misguided. It should be expected too, that in times of poor profitability, then revenue and cost considerations in PAF's management will certainly prevail to the detriment of pollution control.

This is not to say that PAF should not undertake the monitoring and/or enforcement, but PAF needs to come under the mantle of national standards and local authority management. Specifically they need a revenue mechanism to undertake the work which is independent of their other operations.

This issue needs an internal Government-PAF review.

9.5.7 Vehicle Emissions

In metropolitan environments, where there are large numbers of vehicles, one of the most serious forms of pollution originates from vehicle emissions. These emissions contain sulphur dioxide, nitrous oxides and a variety of solid dust particles. In addition, in countries such as Fiji where leaded petrol only is used, the lead is absorbed by people through inhalation and through contact with contaminated dust. It also finds its way through wash down and run off into coastal creeks and waters where it accumulates and can be assimilated into the food chain. This is a significant and serious form of pollution.

Fiji's vehicle emission regulation is not enforced and the prevalence of smoky emissions is clearly visible to all who travel or live by Fiji's roads.

9.5.7.1 Recommendations

1. A programme for conversion to unleaded or very low leaded petrol be introduced as soon as possible, with financial inducements being offered for quick compliance.
2. The existing vehicle emission regulation be enforced on an ongoing basis and strengthened by the inclusion of regulatory standards.

10 LEGISLATION FOR EFFECTIVE ENVIRONMENTAL MANAGEMENT

10.1 Priority Requirements

Fiji's environmental legislation has been reviewed in depth (NEMP Report 13, with additions in Report 9).

Priority requirements for effective environmental management are:

- Environmental impact assessment
- Pollution and waste management
- Water and land resource management
- Protected areas, historic sites and wildlife

10.2 Environmental Impact Assessment Legislation

10.2.1 Background

The integration of environmental impact assessment (EIA) into the planning process is now widespread in the developed world and is becoming obligatory in projects funded by multilateral and bilateral development assistance. There is a tendency in some quarters of Government, however, for EIA to be regarded as an unnecessary extra hurdle in the development process and one which is concerned with peripheral interests. If, as has been suggested, that EIA should be termed 'Development Impact Assessment' (IUCN 1991), then its reception may be more favourable.

EIA does not necessarily entail major studies or need to be a lengthy process, as assessment can and should initially be conducted as a brief screening of a project by a qualified person. For many proposals that may be the end of the EIA process.

Contrary to general perception EIAs are rarely either costly or time consuming in relation to the capital cost, life span or financial turnover of development proposals. In contrast clearing up the mess of developments that have failed on environmental grounds through rehabilitation or toxic waste clean ups, is very costly. A recent estimate of F\$30-65 billion will be needed for clean ups in the UK over the next decade. An identified 'contaminated waste site' of less than 2,000 square metres in Walu Bay would currently cost between \$50,000-150,000 to clean up (NEMP Report 27).

10.2.2 Concerns

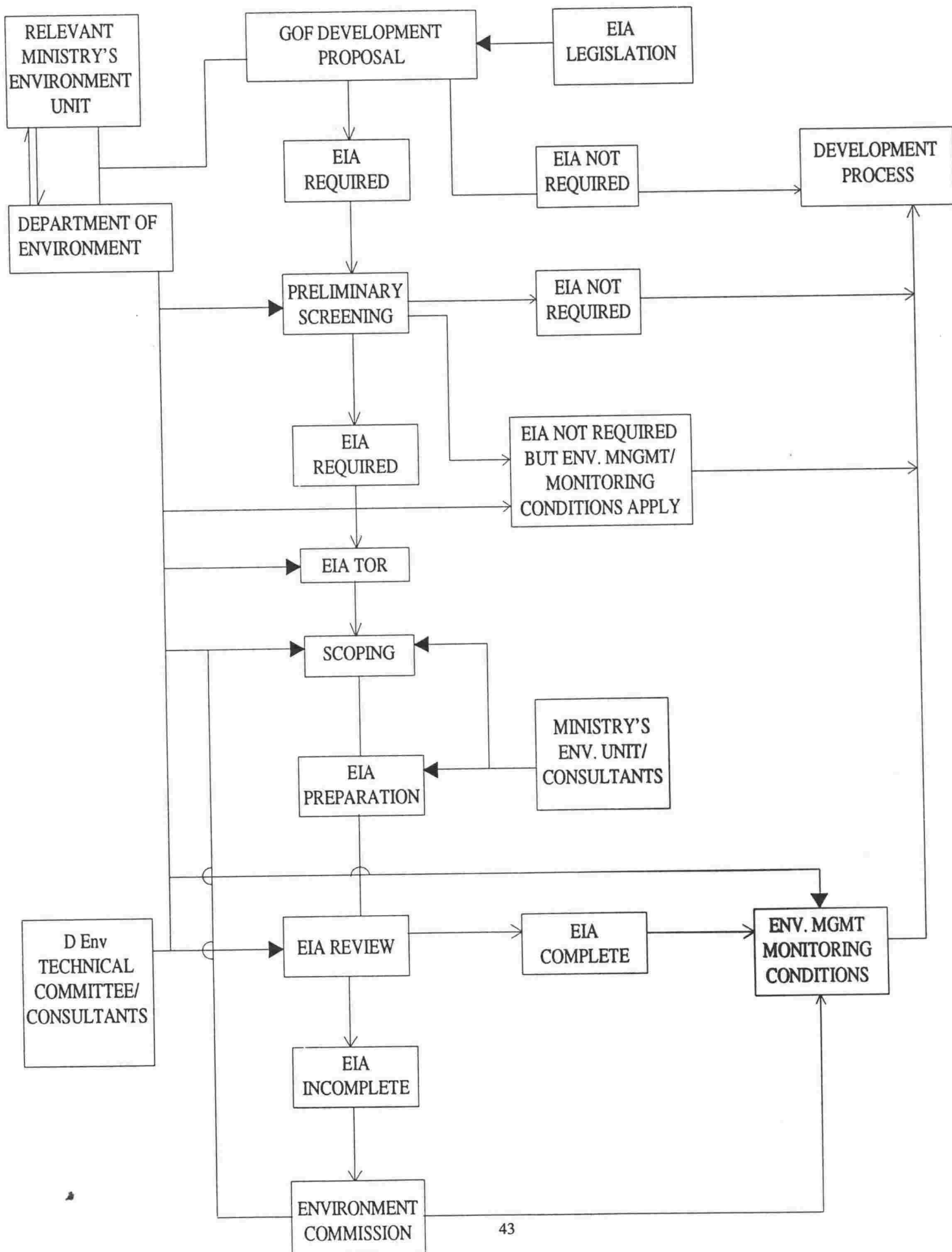
NEMP Reports 7,9 and 13 have examined the need for EIA legislation, highlighting the following points:

- EIAs have no formal legal status, their application is purely discretionary as part of planning permission approval or departmental licensing;
- 'there is no single authority responsible for calling or reviewing EIAs, their current co-ordination through the Environment Unit is purely a function of 'goodwill' between departments and other Government bodies. This is not a sound basis for integrating EIAs into the planning process;
- 'Government developments are not subject to planning or licensing legislation and so are not subject to any EIA requirement, yet Government is the nation's major 'developer'

CHART SEVEN

**SCHEMATIC REPRESENTATION OF PROPOSED
EIA PROCEDURE FOR GOVERNMENT DEVELOPMENTS**

(Note : Process will be defined by the proposed EIA legislation)



(although increasingly EIAs are being done as part of aid requirements);

- 'provisions which 'enable' EIA but do not make it a legal obligation have been found, in the experience of several developed countries, to be ineffective, because assessments become 'isolated' and poorly integrated into the planning process;
- 'key development bodies such as Trade and Investment Board, Fiji Development Bank and NLTB lack policy provision for any form of EIA which has serious implications for development initiatives.

10.2.3 Recommendations

1. Legislation be enacted recognising the key principles of environmental impact assessment. Aspects of the EIA process to be followed should also be incorporated in law.
2. That EIA legislation should also make provision for the establishment of a Department of Environment as the focus of EIA.

10.3 Pollution legislation

10.3.1 Issues and concerns

Pollution is locally severe in Fiji and is emerging as a serious issue. Waste management, especially at the municipal level, is widely regarded as a national dilemma.

There is little 'high risk' industry and manufacturing in Fiji, nonetheless there is at least one 'contaminated site' in existence and perhaps more which are unknown because of the lack of monitoring, (2.12; NEMP Report 27). Nonetheless, preliminary surveys indicate widespread pollution from industrial and manufacturing sources (PAF 1991).

The most serious issue, however, is that polluters are effectively free of any official constraint on their activities. Current legislation is completely inadequate or not used as a result of administrative failure. Only new projects are subject to constraint through development approval conditions but are not then subject to effective monitoring for compliance.

The high cost of cleaning up toxic waste sites is well known, but will not be appreciated until one is undertaken in Fiji, the site at Walu Bay would be a good example to start with. The costs of deteriorating health and living standards are almost impossible to quantify and so are generally ignored. But they are considerable. Although pollution rarely manifests itself in mortality, sickness, school and work absenteeism in the short term, increased cleaning requirements, rapid rusting and maintenance necessitating machinery replacement, poor crop and fruit tree yields and declines in fish and shellfish resources are all costs of pollution, but are never evaluated in this context.

10.3.2 Enforcement

Enforcement of existing anti-pollution legislation is currently a significant problem and is likely to remain so, even if the legislation is improved and responsibilities clarified. Prospective legislation should not rely solely on civil remedies, criminal provisions should be included. Committing company owners or executives to jail for gross pollution offenses is the current trend in pollution legislation worldwide and should be adopted here too. Measures to elicit compliance especially through financial incentives would be equally important.

10.3.3 Polluter Pays

Currently it is the general public and landowners who are paying for pollution either through taxes supporting existing Government spending on pollution monitoring and control - limited though this is or through financing their own health and discomfort costs caused by pollution.

The future costs of clean-up and land rehabilitation (as a result of land degradation through soil erosion) are currently being unwittingly apportioned to future landowners.

Costs for the management and control of all forms of pollution and any necessary rehabilitation works should be borne by the 'polluter'.

NEMP Reports 7,9,13 examine pollution control legislation in detail.

10.3.4 Recommendations

1. Fiji drafts and enacts comprehensive legislation controlling water, soil, air and noise pollution which should be administered by the Department of Environment.
2. Costs for the management and control of all forms of pollution and any necessary rehabilitation should be borne by the 'polluter'.3. The legislation should make provision for standards as regulations promulgated by an Executive.
4. The legislation should contain civil and criminal offence provisions.
5. The use of economic instruments to control pollution should be actively considered.
6. Fiji's obligations as a Contracting Party to the Convention for the Protection of Natural Resources and Environment of the South Pacific Region and related protocols (SPREP Convention) be assessed and legal responsibilities incorporated in waste management and pollution legislation.

10.4 Land and Water Resource Management Legislation

10.4.1 Background

It is clear that effective legislation is required to enable sustainable use of Fiji's land and water resources. Currently, Fiji's freshwater resource is under no effective legislation or management, yet development and exploitation of the resource is proceeding rapidly. Some legislation for land management is provided by the Land Conservation and Improvement Act, nonetheless management of the resource remains deficient. There have been major reports on the legislation prior to the NEMP (Clark 1976,1986; Dixie 1983 and Peach 1988), but these have not resulted in appropriate legislation or management.

10.4.2 Recommendation

The existing reports on the current water and land management legislation should be reviewed with the view of implementing the recommendations if inappropriate.

10.5 Legislation for Protected Areas, Historic Sites and Wildlife

10.5.1 Issues and Concerns

With the exception of archaeological and palaeontological sites, legislation for the protection of natural, cultural and historic sites is either ineffective or absent. There is shared or overlapping responsibility for the protection of natural areas, historic and cultural sites and the absence of clear institutional responsibility is a major factor in its poor state of development.

Legislation for the protection of birds has a technical flaw which means it has little practical use. Mammals, reptiles, amphibia, fish, plant and other groups are either not or inadequately protected either in situ or in respect of import or export. Quarantine provisions are quite well developed but ecological impacts of prospective imports are not sufficiently considered. New legislation for both wildlife and parks and protected areas have been drafted but not enacted, twice in the case of wildlife.

10.5.2 Recommendations

1. Fiji's obligations as a Contracting Party to the Convention on Conservation of Nature (Apia Convention) be assessed and legal responsibilities incorporated in protected area and wildlife legislation.
2. The existing drafted legislation for wildlife, and parks and protected areas should be reviewed.
3. Culturally appropriate legislation needs to be enacted for both protected areas and sites, and for wildlife protection.
4. The legislation should clearly identify the organisations responsible for protection of the various components of national heritage and statutory provision made for them if necessary.

10.6 A Comprehensive Resource Management Act ?

Fiji's environmental and resource management legislation requires major amendments to the majority of Acts to make them effective in the modern context, while other areas require completely new legislation. Introducing appropriate legislation will be a major task and before it is attempted in a piecemeal fashion, GOF should examine whether a comprehensive 'Resource Management Act' as has been recently introduced in New Zealand or Britain's Environmental Protection Act 1990, would be appropriate for Fiji's circumstances.

10.6.1 Recommendation

New Zealand's Resource Management Act, Britain's Environmental Protection Act 1990 and other similar legislation be evaluated in the context of Fiji's requirements for new resource management legislation and extensive amendment to existing legislation.

11 PROTECTING NATURAL AND CULTURAL HERITAGE

11.1 Measures Required for Appropriate Heritage Protection

To improve heritage protection requires:

- adequate identification and documentation of the nation's historical and cultural heritage as well as its biodiversity; and
- management measures to ensure that the heritage is protected, these include: advocacy, management of protected areas and sites, and wildlife issues.

In order to do this the following administrative framework is required:

- the need for a 'dedicated' advocacy institution within Government whose sole mission is to promote conservation and preservation;
- a register of all 'Sites of National Significance', to include natural areas as well as historic and cultural sites;
- the need for a management institution(s) for protected areas, historic and cultural sites, and wildlife protection and import/export (trade).

11.2 Conservation Management

In line with the policy of single agency responsibility, a Department of Conservation (DOC) is proposed as the Government agency responsible for the three components of heritage protection identified above (11.1). The appropriate structure and objectives of the DOC are shown on Chart 4.

The institutional location of the Fiji Museum requires careful further consideration. The Museum has a specific conservation function under the Archaeological and Palaeontological Interest Act which would indicate a position close to the proposed DOC. However, it also has an educative and cultural role which must not be marginalised.

