

**THE  
NATIONAL  
ENVIRONMENT  
STRATEGY**

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**FIJI**



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Compiled by: Dick Watling                      Stuart Chape  
IUCN Team Leader                              NEMP Manager

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