A more gradual establishment of the DOC than the DOE is envisaged, full department status should be attained once the Registration of Sites of National Significance has been completed and a legislative and administrative structure instituted.

11.3 Site and Species Identification

11.3.1 Natural Resources Survey

Following survey and review work by the NEMP, it is concluded that our knowledge of Fiji's terrestrial and marine biodiversity is fragmentary and that many of the natural ecosystems are threatened by a variety of human associated activities. As a matter of urgency a comprehensive natural resources survey should be undertaken (Project 8; 15.8)

11.3.2 Register of Sites of National Significance

The absence of adequate registers of natural, historic and cultural sites of national importance is an issue of major concern. It is proposed that a statutory Register of Sites of National Significance be drawn up. Components of the registration procedure would be:

Identification: a compilation of all existing but scattered knowledge supplemented by detailed fieldwork to draw up a single preliminary register of all sites (natural, historic and cultural).

Registration: based on adequate documentation compiled by experts, sites would be entered for official registration, in a variety of categories, based on their national significance.

Consultation: landowners would receive official notification of the presence of Registered Sites of National Significance on their landholdings.

Protection: efforts would commence to protect, through leasing arrangements or other long term arrangements agreeable to the landowners, the most important sites. The only form of protection for other registered sites would be the necessity for a specific channel of planning permission if any development was proposed which would alter the site's intrinsic character. Provincial authorities would be the appropriate monitoring agency for registered sites.

A Preliminary Register of Natural Sites has been compiled by the NEMP (Appendix 2). Drawing up the Register of Sites of National Significance and preparing administrative procedures is a matter of urgency which is considered a priority NES project (Project 7; 15.7).

11.4 Natural Forest Management

11.4.1 Department of Forestry

The forestry sector was the subject of a wide-ranging review in 1987 (FAO 1988) and the DOF has since responded well to the challenges of environmental management within the sector. However, certain issues require continued attention, in particular promotion of natural forest

management and the hardwood plantation programme.

11.4.2 Natural Forest Management

There is an urgent need to promote long term, natural forest management for multiple use of the forest including sustainable harvesting and protection of biodiversity. Currently DOF is effectively involved only in the control of logging operations and the establishment of plantations, with a recent welcome initiative in nature reserve identification and establishment. However, there are several reasons of national significance (water catchment management, biodiversity protection, landowner income opportunity, etc.) why equal, if not greater emphasis, should be given by DOF to the promotion of natural forest management for sustainable harvesting than for plantations. However, this, with the exception of the Natural Forest Management Pilot Project at Nakavu, is apparently being ignored by the DOF, as is confirmed by the fact that the DOF has no extension division.

This is a serious situation for it leaves a complete void in respect of post-logging management of the natural forest. It is inconceivable that GOF appears to expect landowners to manage this resource without assistance and advice. If this is GOF's intention, the resource has no future, it will inevitably degenerate into a 'degraded, non-commercial bush'. The DOF needs a vibrant extension division which actively advises and assists landowners in natural forest management. This recommendation is not new but the 'new direction' envisaged has not been pursued, (see Box 3).

11.4.2.1 Hardwood Plantations

The hardwood plantation sector has developed with admirable efficiency and is a significant but little recognised national achievement. However, it has developed at the expense of other forestry sectors and this balance needs to be rectified - in particular, natural forest management, logging control and protected areas. The conversion of prime natural forest to monoculture mahogany plantation following logging is no longer warranted given the large area of non-commercial forest and degraded forest available.

Box 3 A 'New Direction' for Forestry Management

"..... The DOF still functions in a scarcely derived form from that which operated 25 years ago,In the intervening period there have been major changes in requirements from the forest resource at both the national and landowner level. Only the plantation sector has developed apace. Management of the native forest has not developed at all, exploitation is effectively demand generated, the resource is being 'mined' the environmental implications of this are serious.

Management of the native forest is in an urgent need of a new direction. Principles of conservation and sustainable use will have to be adopted, if the native forest is not to degenerate into a degraded, non-commercial 'bush'.

The DOF's role in any such new direction will be unenviable, although continuing to be nominally responsible as the management agency they will effectively have little or no medium or long-term control, land-owners will rightly determine the fate of their holdings. In consequence, if the DOF is to maintain any effective sustained management for the resource it will be as an adviser and partner not as a controller....."

(Forestry Sector Development Study. Environmental Scientist's Report. FAO, 1988)

11.4.2.2 Management Responsibility for Reserves

Although it is recommended that the DOC assumes responsibility for protected areas, all the expertise for protected area management currently lies within the Department of Forestry. The DOF is also actively pursuing a policy of nature reserve establishment which needs to be encouraged and enhanced. It is clear that the DOF should remain the managing agent for protected areas until such time as legislative and administrative measures have been enacted and DOC has the capacity to undertake management, at which time the DOF sections and its infrastructure involved in protected area management, should form the nucleus of the DOC capability.

11.4.2.3 Recommendations for Improved Natural Forest Management

1. The National Code of Logging Practice be supported by extensive training for both industry operators and DOF officers.
2. The DOF set up an appropriate framework to advise and assist landowners in natural forest management for long term protection or sustainable yield harvesting.
3. The current Natural Forest Inventory be succeeded by a permanent forest monitoring system with regular (3-5 year) satellite data analysis.
4. Hardwood plantations should no longer be established in natural forest but confined to areas of 'non-commercial' forest or degraded forest.
5. A protected area system be set up based on ecological criteria. Until such time as a Natural Resource Survey has been undertaken on which such identification can be based, priority areas for complete protection include:
 - . Sovi Basin, Viti Levu
 - . Mount Evans Range, Viti Levu
 - . Tomaniivi - Wabu - Nadrau Plateau, Viti Levu (combined reserve)
 - . Waisale Reserve, Vanua Levu (existing proposal)
 - . Vunivia, Vanua Levu (existing proposal)
 - . Tunuloa Silktail Reserve, Vanua Levu (existing proposal)
 - . Taveuni Forest Reserve, Taveuni (existing proposal)
 - . Monu, Monuriki Islands, Mamanuca Group (existing proposal)
 - . As yet unidentified reserves on Ovalau and Kadavu
 - . As yet unidentified reserves of dryland palaeotropic seasonal vegetation (Viti Levu, and possibly Vanua Levu)

11.5 Wildlife Issues

GOF can ill afford to continue its current passive approach to wildlife issues (2.2.6/7;5.3.4). Such issues are likely to increase significantly and they have a very high international profile. Currently there is no regulation of the use of Fiji's biological resources by overseas researchers to ensure a fair return is made to Fiji on any commercial values discovered.

There is a need for appropriate legislation (10.5) and a single agency, the DOC, should have responsibility for wildlife issues. Until such time as the DOC can assume this role (which should await appropriate legislation), MPI should upgrade its management role under existing legislation.

Box 4 Significance of the Long-Legged Warbler

“.....The long-legged warbler has not been seen on Viti Levu this century. Is it extinct? We do not know, but surely we should. For is it not a small but significant part of our natural heritage? A bird that is found nowhere else in the world, so it is our heritage alone and our responsibility alone to ensure that it survives.

Some people will argue that it is insignificant and if it disappears then nobody should worry. I strongly disagree, if we do not attempt to protect our heritage, then we will soon feel it unimportant to protect our culture. Protecting our heritage is an integral part of protecting our national identity.”

Hon. Joeli Kalou, Minister of State for the Environment (16/8/92)

Total Trade Bans (all forms of sale, purchase or exchange), should be introduced as soon as possible for known endangered or threatened species (subsistence and cultural uses would be excluded). Existing legislation which adequately covers certain species needs to be enforced, notably native birds and especially in respect of parrots. At present species requiring total trade bans are:

- all species of turtle found in Fiji waters (existing legislation with respect of bans during the nesting season needs to be retained, irrespective of subsistence and cultural uses)
- Sandalwood Santalum yasi
- Sago palm Metroxylon sago
- Coconut crab Birgus latro
- Iguanas Brachylophus fasciatus, B. vitiensis
- Snakes Candoia bibronii, Ogmodon vitianus
- Fruit Bats Pteropus tonganus, P.samoensis, Pterolopax acrodonta Notopteris macdonaldii
- Shells - various, needs expert advice (including those protected under existing legislation)

Recommendations

1. Existing quarantine screening be upgraded to include ecological values in respect of potential introduced species.
2. Wildlife values be elevated within the public community through publication of appropriate material and awareness campaigns. This could be initiated by the official adoption of a national bird, fish and plant.
3. Total trade bans be placed on known endangered and threatened species.
4. Fiji become a signatory of CITES, the Convention on International Trade in Endangered Species.

11.6 National Trust for Fiji

11.6.1 Efficacy of the National Trust for Fiji

A recent evaluation of the National Trust for Fiji (NEMP Report 14) concluded:

"Major decisions need to be made by both the Trust Council and the Government to make the National Trust for Fiji an efficient and effective body"

The general failure of the Trust to significantly advance the conservation and preservation of Fiji's heritage, since it was instituted 21 years ago, are self-evident and they can be ascribed to three causes:

- minor legislative problems with the Trust Act;
- lack of Government support ; and
- administrative failure on the part of the Trust.

In the past the GOF has tended to use the National Trust as its principal advocate for conservation and environment issues but has not provided sufficient resources and direction for it to be really effective in this role. However, environmental management in Fiji is progressing at a relatively rapid rate and with a National Environment Strategy in place, it should do so at an even faster pace. At this time the general advocacy role of the National Trust will need to be superceded by specialist expertise in the various ministries and departments. Thus even in this single area of relative success, the National Trust's advocacy role will, in the near future, be effectively redundant.

The need for major changes at the National Trust for Fiji is a matter of urgency. The Trust should act as a public watchdog and be free of actually exercising protective powers. These powers need to be in a Government body as it will be affecting private property rights and spending public money - this would be the proposed DOC.

11.6.2 Options for Reform of the National Trust for Fiji

Three options for reform of the Trust are:

1. Divesting the National Trust of all its natural heritage and environmental responsibilities to concentrate solely on the built environment.
2. As above and merging the National Trust with the Fiji Museum to strengthen cultural heritage conservation and preservation in one institution.
3. Making the National Trust an independent body (an NGO) responsible for its own affairs and divesting it of all its 'Government' responsibilities. It should then be registered as a 'Charity' and receive Government grants as appropriate.

11.6.3 Reorganisation of the National Trust for Fiji.

It is recommended that the National Trust for Fiji become an NGO, eligible for charity status, without statutory 'Government' responsibilities. These responsibilities in the Trust's Act would be transferred to the Department of Conservation. The Trust would then be free to raise its own funds, a vital function for an organisation in this field, without constraints imposed by the GOF's Aid Co-ordinating Committee. The Trust would then have to become an efficient organisation to survive. It should be pointed out that National Trust type agencies in many countries worldwide operate very successfully on this basis.

It is envisaged that Government's support for the Trust would be withdrawn slowly during a change-over period, but eventually its support would be on a case by case basis in response to proposals from the Trust.

In the existing environment of international development assistance for biodiversity and heritage protection, an efficient and dedicated NGO, coupled with a national charitable status, the Trust should have no problem in raising funds.

Existing national legacies (Borrón House, Yadua Taba, Garrick Memorial Park, Sigatoka Sand Dunes etc.) currently in the care of the Trust would become the legal responsibility of DOC, but their management could be undertaken by the Trust or any other appropriate organisation on a commercial basis.

11.6.4 Recommendation

Reorganise the National Trust for Fiji so as to create:

- an independent body (an NGO) responsible for its own affairs and run by its members;
- an organisation with no 'Government' responsibilities;
- an organisation which can be registered as a charity;
- an organisation which receives Government grants based on management performance.

11.6.5 Sigatoka Sand Dunes National Park

The Sigatoka Sand Dunes has been gazetted as a National Park following a Cabinet decision and the responsibility for its management allotted to the National Trust. However, the Trust has not been provided with the resources (either financial or manpower) to undertake this mandate in any effective form.

The Sigatoka Sand Dunes NP is of national significance for three reasons:

- its geomorphology and ecology - sand dune ecosystems are very rare in the tropical Pacific;
- tourist potential, the Sand Dunes are easily accessible and strategically located on the coral coast if well managed the site would be an important asset to the tourist industry; and
- the Sand Dunes have an archaeological site of international significance, a site which is one of the most important in the Pacific and of immense significance to an understanding of Fiji's early inhabitants.

Yet the Sigatoka Sand Dunes NP is currently under grave threat both from human-induced impacts and natural causes. These threats are well beyond the management capabilities of the Trust and an alternative Government initiative is required to address them.

11.6.5.1 Recommendation

GOF review the status and management of the Sigatoka Sand Dunes National Park with a view to providing effective conservation for its internationally significant archaeological site together with the site's ecological and geomorphological values while also developing its tourism potential.

12 LAND USE PLANNING

12.1 Physical Planning

12.1.1 National Landuse Plan

An authoritative national landuse plan is a priority requirement for sustainable development because it would greatly facilitate wise resource allocation. The larger islands of Fiji are sufficiently small and the relevant data bases sufficiently good to enable an authoritative land use plan to be drawn up to a very high standard without major expense and technical requirement.

Any landuse plan to be fully effective will require landowner consultation and consensus agreement. This will be a more lengthy and difficult process than the technical preparation of the plan. However, the use of such a plan does not hinge on immediate landowner acceptance, it would always be an important strategic planning document. With the landowner agreement being a medium term objective.

Integrated land use/development planning needs to be implemented at the regional and district levels, as well as the national level. Such a plan is proposed for Taveuni (Project 10 15.10). In addition, NEMP has prepared framework environmental management plans for Taveuni Island, the Mamanuca Group and Vunivia catchment, Macuata.

12.1.2 Urban Environment

Migration of people from rural and outlying island areas to urban centres has already resulted in significant environmental and social problems in some urban and periurban locations. The trend is likely to accelerate placing further burdens on existing infrastructure and stimulating an increasing demand for land, jobs and affordable housing. Degradation of the urban environment is likely to increase markedly unless the urbanisation trend is recognised as a key component of economic and social life in Fiji.

12.1.3 Coastal Zone Management Plans

The coastal zone is of vital importance. It brings together an unique assemblage of resources such as reefs, mangroves, water, agriculture, seafood and high quality landscapes. Yet it is also the location of every significant town in Fiji, most villages and the vast majority of the population together with industry and commerce. It is ecologically complex and sensitive and can be highly susceptible to natural hazards and human violation. Great care needs to be taken to develop its potential without destroying its assets by over exploitation, overuse or pollution.

The coastal zone is clearly an area which requires careful development and authoritative management plans would clearly assist in appropriate development. Currently a variety of management plans, zoning plans etc. are in existence for certain coastal areas, these include:

- Mangrove Management Plan - Phases 1 & 2
- Urban and Development Zoning plans
- GOF tourism development plans
- NLTB tourism development plans

There should be an initiative to combine these to form a holistic coastal zone management plan and develop it firstly for all priority areas, and then extending to the whole country. There is no doubt that this would be most appropriately undertaken in GIS format.

One of the most pressing reasons for having a single coastal zone management plan initiative

is the need to centralise strategic planning for the effects of a predicted sea-level rise as a result of global warming.

12.2 Climate Change

The implications of global warming for Fiji are severe but as yet cannot be determined with any degree of accuracy. However, it is now an established fact that global warming is occurring and Fiji can expect effects from sea-level rise and climate change.

The appropriate response to both of these at the present time is to:

1. Maintain a watching brief on relevant international activities and participate where appropriate.
2. Initiate coastal zone management plans which pay specific attention to the consequences of possible sea level rise.
3. Initiate strategic long term planning for resources which may be affected by climate change. Of specific importance are the sugar cane cultivation and plantation establishment in the dry zones of Viti Levu and Vanua Levu.

Box 5 Desertification in Fiji ?

Rainfall in islands with south-east rain bearing winds is likely to remain unchanged - even increase. But major circulation patterns are likely to change more rapidly.

Islands with present dry seasons are likely to be affected by desertification by the year 2100. This includes western Viti Levu where storm erosion is likely to increase due to increased exposure of the soil surface; shorter wet season, increased shoreline retreat.

(ASPEI 1990)

13 LAND DEGRADATION

13.1 The Issue

13.1.1 Scarcity of Arable Land.

The loss of agricultural productivity through land degradation is an issue of major concern. The reasoning is quite simple, first class arable land is relatively scarce (16-20% of total land area, depending on classification) and it is effectively completely utilised. Thus all current and future agricultural expansion will be into marginal hill lands which constitute 35-60% of land area, this is the agricultural resource base of the future. Agriculture is considered technically feasible here but only if agricultural practices are accompanied by soil conservation measures. The use of such measures are effectively absent today.

In the next decades, agriculture will remain the mainstay of the majority of Fiji's population but the resource base will be shifting at an increasing rate into the marginal hill lands. Current agricultural development policies will need to be rethought particularly with respect to ecological conditions and their constraints on sustainable productivity.

13.1.2 Time Frame

Soil conservation programmes in developing countries have had very limited success, but there is now a growing body of knowledge and experience indicating favourable methods of approach. In the past, quick-fix strategies with large-scale and heavy-handed government intervention even with considerable financial and expert backing have rarely achieved sustainable results. Yet it is this top-down approach which is administratively easy and which can be more readily justified economically which is the favoured and conventional approach amongst international donors.

The failure of such approaches has demonstrated the need for much more emphasis on the process of embedding new ideas, attitudes and organisational structures at the local level. There is need to tackle local problems and to build on existing knowledge, traditions and experiences and to proceed only with the support of communities.

It seems likely that the successful approach will be a slow one and any quick-fix solution is likely to be illusory. For this reason alone, there is great urgency for the land-degradation issue to be addressed positively before widescale and irreparable damage is done to the marginal hill lands.

13.1.3 Sugar Cane

Sugar cane cultivation is responsible for the most widespread land degradation. The current cultivation of sugar cane on the marginal hill lands is clearly an unsustainable practice. On Viti Levu alone, nearly 15,000 ha of sugar cane have already been identified as requiring urgent soil conservation work and a further 6,500 ha should be retired from sugar cane and put to a less erosive form of land use.

In view of this it is ironic that Fiji is internationally famous for the development of erosion control in sugar cane through contour planting, using vetiver grass. Today this practice has effectively ceased, though the cane perimeter has expanded to include marginal lands (formerly considered too steep for cane cultivation) where the use of vetiver grass or its equivalent, is essential. Unsustainable cane cultivation practices are responsible for valuable agricultural land annually going out of production.

13.1.4 Ginger Industry

Fiji's nationally acclaimed ginger industry is based largely on unsustainable agricultural practices. Current measurements of the value of the industry do not include the environmental costs which considerably reduce the actual benefits that accrue to the nation and landowners (Box 6).

Currently the area of ginger grown is small and the soil lost to river sediment load from ginger cultivation is considered relatively low compared to the high background levels. The significance of the industry from the environmental perspective is not focused on the magnitude of damage at present, but the fact that the unsustainable practices are a very bad precedent for an agricultural industry in the marginal hill lands and one which appears to be receiving official encouragement. Encouraging unsustainable agricultural practices for their short term economic and social benefits will only result in widespread irreparable damage and major financial costs in the medium to longterm.

13.1.5 Future Generations

The ginger and especially the cane industries are currently responsible for significant areas of land going out of agricultural production. This loss of 'natural capital' has major implications for future generations of landowners for their inheritance is currently being 'eroded away'.

The importance of consideration for future generations has been noted above and is regarded as central to the concept of sustainable development (4.2.2). However, there is another important reason why GOF should seriously address the land degradation issue, in particular the possible repercussions from the emerging power of international 'green' lobbies.

13.1.6 The Green Movement

The sugar industry is reliant on a favourable EEC, and to a lesser extent United States, price formulation and quota (Box 7). If world market prices alone prevailed then cane farmers on marginal hill lands, those responsible for the majority of land degradation, would probably be forced out of production. If the US or European green lobby focus their attention (which is considered inevitable sooner or later) on the fact that 'assistance' is inadvertently encouraging land degradation, there could be radical and rapid reversals in assistance policy. Targeting aid is a soft option for domestic green movements and it is just these types of issues are being highlighted after the June 1992

UN Conference on Environment and Development .

Fiji's ginger industry is also very vulnerable to green bans because of its narrow market base. Two countries, USA and Canada, both of which have very influential green movements, import 82% of Fiji's ginger.

In respect of ginger and sugar, the most appropriate GOF response to possible green bans is to anticipate and forestall them. By putting in place the necessary institutional and policy changes and then applying to the relevant donors for assistance in implementation, Fiji is likely to win on both counts.

**Box 6 The environmental costs of the ginger industry
(data from NEMP Report 14)**

On site costs:

Loss of soil resource expressed as a capital loss.

Average erosion rate 1-300 t/ha/yr on 271 ha ginger (1990)

27,100 - 81,300 tonnes of soil is lost each year by ginger growers

Soil capital loss \$7.57-\$22.72/t (15-5% discount rates respectively)

Annual capital loss of \$410,294-\$1,231,424 (15-5% discount rate respectively) for 200t/ha erosion rate.

This figure **does not** include the cost of **restoring soil resources** which is effectively impossible. It represents only the **lost opportunity cost** - the value of net returns foregone through lost production.

Off site costs:

- Dredging has cost the nation over \$16 million between 1986-91. A significant proportion of the sediment can be attributed to the ginger industry
- Each tonne of sediment costs \$3.50 to remove - at 200t/ha erosion rate = **\$189,700** each year is attributable to the ginger growers, it could be more.

This figure **does not** include a value for impacts on fisheries and tourism (sedimentation of reefs and mangroves); navigational costs and flood risks.

Box 7 The Basis of Fiji's Sugar Industry

".....The sugar industry has survived through 'preferential arrangements' that pay us a reasonable and remunerative return. Without our shipments to the European Community under The Lome (Convention), our sugar industry would not survive in its current form at all..... the industry was underpinned by the Lome Convention protocol and to a lesser extent by access to the United States market. Both these markets provide us with a return that is currently around three times those received from the free market...."

Mr John May, Fiji Sugar Marketing Ltd. quoted in 'Fiji Times' 24/7/92

13.2 Current Control of Land Degradation

Land degradation in Fiji has been an issue of concern in certain quarters for at least half a century. In recent years there have been numerous studies and calls for action, yet while every involved agency appears to agree with the seriousness of the issue, there is no effective management action or initiative. **Land degradation is seen as ‘everybody’s problem and therefore nobody’s responsibility’.**

Unsustainable agricultural practices resulting in soil degradation are intricately connected with the social and economic conditions prevailing in rural areas. As such the issue is very much socio-political in nature rather than a purely physical problem (13.5.4). This is widely known and accepted, but far from crystallising responsibilities or stimulating new initiatives, it appears to have promoted inaction in the vague hope that ‘Government will act’. Government can only act as a facilitator, one component of which is to ensure that the numerous players in the issue have clearly defined responsibilities which they pursue diligently.

It is widely regarded that responsibility for the control of land degradation lies with the Land Conservation Board under the chair of MPI with legislative backing provided by the Land Conservation & Improvement Act. However, the LCB has clearly failed to address the issue with any effective action, even though there have been repeated calls to bolster the LCB it still meets no more than 2 or 3 times a year and there has not been a gazetted soil conservation officer for many years. The LCB’s ineffectiveness can be attributed not to the structure of the LCB or its legislation, but to its lack of resources both technical and financial as a result of administrative failure and the lack of political will.

Although the LCB can be regarded as the Government’s response to the issue, the Native Land Trust Board has the responsibility to safeguard the interests’ of landowners, both present and future, by seriously addressing the issue.

13.3 Native Land Trust Board.

13.3.1 Responsibilities

In recent years the NLTB has increasingly come to act in a business-like manner as a development agency for the advancement of Fijian landowners and there are many important and worthwhile reasons why it has evolved in this manner. However, the NLTB is primarily the custodian of native land and its sole administrative agent, and as such it appears quite clear that it should assume responsibility for land management by its lessees. Current lessees should not be able to maximise their short term returns at the expense of future generations of leaseholders or landowners. Lease conditions to prevent soil erosion and ensure good husbandry are explicitly stipulated in NLTB’s Act.

Currently the NLTB is administratively incapable of enforcing these lease conditions and relies on other agencies to confirm evidence of agricultural malpractice, before it will attempt action. This is clearly unsatisfactory from both the landowner and national perspective, NLTB should accept the responsibility inherent in its Act and develop a full in-house capability to discharge its responsibilities in respect of the Act. Primary responsibility does not indicate a sole management role, other agencies will clearly have major management roles, but the primary responsibility is clearly that of the NLTB, and it needs to be pro-active in ensuring that there is effective cross-coordination between agencies in the management of land degradation on its estate.

To promote the sustainable use of native land, which is where the majority of land degradation is currently occurring and which includes, with minimal exception, all the vulnerable marginal

lands, the NLTB needs to continually assess its mandate as the custodian of land resources. It would appear appropriate from the first principles of communal land tenure, that **NLTB should be Fiji's leader in sustainable resource management.**

13.3.2 NLTB's Environment Charter

In recent years the NLTB has moved to appreciate that good estate management requires sound environmental management and thus NLTB's Environment Charter which is currently being compiled on its own initiative is a policy document of major significance. It needs to be very clearly drawn up and extend to all parts of its estate (soil conservation, forest conservation, pollution etc.). The policy needs to be transparent and explicit. Considerable resources will need to be made available for its implementation and explanation of its purpose to landowners.

A significant shift in policy direction, such as that called for in the drawing up and implementation of the Environment Charter, for a large organisation such as NLTB is unlikely to be accomplished as the result of an internal review. NLTB should consider procuring consultant assistance to prepare a proposed policy and implementation strategy which should then be reviewed and adopted as appropriate by NLTB. Such a process would ensure credibility of the Charter and it is likely that international assistance would be available for its preparation in this manner.

13.3.3 Inducements for Conserving Soil Resources

Financial inducements for soil conservation practices need to be examined by NLTB. While direct grants are simplest to administer and generally produce the quickest results, they are rarely sustainable. A promising incentive would be a rent rebate scheme. For example, farmers who undertook soil conservation measures would be available for a lower rental rate or would not have the rent increased after the periodic rental assessment.

The GOF could signal the importance of this issue to the NLTB, by immediately considering such an initiative for State Land leases.

13.3.4 Recommendations

1. NLTB's Environment Charter be a credible and comprehensive policy document extending to all environmental components of its estate.
2. The NLTB should examine the various types of lease currently being used to determine whether changes to lease conditions could increase commitment to soil conservation and good husbandry.

13.4 Landowners and Landusers

While NLTB administers native land on behalf of the landowners, nobody underestimates the role landowners play in land degradation itself and in the ability of NLTB to act on their behalf. Two points emerge, firstly landowners need to become aware that land use has limits and that its value depends on wise usage, secondly that NLTB is far more likely to pursue their mandate in respect of lessees practicing unsustainable soil practices, if landowners are aware of the dangers and have forums to inform NLTB of their concerns. A major educative initiative amongst landowners is urgently required.

13.4.1 Recommendation

A nationwide educative initiative on soil conservation amongst landowners is urgently required be developed and implemented as a matter of urgency.

13.5 Role of the Department of Agriculture

13.5.1 Responsibilities

While the primary responsibility for soil degradation on native land should be clearly vested in the NLTB, the DOA with its extensive research and extension sections should have well defined management responsibilities in respect of soil conservation. In particular research into the most appropriate methods of sustained agricultural practices on marginal lands (most appropriate being a combination of technically appropriate factors and acceptability to farmers), and extension.

With the exception of the MPI-GTZ agroforestry initiative, MPI appears to have made little effort to generate and introduce sustainable techniques adapted to the specific ecological constraints of Fiji's marginal lands and to create conditions that make the adoption of sustainable alternatives attractive to farmers. As noted in 13.1.1, the marginal hill lands are the agricultural resource base of the future. There is a clear need for MPI to significantly increase its research and extension efforts in this sector. Included in this should be longterm research on current agricultural practices on hill lands which are needed to determine whether or not such practices are sustainable.

13.5.1.1 Recommendation

MPI significantly increase its research into agricultural practices suitable for marginal hill lands and, more importantly, the adoption of sustainable alternatives which are attractive to farmers.

13.5.2 Land Conservation Board

Currently the Land Conservation Board provides a forum but no effective role in managing the land degradation issue. It is the correct 'horizontal structure' which should result in effective co-ordination of water catchment management. While it is clear that overall there is insufficient definition of responsibilities amongst the agencies involved, its failure may be because it is controlled by a line ministry (MPI) with a vested short term interest (increasing agricultural production) in it being ineffective. Alternatively it could be short of resources, either technical or support.

13.5.2.1 Options for Making the Land Conservation Board an Effective Agency

Whether the Land Conservation Board under MPI can ever be successful is debatable. However it is essential that either it becomes an effective body or is confirmed as a failure and its responsibilities moved elsewhere. There have been several detailed studies in the last decade outlining how the LCB could be transformed into an effective agency. In line with certain of these recommendations MPI is currently planning to upgrade the LCB in a move into its Land Use Planning Section. Such a move is an appropriate step but if the DOA is to meaningfully address the issue, there needs to be a major change in apparent ministerial policy direction, resource allocation and political will.

Most appropriately, the new LCB secretariat could form the core of MPI's environmental management capability (8.2). Legislative and administrative changes may be required following a review of recent studies (Pulea 1992; J.Clark 1989; Guivalu 1989; S.Clark 1986; Nelson 1986; Bienefeld 1984).

An alternative option would be to reconstitute the LCB under the proposed Minister of Planning and Environment. Because of the apparent conflict of ministerial interest raised above (13.5.2), 2 the Minister for Planning and Environment rather than the Minister MPI, could be expected to be more likely to provide the political will which is an essential ingredient

for an effective LCB but it is doubtful if in the near future the proposed Ministry would have the resources required to undertake the task,

Hence it is recommended that the LCB remains with MPI to see if current changes make it an effective agency.

13.5.5.2 Recommendation

1. MPI revitalise the Land Conservation Board into an effective agency by the provision of sufficient resources both technical and financial, together with legislative and administrative changes found to be appropriate following a review of the numerous recent studies.

13.5.3 Role of Fiji Sugar Corporation

The Fiji Sugar Corporation (FSC) is by far the most significant agent of land degradation in Fiji today. It has assumed this through its encouragement of sugar cane cultivation in the marginal hill lands, without enforcing contract provisions which ostensibly limit cane planting to slopes less than 90. Enforcing these provisions or, preferably, linking them to mandatory introduction of soil conservation measures would be by far the quickest method of reducing the overall rate of current soil erosion in Fiji.

The FSC together with other Government owned companies (section 7) requires an explicit environmental policy, a policy which specifically addresses the issue of soil degradation and its extension and research divisions need the resources to carry out a revised environmental mandate.

Because of the manner in which the sugar industry is to a large degree dependent on the EEC's quota and price formulation and the vulnerability of this to change instigated by the green movement (13.1.6), the future of the industry could be dependent on how it confronts the land degradation issue.

13.5.3.1 'User or Polluter Pays'

Soil erosion leading to increased sedimentation in rivers and land degradation is a form of pollution and, as recommended by the NES (10.3.3-4), the concept of 'polluter pays' should be followed. This clearly indicates that the cane contract holders or sugar industry should bear the financial costs of soil conservation measures for land planted to cane.

Currently, landowners stand to bear the principal financial losses attributable to land degradation because of reduced productivity and expected returns in the future, while the nation pays the additional costs of off-site environmental damage related to increased sedimentation in the rivers (and nearshore coastal waters).

13.5.3.2 Recommendation

The Fiji Sugar Corporation examine its contractual arrangements and administrative procedures with farmers to determine whether changes could reduce land degradation.

13.6 Land Degradation: Not Solely an Environmental Issue

It needs to be stressed that land degradation is not solely an environmental issue and thus any measures which address it purely as an environmental issue are doomed to failure. This has been the cause of many expensive failures in erosion control and watershed management the world over.

Land degradation is often merely the symptom, the manifestation, of underlying socio-

political problems and this is certainly the case in Fiji, especially in the sugar cane industry, but it is also prevalent in the ginger industry as well. Issues of land tenure, price formulation and lack of services are vital issues for the majority of Fiji's commercial farmers.

It is the Government structure which bears primary responsibility for addressing these concerns, either directly (through its policies and programmes) or indirectly (by guiding and facilitating other agencies). Government will need to assume a positive role as a facilitator, coordinator and integrator of local initiative - rather than acting as a prescriber and controller

It is human nature and widely appreciated that if a lessee does not have long term security of tenure, he will not of his own accord practice sustainable agriculture, he will 'mine' the soil resource for its short term benefits. Thus if short term leases are to be normal, then attaining sustainable agricultural practices on leased land will need specific attention through a combination of enforcement and financial inducement.

It is recognised that there are social costs to be paid if the land degradation issue is to be addressed seriously, but equally certain is that the costs will only increase and in line with population growth the increase is likely to be exponential in form. Thus there is an urgency to confront the issue before it becomes too widespread.

13.6.1 Recommendation

Environmental issues pertaining to sustainable practices and the maintenance of the capacity of land to be productive in the long term, should be prominent in the review of the forthcoming ALTA leases, as well as in the development of Government's overall national environmental policies.

PART V IMPLEMENTATION

14 IMPLEMENTING THE NATIONAL ENVIRONMENT STRATEGY

14.1 Introduction

Implementation of the National Environment Strategy will need considerable resources and determination on the part of the Government of Fiji. It will require new positions, new institutions, new laws and, more important than all of these, a changed focus on the priorities of national development, a gradual shift from immediate economic-only goals to a longer term, more conservative perspective on development and resource utilisation.

There is little doubt that the NES will be greeted with much rhetoric and no little publicity. But Fiji's commitment to environmental concerns and sustainable development will be measured solely by action. If the NES leads merely to more rhetoric it will surely fail.

Fiji is fortunate, however, in that international assistance from donor and lending institutions could play a major positive role in assisting with implementation. Fiji's needs are sufficiently severe to attract attention, and small enough for directed assistance to be effective in the short term. GOF will probably find a plethora of potential assistance, what it needs is a very clear idea of what it actually requires and the ability to fully direct all assistance when it is provided and to ensure that it is used for institutional and capability strengthening. Projects which will require continuously high levels of technical or financial resources should be avoided.

14.2 International Assistance - a 'kick-start' for the NES

The possibility of 'kick-starting' Fiji's NES with international assistance should be an integral part of the Strategy. International commitments to environmental management have been heightened by the UNCED 'Earth Summit'. While the creation of the Global Environment Facility, the strengthening of SPREP and the drawing up of Pacific programmes by international agencies such as IUCN and WWF, all point to significant possibilities for financial and technical assistance for implementing the NES.

More specifically, Fiji is one of six countries in the Asia/Pacific region selected for initial support by UNDP under the **Capacity 21** programme which UNDP has initiated to implement the **Agenda 21** mandate of UNCED.

The following sections on implementing the NES have been prepared to indicate where international assistance could be most appropriately used in the short term. Project outlines have been prepared to encompass these areas, to assist the GOF in specifying its requirements in a manner which is easily assimilated by international donors and agencies. The listing is preliminary and does not indicate that assistance in other sectors or components of the Strategy is not required.

14.3 Government of Fiji Contributions

It will be necessary for the GOF to initiate action on the NES in a positive and conspicuous manner. At the international level GOF is unlikely to attract assistance in any form other than

rhetoric, if it does not first show its own commitment to the NES. While at the national level, the widespread scepticism of Government's ability to convert rhetoric into action will be confirmed and the public will not respond.

Commitment can be best evidenced in the first place by:

- endorsement of the NES by Cabinet;
- creating the core of the recommended institutional structure;
- provide the current DOE 1993 budget and staffing request totaling approximately F\$200,000;
- initiating the NES recommended 'in-house' reviews (14.3.2);
- quickly drawing up national environmental policies;
- ensuring that Government Ministries and all Government associated bodies or companies initiate a programme of environmental policy formulation to guide their activities;
- taking action on some of the 'pollution flagships' notably:
 - the Suva and Lautoka Municipal Dumps
 - Fiji Industries Ltd's Lami cement works
 - Fiji Foods, Walu Bay
 - bus and other diesel-engined vehicle emissions;
- undertaking a clean up of the 'contaminated site', Walu Bay;
- initiating the 'kick-start' of the NES by rapidly procuring international assistance;
- examining the various types of lease on relevant State land to determine whether changes to lease conditions could increase commitment to soil conservation.

14.3.1 Targets

Targets for the achievement of the NES need to be set as a means of both focussing action and evaluating its results.

14.3.2 Government Reviews and/or Endorsements

Apart from an endorsement of the National Environment Strategy, Government needs to undertake several in-house reviews as a matter of urgency. These include;

1. Feasibility of the creation of a Waste Management Authority to oversee national waste management and pollution control (9.5.5).
2. Feasibility of the Ecologically Sensitive Area Concept (in preparation for Project 8.1, 15.8.1).
3. Funding pollution monitoring by the Ports Authority of Fiji (9.5.6).
4. Reorganisation of the National Trust for Fiji (in preparation for Project 11 (15.12)).
5. Review existing 'draft' legislation and make positive moves to implement or replace as necessary. Included amongst these are:
 - .Water and Land Resources Management Bill (Clark 1986, Dixie 1983 but note: Pulea 1992; J.Clark 1989;Guivalu 1989; Nelson 1986; Bienefeld 1984);

- . Wildlife Protection Act (1979);
 - . Fauna Protection and Control Act (Clarkson 1984);
 - . National Parks & Reserves Act (National Trust 1980).
6. GOF through the relevant ministries and departments provide written comments to the DOE on the recommendations made in the NEMP reports prepared by the specialist consultants.

14.4 Priorities

All the project outlines detailed below are considered as high priority but it is clear that some are more important than others. While institutional strengthening of the DOE is essential if the NES is to be implemented, priorities among the other projects tend to relate more to a sequence inherent in the NES. Some projects need to be founded on institutions, skills or databases provided by preceding projects.

In the lists below, projects highlighted in bold typeface are considered priority projects, refer to Chart 8.

14.4.1 Environmental Management

- Project 1 Institutional strengthening of The Department of the Environment
- Project 2 National Waste Management and Pollution control Strategy
- Project 3 Legislation for Environmental Impact Assessment
- Project 4 National Land Use Plan
- Project 5 Introduction of soil conservation practices:
 - 5.1 Sugar Cane
 - 5.2 Ginger Farmers
- Project 6 Examination of the feasibility of a comprehensive Resource Management Act for Fiji

14.4.2 Heritage Management and Protection

- Project 7 Assessment of Sites of National Significance and establishment of the Department of Conservation
- Project 8 Natural Resource Assessment
 - 8.1 Terrestrial Resources
 - 8.2 Marine Resources
 - 8.3 National Environmental Database
 - 8.4 Decision support system for resource management
- Project 9 Establishment of park and protected area system
- Project 10 Integrated Development Plan for Taveuni Island

14.4.3 NGOs, Public Awareness and Participation

- Project 11 Re-organisation of the National Trust for Fiji
- Project 12 Environmental education strengthening
- Project 13 Public Awareness Programme
- Project 14 Sustainable management of traditional fishing rights areas by fishing rights owners
- Project 15 Expansion of community pine schemes using Utility Carbon Assimilation Funds

NATIONAL ENVIRONMENT STRATEGY - PROJECT ACTION CHART

CHART EIGHT

(Note : \$ 15.1 - Section 15.1 provides project outline)

TIME FRAME	INTERNATIONAL DONOR ASSISTANCE			
	NATIONAL FUNDING	ENVIRONMENT MANAGEMENT	PUBLIC AWARENESS	HERITAGE PROTECTION
IMMEDIATE	<p>GOVT OF FIJI ACTION</p> <ul style="list-style-type: none"> Visible commitment §14.3.1 <ul style="list-style-type: none"> - NES endorsement - creation DEnv; EC; NEC - in house reviews §14.3.3 - D Env. 1993 budget request 			
URGENT	<ul style="list-style-type: none"> Action on pollution flagships §14.3.1 	<ul style="list-style-type: none"> Institutional strengthening of Department of Environment §15.1 National Waste Management and Pollution Control Strategy §15.2 	<ul style="list-style-type: none"> Re-organisation of National Trust for Fiji §15.11 	<ul style="list-style-type: none"> Re-organisation of National Trust for Fiji §15.11
SHORT TERM	<p>IMPLEMENTATION OF NES THROUGH ENVIRONMENT COMMISSION COORDINATION</p>	<ul style="list-style-type: none"> Legislation for EIA §15.3 Feasibility of comprehensive Resource Management Act §15.6 Soil conservation practices §15.5 Comprehensive Pollution Management Legislation §15.2 National Land Use Plan §15.4 	<ul style="list-style-type: none"> Environmental Education strengthening §15.12 Community Awareness Program §15.13 Expansion of community pine schemes §15.14 Sustainable management of traditional fishing rights areas §15.15 	<ul style="list-style-type: none"> Assessment of Sites of National Significance §15.7 Natural Resource Assessment §15.8 Integrated Development Plan for Taveuni §15.10
MEDIUM TERM				<ul style="list-style-type: none"> Establishment of Dept. of Conservation §15.7 Parks & Protected Area System §15.9

15 PROJECT OUTLINES

PROJECT 1:

15.1 INSTITUTIONAL STRENGTHENING OF THE DEPARTMENT OF ENVIRONMENT

Objective

Upgrade the DOE so that it is able to provide the policy and technical advice which the GOF will need to implement the NES.

Rationale

Implementation of the NES will to a large degree depend on the very quick establishment and functioning of the DOE. Without it being set up and functioning quickly, the NES will quickly founder while bureaucratic delays will lead to long delays in EIA review and development approval.

Activities

- Provide expatriate specialists to act in line positions.
- Provide a short term consultant for training in case studies and applications of economic environmental valuation in line ministries and CPO.
- train at least six local counterparts by a combination of on the job training (3 at a time) and tertiary education abroad (3 at a time).
- Organise a series of workshops on national and sectoral policy formation for sustainable development.
- Install the recommended Information System (NEMP Report 3).

Personnel

Line positions:

- An environmental policy, planning and assessment specialist (as Director of DOE).
- A pollution expert specialising in monitoring and control (head, Standards, Monitoring and Enforcement Unit);

Short term consultants:

- Resource economist (2 months);
- environment policy specialist (2 months).

Duration

The project should run for at least five years to provide sufficient time for implementation of the NES to be well advanced, but more importantly for a sufficient time for a cadre of local technical expertise to be trained

Government's Contribution

- creation of DOE positions and structure;
- creation of NEC and provision for its running needs;
- creation of EC and provision for its running needs;
- provision of six scholarships in appropriate environmental; sciences over the 5 year period of the project.

Target

DOE, ECC and NEC to be instituted, assistance procured and specialists and counterparts in position by the end of 1993.

Indicative cost

US\$1,100,000 over 5 years - international assistance

F\$630,000 - national costs for training scholarships

PROJECT 2:

15.2 NATIONAL WASTE MANAGEMENT - POLLUTION CONTROL STRATEGY

Objective

Provide a national strategy for waste management including pollution control.

Rationale

Solid waste management is a dilemma which requires a firm Government initiative at the national level, while pollution and hazardous waste management are serious emerging issues. Existing legislation and administration is inadequate and the NES makes substantive recommendations with respect to the transfer of responsibilities, possible management structures, legislation and administrative measures. These need to be examined in detail with concurrent Government and private sector consultation to formulate a detailed implementation strategy. (Urban sewage reticulation would not be included in this study).

Activities

- Undertake further consultation (workshops) with relevant parties on the pollution and waste management recommendations of the NES.
- Examine the potential for recycling activities.
- Examination of the most appropriate revenue earning and cost-recovery measures for both waste management and pollution control.
- Assessment of Fiji's municipal waste management requirements and the design, standards and management measures required.
- Recommend appropriate hazardous waste management procedures, facilities and locations.
- Draft comprehensive legislation for controlling water, soil, air and noise pollution, making provisions for standards as regulations.
- if found to be appropriate, draw up an operational and legislative framework for the proposed Waste Management Authority. The project would incorporate or be additional to a specific project originating in the Department of Energy Greater Suva Waste Incineration and Heat Utilisation Feasibility Study'.

Personnel

4 specialist consultants with an estimated combined input of 15 man months:

- environmental engineer - specialist in hazardous waste, municipal waste and recycling management;
- pollution control specialist - specialist in administrative, legislative and institutional aspects of pollution control
- economist-planner
- legislation drafting specialist

Government contribution:

- rapid procurement of international funding for the study;
- counterpart assistance to each of the four consultants;
- concurrent study of staffing issues and requirements.

Duration

8 months

Target

completion of the study by the end of 1993.

Indicative cost

US\$300,000

PROJECT 3:

15.3 ENVIRONMENTAL IMPACT ASSESSMENT LEGISLATION

Objective

To provide GOF with appropriate drafted legislation on Environmental Impact Assessment

Rationale

Current requirements for EIA have no formal legal status, they are 'guidelines' only. The DOE has the invidious task of deciding whether or not a development requires an EIA. Government projects do not require planning permission and so do not require EIAs, this is clearly unsatisfactory.

Activities

Based on the recommendations of NEMP Reports 7,9 and 13:

- . undertake a series of consultative workshops in the private and public sector ;
- . draft appropriate stand alone EIA legislation which institutionalises the DOE's role in environmental assessment procedures and provides a legal basis for implementing such procedures.

Personnel

- . EIA specialist (2 months)
- . Experienced EIA legal draftsperson (2 months)

Government contribution:

Infrastructure and technical support

Duration

4 months

Target

EIA Legislation to be drafted by the end of 1993 and enacted by mid 1994.

Indicative Cost

US\$85,000

PROJECT 4:

15.4 NATIONAL LAND USE PLAN

Objective

Preparation of an authoritative land use plan based on land capability.

Rationale

A national land use plan would greatly assist in appropriate land use and resource allocation - fundamental prerequisites of sustainable development. Preparation of a national land use plan would be a major undertaking and because land use priorities differ between users, the terms of reference for a National Land Use Plan need to be drawn up through co-ordination and consensus with all major natural resource users including landowners. To ensure that all interested parties are adequately consulted, it would be advisable for a consultant to be commissioned to draw up a programme and terms of reference for the National Land Use Plan which should include an investigation of possible funding sources.

Activities

- . Initial preparation of a consultancy report on the programme and TOR for the National Land Use Plan.
- . Preparation of the National Land Use Plan by a team of specialists with local counterparts.
- . Installation of GIS and data information system.
- . Setting up of landowner consultation forum.

Personnel

- . Initial consultancy - natural resource planner (1 month)
- . Preparation of Land Use Plan - as recommended by above consultancy

Government contribution:

- . facilities for Land Use Plan consultant team;
- . counterparts for all specialists;
- . 2 scholarships for tertiary qualifications in land use planning.

Targets

- . Terms of Reference for a National Land Use Plan should be prepared by mid 1993.
- . Preparation of the National Land Use Plan should have commenced by mid 1994.

Duration

3 years

Indicative cost

US\$20,000 for project formulation consultancy

US\$ 2 million (depending on scope of final project)

PROJECT 5:

15.5 INTRODUCTION OF SOIL CONSERVATION PRACTICES

PROJECT 5.1

INTRODUCTION OF SOIL CONSERVATION PRACTICES BY SUGAR CANE FARMERS

Objective

The introduction of ecologically sound and socially acceptable soil conservation practices by Fiji's sugar cane farmers.

Rationale

Over the past 15 years, Fiji's cane perimeter has expanded dramatically to include large areas of marginal hill country-land which can be used for agriculture but only if accompanied by soil conservation measures. Cane growing is now common on slopes of between 15-30o and there is widespread erosion, often very severe.

Since all first class agricultural land is now effectively occupied, future expansion of agriculture and the needs of future generations will be in the marginal hill lands. The need to introduce soil conservation measures is therefore very urgent.

Methodology

To introduce soil conservation measures which are both ecologically sound and socially acceptable is best accomplished by low-key demonstration projects running over 5 years or more, with community based technical workers in daily contact with the farmers. A good example of this is the Fiji-German Forestry agroforestry-soil conservation initiative in Lomaivuna and the FAO agroforestry project in Western Samoa which has been running successfully on a small scale for several years.

Large multi-sectoral projects such as the proposed Ba River Watershed Management Project and the existing Sigatoka Valley Rural Integrated Development Project are far less likely to initiate acceptance of soil conservation measures by farmers. However, it is these large high cost and high technical input projects which have traditionally been favoured by the larger lending and donor agencies. As such they should be resisted if the introduction of soil conservation measures by individual farmers is the objective.

Activities

- . At least five demonstration projects in selected localities on both Viti Levu and Vanua Levu.
- . Introduction of vetiver grass bunding and other species and measures as appropriate, through farmer acceptance not through subsidies.
- . Introduction of cane trash mulching.
- . Soil conservation extension activities.
- . Economic analyses of soil conservation measures.
- . Determination of soil erosion rates with and without soil conservation measures.

Organisation

Implementation of demonstration projects to be undertaken by an NGO through the Sugar Cane Growers Council, to ensure maximum acceptance by farmers.

Personnel**Project Formulation**

- Soil conservation specialist - preparation of TOR (2 months)

Project personnel (as recommended by above but possibly:

- Team leader - soil conservation practitioner experienced with working with communities (international for 3 years then replaced by national for 5 years).
- 2 Technical Officers - soil conservation officers in charge of training local Technical Officers, publicity material, extension work etc. Initially international consultants for 2 years, then replaced by local specialists once trained.
- Erosion specialist - field measurement of erosion rates.

Government contribution:

- Technical Officers as counterparts for NGO consultants to be trained for future work with MPI.
- 3 scholarships in soil conservation at tertiary level during the course of the project.

Duration

8 years minimum

Target

Initiation of the project by early 1994

Indicative cost

US\$30,000 for project formulation consultancy

US\$1.75 million

F\$315,000 (national costs for training scholarships)

PROJECT 5.2

PROMOTION OF SOIL CONSERVATION PRACTICES BY GINGER FARMERS

Objective

To achieve widespread acceptance of sustainable farming practices by ginger farmers through the continuation and expansion of the current Fiji-German Forestry initiative at Lomaivuna or equivalent

Rationale

The ginger industry is based on unsustainable agricultural practices yet it continues to receive GOF support and encouragement. Since most ginger farmers are lessees with no medium or long term interest in their leases, they will only adopt soil conservation measures if they have to, or if they stand to gain financially in the short term. There is a need to introduce a rent rebate scheme for lessees improving their leases through adopting soil conservation practices combined with demonstration farms and community extension work.

Activities

- At least two demonstration projects at different sites within the ginger industry growing area.
- Introduction of appropriate soil conservation measures based on an evaluation of the current Fiji-German Forestry project in Lomaivuna, through farmer acceptance not through subsidies.
- Soil conservation extension activities.
- Economic analyses of soil conservation measures.
- Determination of soil erosion rates with and without soil conservation measures.

Organisation

Current Fiji-German Forestry project to be continued and expanded. Implementation of demonstration projects to be undertaken by an NGO through existing Government ministry but preferably through a Ginger Growers association.

Personnel:

- Team leader - soil conservation practitioner experienced with working with communities.
- 1 Technical Officer - soil conservation officer in charge of training local technical officers, producing publicity material, extension work etc. This position initially an expatriate consultant but replaced by local specialists once trained.
- Erosion specialist - field measurement of erosion rates.

Government contribution:

- GOF to influence NLTB to introduce a rent rebate scheme rewarding lessees who improve their leases through the adoption of soil conservation measures;
- Technical Officers as counterparts for NGO consultants to be trained for future work with MPI;
- three scholarships in soil conservation at tertiary level during the course of the project.

Duration

8 years minimum

Target

To continue without interruption current Fiji-German Forestry project, due for completion in mid-1993.

Indicative cost

US\$1.15 million

F\$315,000 (national costs for training scholarships)

PROJECT 6

15.6 EXAMINATION OF THE FEASIBILITY OF A COMPREHENSIVE RESOURCE MANAGEMENT ACT FOR FIJI

Objective

To determine whether a comprehensive Resource Management Act would be appropriate for Fiji.

Rationale

Fiji's natural resource management legislation is highly sectoralised, the majority of it is outdated and requires major amendments. Important sectors have no workable legislation and there are some complete omissions. Given that comprehensive resource management acts have been recently introduced in some countries, most notably New Zealand and the UK, it would be appropriate for Fiji to examine the feasibility of introducing a single comprehensive Resource Management Act, rather than attend to all the sectoral legislation in a piecemeal fashion.

Activities

Following on the work of the NEMP (Report Nos. 9,13):

- . Review Fiji's current and drafted resource management legislation in the context of their possible replacement by a single comprehensive Resource Management Act.
- . Hold consultative workshops in the private and public sector.
- . Make recommendations as to the feasibility and, if affirmative, an operational programme for drafting the legislation.

Personnel

- . Consultant environmental legislation specialist with experience of comprehensive resource management legislation.
- . Consultant (or GOF employee) with experience of Fiji's legislative administration.

Government contribution:

Provision of consultant/counterpart (as per personnel).

Duration

6 months

Target

Initiation of project by early 1994

Indicative cost

\$US 110,000

PROJECT 7

15.7 ASSESSMENT OF SITES OF NATIONAL SIGNIFICANCE AND THE ESTABLISHMENT OF THE DEPARTMENT OF CONSERVATION

Objective

Institutional establishment and strengthening of the Department of Conservation, registration of sites of national significance and the introduction of a registration procedure.

Rationale

Because of the gradual loss of sites both natural and cultural through development activities, a national register is urgently required together with a procedure to prevent accidental loss of such sites. This requires a dedicated agency, but to concentrate the current responsibilities which are scattered in various ministries will require legislative changes and institutional building within the DOE.

A more gradual establishment of the Department of Conservation (DOC) than the DOE is envisaged, full department status should be attained once the Registration of Sites of National Significance has been completed and a legislative and administrative structure instituted.

Activities

- Undertake the necessary fieldwork to register all sites of national significance and draw up an administrative and legal framework through which it can operate. Two components can be distinguished:
 - registration of natural and post-European contact sites. A preliminary list or knowledge of these is quite well advanced although it needs to be co-ordinated with the natural resource inventory which may well discover further sites.
 - registration of pre-European contact historic and cultural sites. Knowledge of these is much more fragmentary and incomplete.
- Draw up the administrative and operational framework for the Register of Sites of National Significance.
- Provide appropriate data and information system.
- Draft a single piece of legislation which covers protected areas, historic sites and the Register of Sites of National Significance (RSNS) in one piece of legislation.

Personnel

Initial consultancy:

Conservation planner, international consultant to undertake project formulation, prepare TOR and programme (2 months)

Project personnel as per TOR above but probably:

Line position:

Ecologist/conservation planner. Three year adviser, responsible for overseeing the RSNS project, provision of policy and technical advice, training of counterparts, evaluation of natural areas, upgrading unit to departmental status.

Short term consultants:

Archaeologist. To train field survey teams and to advise on priorities for national sites, DOC institutional needs, restoration and conservation management requirements. 12 month term.

Historic building specialist. To advise on priorities for conservation of identified historic

buildings, DOC institutional needs, restoration and conservation management requirements.
4 months.

Legislation specialist. Review existing and drafted legislation, consolidate to one. 4 months.

Co-ordination will be required with the Marine Inventory Project (Project 8.2;15.2.2) because it is intended that the RSNS cover marine sites as well.

Government contribution:

- . GOF should show its commitment by creating a conservation unit within the DOE immediately;
- . provision of counterpart to consultant head of RSNS;
- . survey teams;
- . provision of two scholarships - archaeology, national park management.

Targets

- . Conservation unit to be operational and RSNS project commenced by end of 1993.
- . Department of Conservation instituted by end of 1994
- . Local archaeologist and national parks manager with tertiary qualifications employed by DOC (archaeologist could be employed by the Fiji Museum) by end of 1996.

Duration

3 years

Indicative cost

US\$30,000 for project formulation consultancy

US\$1.5 million

F\$210,000 for training scholarships

PROJECT 8
15.8 NATURAL RESOURCE ASSESSMENT
SUB PROJECT 8.1
TERRESTRIAL RESOURCE SURVEY

Objective

To achieve a comprehensive understanding of Fiji's biological and ecological resources and develop a GIS database to locate and identify Ecologically Sensitive Areas to help generate ecologically sustainable options for resource exploitation.

Rationale

The NEMP study has revealed that the present level of understanding of Fiji's biological and ecological resources is insufficient to support a national resource management strategy. A comprehensive survey of these resources is urgently needed. It is a major task that will complement the current Natural Forest Inventory. Output will be of immense strategic value to a wide range of Government sectors and will provide critical information for such projects as the National Land Use Plan, Registration of Sites of National Significance and for forest management. Rationale and operational aspects are discussed at length in the report of NEMP Natural Resource Specialist, Dr A.N. Gillison (NEMP Report 4).

Activities

A pilot study will provide the design and operational structure for a wide-ranging survey to be undertaken by teams of trained in-country operators who will feed data to a central GIS database and operations centre in Suva. Computerised models which can be used to predict species distribution and their response to environmental impact will be developed as the survey proceeds. Output from these models will be used to develop portable, user-friendly decision support systems for management.

Government contribution:

- Provision and maintenance of dedicated office and laboratory facilities.
- Effective liaison with sectors eg forestry to identify field and laboratory personnel for training purposes.
- Facilitate liaison with land use planning sectors and Provincial Government.
- Limited use of GOF aircraft.
- Access to relevant sectoral resource data.

Duration

Three years primary survey; two years optional follow up.

Target

Endorsement of the ESA concept with NES by early 1993; if affirmative commencement of Terrestrial Natural Resource Survey in the field by early 1994.

Indicative Cost

US\$ 1.6 million for primary survey

15.8.2

SUB PROJECT 8.2 MARINE RESOURCE SURVEY

Objectives

To document Fiji's marine resources so as to establish a state of knowledge on which management for sustainable use can be meaningfully based.

Rationale

Fiji's marine resources are insufficiently documented and current management measures are derived from an inadequate state of knowledge. The majority of Fiji's population reside in coastal areas and a very large proportion rely on marine resources to sustain their subsistence lifestyle. In many cases the latter is threatened by unsustainable use for commerce. Fiji's largest industry, tourism, is founded on the marine resource and the wise management of reefs and coastlines is essential to the future of the industry.

A pilot survey of reefs of the Mamanuca Group was undertaken by the NEMP and appropriate techniques tested, the marine inventory project proposal is further justified and outlined in NEMP Report 22.

Activities

- . Mapping of Fiji's reefs by aerial photography and remote sensing.
- . Ecological survey of selected reefs.
- . Assessment of selected fisheries stocks.
- . Water quality survey.
- . Assessment of the subsistence fishery.

Personnel

- . Coordinator - senior consultant scientist - 2.5 years
- . Mapping - consultant scientist - 1 year
- . Reef survey - 2 research assistants; 1 boatman 1.5 years
- . Visual reef fish census - consultant scientist - dive assistant, boatman - 1.5 years
- . Reef fisheries and subsistence fishery assessment - 1 fisheries officer, 4 assistant fisheries officers, 50 part time assistants .1.5 years
- . secretarial, databasing - 2.5 years

Government Contribution:

- . Provision and maintenance of dedicated office and laboratory facilities;
- . Fisheries staff/counterpart trainees - 2 fisheries officer, 6 research assistants, 2 boatmen;
- . 3 scholarships in marine sciences over the 3 year period of the project.

Target

The inventory to start before mid 1994.

Duration

25 years

Indicative Cost

US\$ 800,000

15.8.3

SUB PROJECT 8.3 NATIONAL ENVIRONMENTAL DATABASE (NED)

Objectives

- To integrate the results of both terrestrial and marine resource surveys into a single, spatially-referenced National Environmental Database.
- To provide an appropriate context for assessing resource use in contiguous coastal and marine ecosystems.

Rationale

Terrestrial and marine systems are intimately connected. This is unfortunately most evident in the deleterious effect of poor land practices on littoral and mangrove ecosystems and nearshore coral reefs. Equally, the fate of inland riverine systems and estuaries depends on human and other activity in catchments.

Whereas there were once good reasons for marine and terrestrial ecosystems to be treated separately, the advent of geographic information systems now makes possible an overview of both systems within a single context. In a country such as Fiji with over 300 islands, a well coordinated, spatially-referenced environmental database would offer immense advantages over traditional land-only mapping systems. Linked with a GIS, NED would provide important spatial information for land, sea and air transport systems as well as providing a highly efficient spatial platform for the evaluation and balanced exploitation of natural resources. It would complement FLIS (Fiji Land and Information System) as an important but separate, comprehensive, biologically-orientated database.

Activities

A feasibility study would assess, first, the resource elements of concern to sectors with a particular interest in accessing NED. Second, the cost of establishing a GIS-based, DOE information network to service Government sectors. A pilot study (six months) would examine selected resource areas to determine the database structure and mechanisms for incorporating data from terrestrial and marine resource surveys (15.8.1./15.8.2.). The establishment of NED would then run in tandem with these surveys in addition to the incorporation of resource and environmental data from other institutional sources (NLTB/FLIS/MPI...USP..). NED would be linked with the GIS proposed for 15.8.1. and use the same computing system and hardware.

Personnel

Coordinator (senior consultant for 15.8.1) with assistance from two GOF technical officers (one to coordinate data input from 15.8.1., other, data from 15.8.2.) specifically trained and dedicated to NED in years one and two. Staffing review would be necessary at the end of year two. It is assumed NED would be closely coordinated with the GIS development in Sub-Project 15.8.1. and be serviced by personnel from that unit.

Government contribution

As for 15.8.1. for dedicated office space and use of computing equipment. If endorsed, the computing hardware for 15.8.1. would need expanding to cope with additional data.

Duration

Two years initially with a review at the end of each year.

Target

Concurrent with start of 15.8.1

Indicative costs

\$180,000

15.8.4.

SUB PROJECT 8.4 A DECISION SUPPORT SYSTEM FOR RESOURCE MANAGEMENT

Objectives

- To develop a computerised Decision Support System (DSS) to assist planning and management of Fiji's natural resources.
- To help mediate disputes on resource use options.

Rationale

Options for resource use rely not only on a robust information system, but in communicating these options to landowners and Provincial Government to obtain necessary feedback. Decision Support Systems are designed to interrogate a database via a GIS so that the relative, potential impacts for various desired resource options can be visually and immediately displayed on a computer screen for all personnel to see and evaluate. Such a mechanism would be of immense value to planners and managers alike as it provides a common basis for assessing readily understandable resource values. Relatively inexpensive DSS computer software is available and simple to install on small desktop computers and can be used by computer operators with only limited training.

Activities

Following year 1 of Sub-Projects 15.8.1/2, DSS software would be installed and linked with a National Environmental Database and a resource GIS. A pilot study would be established for a selected Management Training Area at Provincial level. An appropriate DSS study might be to evaluate development options for a proposed World Heritage Area listing on Taveuni and the likely impacts on associated ecotourism, and other socio-economic outcomes. If successful, a mechanism should be sought via DOE for arranging access to DSS for interested users in both Sectoral and NGO areas.

Personnel

While a DSS development would be a Sub-Project in its own right, it would be logical to develop it in tandem with a resource survey GIS and NED. To reduce costs, it could be included within 15.8 as part of 15.8.3 (NED) with overview by the senior consultant for 15.8.1. and training of GOF technicians allocated to NED.

Government contribution

As for Projects 15.8.1/2/3.

Duration

One year with a review at the end of 1994. If successful, a DSS would then be used on a needs basis by planners and managers.

Target

Start in year 2 of Projects 15.8.1/2/3.

Indicative cost

\$25,000

PROJECT 9

15.9 ESTABLISHMENT OF A PARKS AND PROTECTED AREA SYSTEM

Objective

Establishment of an effective 'on-ground' system of culturally appropriate protected areas and sites, to include: national parks, nature reserves (terrestrial and marine); regional recreation parks (such as forest parks); archaeological sites and reserves; national monuments; etc.

Rationale

To build upon the Natural Resource Assessment (Project 8) and the Register of Sites of National Significance (Project 7). That is, to take the survey work to the next step of defining 'reserve' or protected areas and sites. This will provide the Government and the DOC with an operational management framework for national environmental and heritage conservation. The resource assessment and the Register can only be as meaningful as the 'on-ground' result; that is, effective conservation management. Establishment of a protected areas/ sites system also has direct correlation with the preparation of national land use and coastal zone plans. Establishment of the system would be the first major task of the DOC.

Activities

- Determine the most appropriate form of a protected areas/sites system for Fiji taking into account the traditional land and resource tenure/ use system and the socio-economic aspirations of traditional owners.
- Use the resource assessment and the Register of Sites of National Significance data to determine suitable area/site boundaries.
- Consult with land/resource owners, Provincial Councils, NLTB, on levels of use/ development of respective areas/sites.
- Prepare, in the short term, management objectives/frameworks for each area or site.
- As a basis for longer term preparation of comprehensive area /site management plans.
- Establish an institutional capacity in DOC for effective, ongoing management of the protected areas/sites system.

Personnel

- Conservation planner (consultant) with in-depth experience in developing protected areas/sites in conjunction with traditional land/resource owners: responsible for developing overall framework system establishment (1-2 years).
- Ecologist/Park Planner (consultant) with experience in park establishment to determine appropriate boundaries and development and management objectives/frameworks) and train counterparts (3-5yrs).

Short term consultants :

- Archaeologists and historic sites specialists to - prepare boundary and management prescriptions for archaeological, historic sites and monuments (6 months - 1 year).
- Resource economist/secondary tourism planner; to prepare a report on potential of areas/ sites for appropriate development activities compatible with conservation objectives and resource owner aspirations (6 months - 1 year).

Government contribution:

- provision of counterparts;
- land /resource owner liaison;
- survey teams;
- development of supporting legislation and regulations.

Targets

- . Currently , identified areas/sites to be protected by 1997.
- . Comprehensive protected areas/sites system to be in place by year 2000.

Duration

3-5 Years

Cost

US\$30,000 project formulation

US\$2 million

PROJECT 10
15.10 INTEGRATED DEVELOPMENT PLAN FOR TAVEUNI
ISLAND

Objective

Preparation and implementation of an integrated development plan for Taveuni Island.

Rationale

Taveuni is selected as a model whereby many of Fiji's conservation issues may be resolved by acknowledging the fact that the viability of conservation areas is dependent upon their inclusion in a development planning framework which takes into account the associated range of social, physical and economic factors.

A very detailed proposal for the Integrated Development Plan for Taveuni has been prepared by the NEMP (NEMP Report 1).

Duration

Three years

Cost

US \$1.4 million

PROJECT 11

15.11 RE-ORGANISATION OF THE NATIONAL TRUST FOR FIJI

Objective

Reconstitute the National Trust for Fiji as a Non-government Organisation and a registered charity.

Rationale

It is a conclusion of the NEMP that the National Trust for Fiji would function more efficiently if it was re-organised and re-constituted as an NGO and then registered as a charity. This would enable it to be more responsive to the changing needs of a heritage protection organisation, and be administered in a professional, cost effective and business-like manner. Being an NGO and a charity without national responsibilities would give it much greater flexibility in its choice of operation and would provide it with much greater fund raising opportunities.

Activities

- Reconstitute the National Trust as an NGO eligible for registration as a charity.
- Draft amendments to the National Trust Act or completely new legislation as appropriate.
- Draw up a constitution and administrative framework.
- Draw up a priority work programme and operational framework in the transition period.
- Provide GOF with guidelines as to its future contribution to the National Trust for Fiji.

Personnel

- Specialist in the constitution and administration of heritage protection NGOs (consultant - 2 months).
- Legal draftsman (consultant ?).
- Government appointee (local).

Government contribution:

- rapid procurement of international funding for the study;
- appointment of a suitable government appointee to the team;
- enact necessary legislative changes.

Duration

3 months

Target

National Trust to be reconstituted as an NGO with charity status by the end of 1993

Indicative cost

US\$40,000

PROJECT 12

15.12 UPGRADING ENVIRONMENTAL EDUCATION

Objective

Improving environmental education by correcting curriculum deficiencies, providing in-service training to teachers and improving the resources for environmental education in schools.

Rationale

Based on a review of environmental education in Fiji (NEMP Report 12) certain deficiencies in environmental education in the formal curricula require correcting. A detailed project proposal is included in NEMP Report 12 and this has been endorsed by the Ministry of Education.

Activities

- Development of curriculum material on Fiji's terrestrial, specifically forest environments (marine environment is currently the subject of an on-going UNESCO project).
- Review agricultural science, Forms 3-7.
- Co-ordination of resource distribution.
- Strengthening the Schools broadcasting unit for delivering environmental education.
- Workshops for environmental education teachers.

Personnel

Various, expertise available in Fiji detailed in NEMP Report 29.

Government Contribution

Duration

7 months

Target

To be completed by end of 1993

Indicative cost

US\$ 90,000

PROJECT 13

15.13 DIRECTED PUBLIC AWARENESS PROGRAMME

Objective

Raise general awareness in rural communities on the benefits of sustainable resource use and the awareness of specific, affected communities on the repercussions of non-sustainable land use.

Rationale

There is an increasing trend in Fiji's rural communities to dispense with traditional agricultural and fishing practices which were mainly extensive and sustainable, in favour of intensive, non-sustainable income generating alternatives. Public awareness and understanding of environmental issues is frequently regarded as indispensable to sustainable environmental management. Despite the significant increase in interest in the environment in the media over recent years, much is of a more general nature which sensitises communities without stimulating specific action. There is a need now to move into a more directed phase of public education leading to a gradual change in people's daily activities. There is a need to target communities with a variety of material in the vernacular and based on specific activities from a series of small participatory environmental projects.

Activities

Undertake a variety of small environmental projects related to sustainable resource use in areas where they are specifically needed and then produce media material (video, articles, manuals, booklets) on these for more widespread distribution. The projects should be small, community based and actively participatory in nature. Some of the media material should be in the vernacular.

Appropriate projects include:

- . vetiver grass contour planting in sugar cane fields;
- . *Calliandra* sp or appropriate alternative contour planting in ginger, dalo or other crop;
- . pine or fuelwood plantation establishment in fire climax grasslands;
- . introduction of appropriate village/rural garbage and waste management;
- . logging for sustained yield harvesting (coverage of on-going DOF-GTZ Nakavu Forestry Project);
- . seeding of reefs with cultured giant clams from the Makogai rearing station;
- . establishing local fish sanctuaries to seed surrounding areas in traditional fishing rights areas.

The project should adopt an appropriate and easily identified name which links the various projects (as with **Landcare** in Australia).

Personnel and organisation

The project is most appropriate for an NGO and could be undertaken entirely by local personnel:

- . Project Officer;
- . Administrative Officer;
- . Two journalist/presenters;
- . Video work to be undertaken by contracting existing expertise in the private sector.

Government contribution:

Facilitation of project.

Duration

2 years

Target

Initiation of project by early 1994

Indicative cost

\$US 700,000

PROJECT 14

15.14 SUSTAINABLE MANAGEMENT OF TRADITIONAL FISHING RIGHTS AREAS BY FISHING RIGHTS OWNERS.

Objective

The management of **qoliqoli** (traditional fishing rights area) on a sustainable use basis by fishing rights owners.

Rationale

Unlike Fijian landowners who generally do not protect their leases from destructive agricultural practices by lessees, traditional fishing rights owners are much more aware of the value of the resource within their **qoliqoli** and undertake significant management and policing of their own accord. This management is not always directed in a sustainable manner, nonetheless a framework and interest exists which could be developed for the best long term interests of all the **qoliqoli** owners.

Activities

- . Selection of an appropriate **qoliqoli**.
- . Survey of resources within **qoliqoli** .
- . Survey of commercial and subsistence fishery within **qoliqoli**.
- . Identification of appropriate subsistence and commercial fishing level.
- . Introduction of framework for management including policing.
- . Extension activities.

Personnel, Organisation

The project is most suitable for an NGO.

Initial consultancy:

- . artisanal fisheries specialist to select **qoliqoli**, prepare project TOR and programme (2 months).

Project - as determined by consultancy above but probably including:

- . project leader artisanal fisheries specialist (expatriate consultant);
- . 1 technical officers - fisheries (local);
- . 1 technical officer - extension (local);
- . secretarial, boatman (local).

Government contribution:

- . facilitation of project;
- . secondment of fisheries officer as technical officer or counterpart to project leader.

Duration

2 years

Target

Initiation of project by early 1994

Indicative cost

\$US 200,000

PROJECT 15

15.15 EXPANSION OF SUSTAINABLE COMMUNITY PINE SCHEMES USING UTILITY CARBON ASSIMILATION FUNDS

Objective

To utilise the EEC's Carbon Assimilation Funds which are now available to establish community owned pine plantations and assimilate 10,000 tonnes of carbon per annum while providing landowners with a valuable and sustainable resource.

Rationale

This project has been instigated by the Ministry of Energy which has prepared a detailed project proposal.

Duration

20 years

Indicative cost

US\$ 325,000/annum for 20 years

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PART VI APPENDICES

APPENDIX 1:

NATIONAL ENVIRONMENT MANAGEMENT PROJECT REPORTS AND ACTIVITIES REPORTS AND WORKING PAPERS PREPARED FOR THE NATIONAL ENVIRONMENT MANAGEMENT PROJECT

NEMP CORE REPORTS

Core reports are specialist stand alone reports which contain much of the detail and analyses on which the NES is based. They also contain additional sectoral recommendations which because of the need for brevity or appropriateness were not included in the NES.

- 1 Chape S.P., D. van R. Claasen, A.N. Gillison, and D. Watling. June 1992. Project Proposal, Integrated Development Plan for Taveuni Island, for South Pacific Biodiversity Conservation Programme.
- 2 Claasen D. van R. April 1991. Deforestation in Fiji
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- 4 Gillison, A.N. June 1992. Report on terrestrial resource management.
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- 6 Irvine, I. October 1992. Recommended national environmental quality criteria.
- 7 James, D. June 1992. Achieving sustainable development in Fiji: integration of economics and environment.
- 8 Lal, P.N. May 1992. Foreshore development, customary fishing rights and the recompensation system in Fiji.
- 9 McBride, T. June 1992. Report and recommendations on specific legal issues.
- 10 Morrison, R.J. 1992. An assessment of soil erosion in Fiji.
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- 12 Pulea, M. February 1992. Environmental law in Fiji, a description and evaluation.
- 13 Pulea, M. November 1991. Report on the National Trust for Fiji - an evaluation (Confidential report for the Minister of Housing & Urban Development)
- 14 Taylor, N. April 1992. Environment Education in Fiji, Institute of Education, University of the South Pacific.
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- 16 Watling D. and S.P. Chape. October 1992. National Environment Strategy.
- 17 Weaver, S. June 1992. Environmental management areas programme proposal.
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- Annex 1 : Executive summary & recommendation.
 - Annex 2 : Atlas of reef maps of the Fiji Group.
 - Annex 3 : The coral reefs of the Mamanuca Group, Fiji.

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- 21 Watling, D. November 1991. Interim Report, National Environment Management Project.
- 22 Watling, D. and S.P. Chape. June 1991. State of the Environment Report for Fiji. Draft for comment.
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- 24 Claasen, D. van R. March 1992. Taveuni- ecologically sensitive area analysis.
- 25 Irvine, I. July 1991. Preliminary national environmental quality criteria. Discussion paper.
- 26 Irvine, I. July 1991. Preliminary national environmental monitoring program. Discussion paper.
- 27 Irvine, I. July 1991. Assessing the significance of pollution. Paper for circulation at the NEMP Pollution Workshop, Grand Pacific Hotel, Suva.
- 28 Pulea, M. December 1991. Preliminary report on environmental law in Fiji, a description and evaluation. Draft for Comments
- 29 S.P.A.C.H.E.E. October 1990. Public awareness and information programme. Progress report.
- 30 S.P.A.C.H.E.E. June 1992. Public awareness and information programme. Final report.
- 31 Watling, D. June 1992. Environmental management in Fiji, options for institutional changes. A Working Paper.

REPORTS FROM PROJECT RESOURCE PERSONS

- 32 Cabaniuk, S. April 1992. The archaeology of the Vunivia River catchment, Dogotuki Tikina, Macuata Province, Vanua Levu. A Preliminary study.
- 33 Cabaniuk, S. March 1992. A background information report on the Mamanuca Island Group.
- 34 Taylor, N. February 1992. Environment education in Fiji. Draft report for circulation.
- 35 Weaver, S. October 1991. Native Land Trust Board policy on indigenous forest conservation. Discussion Paper.

- 36 Weaver S. October 1991. Nature tourism as a means of protecting indigenous forest resources in Fiji.
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APPENDIX 2:

PRINCIPLES OF A SUSTAINABLE SOCIETY

(from 'Caring for the Earth: A Strategy for Sustainable Living'.

IUCN, UNEP, WWF (1991)

THE PRINCIPLES OF A SUSTAINABLE SOCIETY

Building a sustainable society

This is a strategy for a kind of development that provides real improvements in the quality of human life and at the same time conserves the vitality and diversity of the Earth. The goal is development that meets these needs in a sustainable way. Today it may seem visionary, but it is attainable. To more and more people it also appears our only rational option.

Most current development fails because it meets human needs incompletely and often destroys or degrades its resource base (see pp. 4-5: Gambling with survival or living sustainably). We need development that is both people-centred, concentrating on improving the human condition, and conservation-based maintaining the variety and productivity of nature. We have to stop talking about conservation and development as if they were in opposition, and recognize that they are essential parts of one indispensable process.

Caring for the Earth sets out a broad and explicit world strategy for the changes needed to build a sustainable society. We need such a strategy because:

- the most important issues we face are strongly interlinked, and therefore our actions must be mutually supportive and aimed at a common goal;
- the changes we must make in the ways in which we live and develop will be fundamental and far-reaching: They will demand our full dedication. The task will be easier if we work together;
- no single group can succeed by acting alone.

Any strategy has to be a guide rather than a prescription. It cannot be followed slavishly. Human societies differ importantly in wealth, quality of life and environmental conditions, and in their awareness of the significance of these differences. Nor are these features fixed in time: change is continual. For these reasons, the principles and actions in this Strategy are described in broad terms. They are meant to be interpreted and adapted by each community. The world needs a variety of sustainable societies, achieved by many different paths.

Principles of a sustainable society

Living sustainably depends on accepting a duty to seek harmony with other people and with nature. The guiding rules are that people must share with each other and care for the Earth. Humanity must take no more from nature than nature can replenish. This in turn means adopting life-styles and development paths that respect and work within nature's limits. It can be done without rejecting the many benefits that modern technology has brought, provided that technology also works within those limits. This Strategy is about a new approach to the future, not a return to the past.

The principles of a sustainable society are interrelated and mutually supporting. Of those listed below, the first is the founding principle providing the ethical base for the others. The next four define the criteria that should be met, and the last four directions to be taken in working towards a sustainable society at the individual, local, national and international levels.

The principles are:

RESPECT AND CARE FOR THE COMMUNITY OF LIFE

This principle reflects the duty of care for other people and other forms of life, now and in the future. It is ethical principle. It means that development should not be at the expense of other groups or later generations. We should aim to share fairly the benefits and costs of resource use and environmental conservation among different communities and interest groups, among people who are poor and those who are affluent, and between our generation and those who will come after us.

All life on earth is part of one great interdependent system, which influences and depends on the non-living components of the planet - rocks, soils, waters and air. Disturbing one part of this biosphere can affect the whole. Just as human societies are interdependent and future generations are affected by our present actions, so the world of nature is increasingly dominated by our behaviour. It is a matter of ethics as well as practicality to manage development so that it does not threaten the survival of other species or eliminate their habitats. While our survival depends on the use of other species, we need not and should not use them cruelly or wastefully.

IMPROVE THE QUALITY OF HUMAN LIFE

The real aim of development is to improve the quality of human life. It is a process that enables human beings to realize their potential, build self-confidence and lead lives of dignity and fulfilment. Economic growth is an important component of development, but it cannot be a goal in itself, nor can it go on indefinitely. Although people differ in the goals that they would set for development, some are vitually universal. These include a long and halthy life, education, access to the resources needed for a decent standard of living, political freedom, guaranteed human rights, and freedom from violence. Development is real only if it makes our lives better in all these respects.

CONSERVE THE EARTH'S VITALITY AND DIVERSITY.

Conservation-based development needs to include deliberate action to protect the structure, functions and divrsity of the world's natural systems, on which our species utterly depends. This requires us to:

Conserve life-support systems: These are ecological processes that keep the planet fit for life. They shape climate, cleanse air and water, regulate water flow, recycle essential elements, create and regenerate soil, and enable ecosystems to renew themselves;

CONSERVE BIODIVERSITY: This includes not only all species of plants animals and other organisms, but also the range of genetic stocks within each species, and the variety of ecoystems;

ENSURE THAT USES OF RENEWABLE RESOURCES ARE SUSTAINABLE:

Renewable resources include soil, wild and domesticated organisms, forests, rangelands, cultivated land, and the marine and freshwater ecosystems that support fisheries. A use is sustainable if it is within the resource's capacity for renewal.

MINIMIZE THE DEPLETION OF NON-RENEWABLE RESOURCES.

Minerals, oil, gas and coal are effectively non-renewable. Unlike plants, fish or soil, they cannot be used sustainably. However, their "life" can be extended, for example, by recycling,

by using less of a resource to make a particular product, or by switching to renewable substitutes where possible. Widespread adoption of such practices is essential if the Earth is to sustain billions more people in future, and give everyone a life of decent quality.

KEEP WITHIN THE EARTH'S CARRY CAPACITY.

Precise definition is difficult, but there are finite limits to the "carrying capacity" of the Earth's ecosystems - to the impacts that they and the biosphere as a whole can withstand without dangerous deterioration. The limits vary from region to region, and the impacts depend on how many people there are and how much food, water, energy and raw materials each uses and wastes. A few people consuming a lot can cause as much damage as a lot of people consuming a little. Policies that bring human numbers and life-styles into balance with nature's capacity must be developed alongside technologies that enhance that capacity by careful management.

CHANGE PERSONAL ATTITUDES AND PRACTICES.

To adopt the ethic for living sustainably, people must re-examine their values and alter their behaviour. Society must promote values that support the new ethic and discourage those that are incompatible with a sustainable way of life. Information must be disseminated through formal and informal educational systems so that the policies and actions needed for the survival and well-being of the world's societies can be explained and understood.

ENABLE COMMUNITIES TO CARE FOR THEIR OWN ENVIRONMENTS.

Most of the creative and productive activities of individuals or groups take place in communities. Communities and citizens' provide that most readily accessible means for people to take socially valuable action as well as to express their concerns. Properly mandated, empowered and informed, communities can contribute to decisions that affect them and play an indispensable part in creating a securely-based sustainable society.

PROVIDE A NATIONAL FRAMEWORK FOR INTEGRATING DEVELOPMENT AND CONSERVATION.

All societies need a foundation of information and knowledge, a framework of law and institutions, and consistent economic and social policies if they are to advance in a rational way. A national programme for achieving sustainability should involve all interest, and seek to identify and prevent problems before they arise. It must be adaptive, continually reorienting its course in response to experience and to new needs. National measures should:

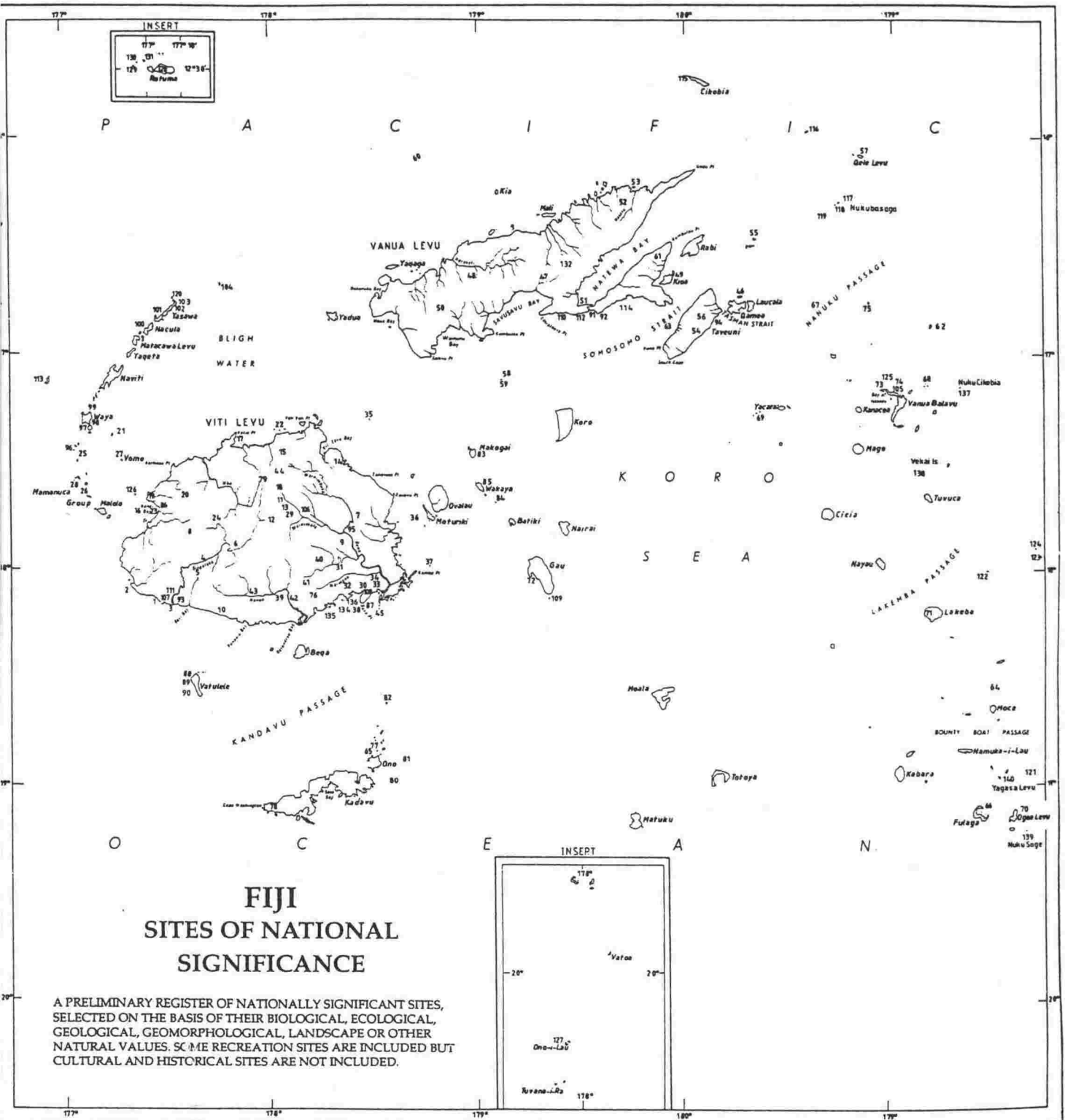
- treat each region as an integrated system, taking account of the interactions among land, air, water, organisms and human activities;
- recognize that each system influences and is influenced by larger and smaller systems - whether ecological, economic, social or political;
- consider people as the central element in the system, evaluating the social, economic, technical and political factors that affect how they use natural resources;
- relate economic policy to environmental carrying capacity;
- increase the benefits obtained from each stock of resources;
- promote technologies that use resources more efficiently;
- ensure that resource users pay the fully social costs of the benefits they enjoy.

CREATE A GLOBAL ALLIANCE

No nation today is self-sufficient. If we are to achieve global sustainability a firm alliance must be established among all countries. The levels of development in the world are unequal, and the lower-income* countries must be helped to develop sustainably and protect their environments. Global and shared resources, especially the atmosphere, oceans and shared ecosystems, can be managed only on the basis of common purpose and resolve. The ethic of care applies at the international as well as the national and individual levels. All nations stand to gain from worldwide sustainability and are threatened if we fail to attain it.

APPENDIX 3:

PRELIMINARY REGISTER OF SITES OF NATIONAL SIGNIFICANCE



**A PRELIMINARY REGISTER OF SITES OF NATIONAL
SIGNIFICANCE**

The register consists solely of 'natural' sites which includes those of biological, ecological, geological, geomorphological, and landscape interest. It also includes some sites currently used for recreation. Cultural and archaeological sites are not included.

This register is by no means complete.

MAP NUMBER	SITE	DIVISION	SIGNIFICANCE
1	CUVU BEACH	Western	Coastal ecosystem, recreation
2	NATADOLA	Western	Coastal ecosystem, recreation
3	SIGATOKA SAND DUNES	Western	National Park, sand dune ecosystem
4	SAUTABU CAVE	Western	Limestone cave
5	NAQALIMARE LIMESTONE	Western	Limestone ecosystem
6	TATUBA CAVE	Western	Limestone cave system
7	WAILOTUA LIMESTONE	Central	Limestone ecosystem and cave
8	NAUSORI HIGHLANDS	Western	Dry zone mountain rainforest
9	NAQALI	Central	<i>Neovetchia storckii</i> palm habitat
10	CORAL COAST REEFS	Western	Marine ecosystem, recreation
11	WAINISAVULEVU FALLS	Western	Waterfall
12	RAIRAIMATUKU PLATEAU	Western	Mountain rainforest
13	MONASAVU	Western	Dam, Hydro catchment protection, rainforest
14	NAKOROTUBU V/THICKET	Western	Unique tropical vine thicket community
15	NAKAUVADRA RANGE	Western	Dry zone rainforest
16	MALAMALA ISLAND	Western	Marine ecosystem
17	VATIA VINE THICKET	Western	Unique tropical vine thicket community
18	WABU CREEK	Western	Intact Fiji <u>dakua</u> montane rainforest
19	DREKETI INLET	Western	Coastal environment, mangrove
20	Mt EVANS RANGE	Western	Intact dry zone montane rainforest
21	WHITE ROCK	Western	Seabird nesting colony
22	MACUATA ISLAND	Western	Crested Iguana habitat
23	NADI BAY REEFS	Western	Reefs, recreation
24	VATURU DAM CATCHMENT	Western	Catchment protection; dry zone rainforest
25	KADOMO ISLAND	Western	Shearwater nesting colony
26	MAMANUCA GROUP	Western	Coastal/marine ecosystem, recreation
27	VOMOSEWA	Western	Flying fox camp; island vegetation
28	MONURIKI ISLAND	Western	Iguana habitat, seabird nesting colony, vegetation
29	MONASAVU SWAMP	Western	Rare montane swamp community
30	SAVURA CREEK	Central	Catchment protection, rainforest
31	SOVI GORGE	Central	River gorge of high scenic value
32	Mt KOROBABA	Central	Rainforest, 5 endemic plant species, recreation
33	NAULU LOKIA SWAMP	Central	White-browed rail habitat
34	NASINU CAVE	Central	Cave system
35	VATU-I-RA	Western	Sea bird nesting colony
36	VATU-I-LAMI	Central	Sea bird nesting colony
37	MUBULAU	Central	Sea bird nesting colony
38	SUVA REEF	Central	Marine habitat and recreational area
39	BATIWAI FOREST	Central	<i>Gulubia microcarpa</i> palm habitat; Forest Reserve
40	SOVI BASIN	Central	Rainforest, wilderness area, high scenic value
41	KOROBASABASAGA RANGE	Central	High scenic value
42	LOWER NAVUA GORGE	Central	High scenic value
43	UPPER NAVUA GORGE	Central	Spectacular scenery; geological formation
44	QARANIBULUTI NAT. RES.	Western	Rainforest, Forest Reserve
45	MAKALUVA ISLAND	Central	Sand cay and reef system; recreation
46	MATAGI ISLAND	Northern	Beach forest; flooded volcanic caldera
47	WALSALI	Northern	<u>Dakua</u> rainforest; Amenity Reserve
48	ROKOSALASE	Northern	Buabua Forest (<i>Fragraea gracipilles</i>)
49	KIOA ISLAND	Northern	Island environment
50	NASELESELE FALLS	Northern	Waterfall system
51	SALT LAKE	Northern	Unique formation
52	VUNIVIA CATCHMENT	Northern	Lowland dry zone forest
53	VUNIVIA MANGROVES	Northern	Intact mangrove system
54	RAVILEVU NATURE RES.	Northern	Wet rainforest habitat; mongoose free
55	COBIA ISLAND	Northern	Beach forest; geological formation
56	TAVEUNI ISLAND	Northern	Potential World Heritage nomination
57	QELELEVU ATOLL	Northern	Atoll habitat
58	NAMENA BARRIER REEF	Northern	Barrier Reef; marine ecosystem
59	NAMENALALA ISLAND	Northern	Sea bird nesting colony; beach forest
60	GREAT SEA REEF	Northern	Barrier Reef; marine ecosystem
61	TUNULOVA FOREST	Northern	Rainforest; Vanua Levu silktail habitat
62	DUFF REEF	Eastern	Turtle nesting site
63	RAINBOW REEF	Northern	Patch Reef/marine ecosystem
64	CAKAULEKALEKA REEF	Eastern	Marine ecosystem
65	YABU ISLAND	Eastern	Seabird nesting colony
66	FULAGA BAY OF ISLANDS	Eastern	Spectacular lagoon; geological formations
67	NANUKU ISLAND	Eastern	Turtle nesting area

MAP NUMBER	SITE	DIVISION	SIGNIFICANCE
68	SOVU ISLAND	Eastern	Seabird nesting colony
69	NUKUTOLU ISLAND	Eastern	Turtle nesting area
70	OGEALEVU	Eastern	Makatea Forest; Ogea flycatcher habitat
71	TUBOU CAVE	Eastern	Island cave system
72	GAU	Eastern	Endangered Fiji Petrel nesting habitat
73	QILAQILA BAY OF ISLANDS	Eastern	Coastal formations/marine ecosystem
74	MASOMO BAY	Eastern	Coastal environment
75	WAILAGILALA ATOLL	Eastern	Atoll, seabird nesting colony; marine ecosystem
76	GARRICK PARK	Central	Rainforest
77	TAQUA ISLAND	Eastern	Seabird nesting colony
78	Mt WASHINGTON	Eastern	Petrel breeding site; unique landscape
79	NADARIVATU NAT. RES	Western	<u>Dakua</u> dominated rainforest
80	GREAT ASTROLABE REEF	Eastern	Marine lagoon ecosystem
81	NORTH ASTROLABE REEF	Eastern	Marine lagoon ecosystem
82	JOSKE'S THUMB	Eastern	Landscape; geological feature
83	MAKOGAI IS	Eastern	Beach forest, cycad dominated; coastal/marine ecosystem
84	CAKAU MOMO REEF	Eastern	Marine ecosystem
85	WAKAYA ISLAND	Eastern	Coastal/marine ecosystem
86	SAWENI SANDFLATS	Western	Feeding site for migratory waders
87	SUVA POINT	Eastern	Feeding site for migratory waders
88	GUSUNIQARA PT.	Western	Geological site — marine notch
89	VATULELE CAVE	Western	Limestone cave system
90	RED-PRAWN POOL	Western	Anchialine habitat red prawn pool
91	NASINUNAQERE	Northern	Geological site — marine notch
92	URABUTA PT.	Northern	Anchialine habitat — red prawn pool
93	KOROKUNE	Western	<i>Veitchia johannis</i> Palm Forest
94	LAVENA	Northern	Geological site-sea stack
95	WAI DAWARA	Central	Geological site-river process
96	VANUALEVU ISLAND	Western	Geological site-rock type
97	KUCUVE PT	Western	Geological site-rock type
98	MOTOKURO PT.	Western	Geological site-rock type
99	KOROMASOLI PT.	Western	Geological site-rock type
100	DIGIO ISLAND	Western	Geological site-rock type
101	NAMATAYA BAY	Western	Geological site-rock type
102	NAROSALIA ISLAND	Western	Geological site-rock type
103	VATULACA ISLAND	Western	Geological site-rock type
104	YALEWA KALOU	Western	Geological site-rock type
105	VUTUA	Eastern	Geological site-rock type
106	WAINIVUDI R.	Central	Geological site-rock type
107	YADUA QUARRY	Western	Geological site-rock type
108	SEALARK HILL, SUVA	Central	Geological site-rock type
109	YACIWA ISLAND	Eastern	Geological site-rock type
110	SAVASI	Northern	Geological site-rock type
111	MAKASIKO	Western	Geological site-rock type
112	BAKABAKA ISLAND	Northern	Geological site-rock type
113	VIWA ISLAND	Western	Geological site-rock type
114	NANUCA	Northern	Geological site-rock type
115	CIKOBIA ISLAND	Northern	Seabird nesting colony
116	VETAUA	Eastern	Seabird nesting colony
117	NUKUBASAGA	Eastern	Seabird nesting colony
118	NUKUPURETI	Eastern	Seabird nesting colony
119	NUKUSIMANU	Eastern	Seabird nesting colony
120	NANUYAIRA	Western	Seabird nesting colony
121	NAIABO	Eastern	Seabird nesting colony
122	VANUAMASI	Eastern	Seabird nesting colony
123	REID REEF	Eastern	Seabird nesting colony
124	LATEIVITI	Eastern	Seabird nesting colony
125	KIBOBO ISLETS	Eastern	Seabird nesting colony
126	VUNIVADRA ISLAND	Western	Seabird nesting colony
127	YANUYA ISLAND, ONO	Eastern	Habitat of endemic <i>Leilopisma alazon</i> skink
128	ROTUMA	Northern	Unique island; geological feature
129	HOFIUA ISLAND	Northern	Seabird nesting colony
130	HATANA ISLAND	Northern	Seabird nesting colony
131	UEA ISLAND	Northern	Geological features, Beach forest
132	VUNIMOLI NAT. RES.	Northern	Rainforest; Forestry Reserve
133	TOMANIVI NAT. RES.	Western	Rainforest; Forestry Reserve
134	DRAUNIBOTA NAT. RES.	Central	Bay of Islands, Forestry Reserve
135	LABIKO NAT. RES.	Central	Bay of Islands, recreation; Forestry Reserve
136	VUO NAT. RES.	Central	Bay of Islands, recreation; Forestry Reserve
137	NUKU CIKOBIA	Eastern	Turtle nesting areas, seabird nesting area
138	VEKAI ISLAND	Eastern	Seabird nesting area
139	NUKU SOGE	Eastern	Seabird nesting colony and turtle nesting area
140	YAGASA LEVU ISLAND	Eastern	Seabird nesting colony

APPENDIX 4:

INTERNATIONAL ENVIRONMENTAL/RESOURCE CONVENTIONS TO WHICH FIJI IS PARTY (Date is year of Fiji's entry)

INTERNATIONAL ENVIRONMENTAL / RESOURCE CONVENTIONS TO WHICH FIJI IS PARTY (Date is year of Fiji's entry)

- . International Plant Protection Convention (1956)
- . Convention on the Continental Shelf (1970)
- . Convention on High Seas (1970)
- . Convention on Fishing and Conservation of the Living Resources of the High Seas (1971)
- . Plant Protection Agreement for South East Asia (1971)
- . Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Underwater (1972)
- . Treaty on the Non-proliferation of Nuclear Weapons (1972)
- . International Convention for the Prevention of Pollution of the Sea by Oil (1972)
- . Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxic Weapons and their destruction (1973)
- . International Convention Relating to an Intervention of the High Seas in Cases of Oil Pollution Casualties (1975)
- . International Convention on Civil Liability for Oil Pollution Damage (1975)
- . South Pacific Forum Fisheries Agency Convention (1979)
- . United Nations Convention on the Law of the Sea (1982)
- . International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1983)
- . South Pacific Nuclear Free Zone Treaty and Protocol (1985)
- . Vienna Convention and Montreal Protocol on Substances that Deplete the Ozone Layer (1989)
- . Convention on the Conservation of Nature in the South Pacific, **the Apia Convention** (1989)
- . Convention for the Protection of Natural Resources and Environment of the South Pacific and their Related Protocols, **the SPREP Convention** (1989)
- . Convention Concerning the Protection of the World Cultural and Natural Heritage, **the World Heritage Convention** (1990)
- . United Nations Framework Convention on Climate Change (1992)
- . Convention on Biological Diversity (1992)



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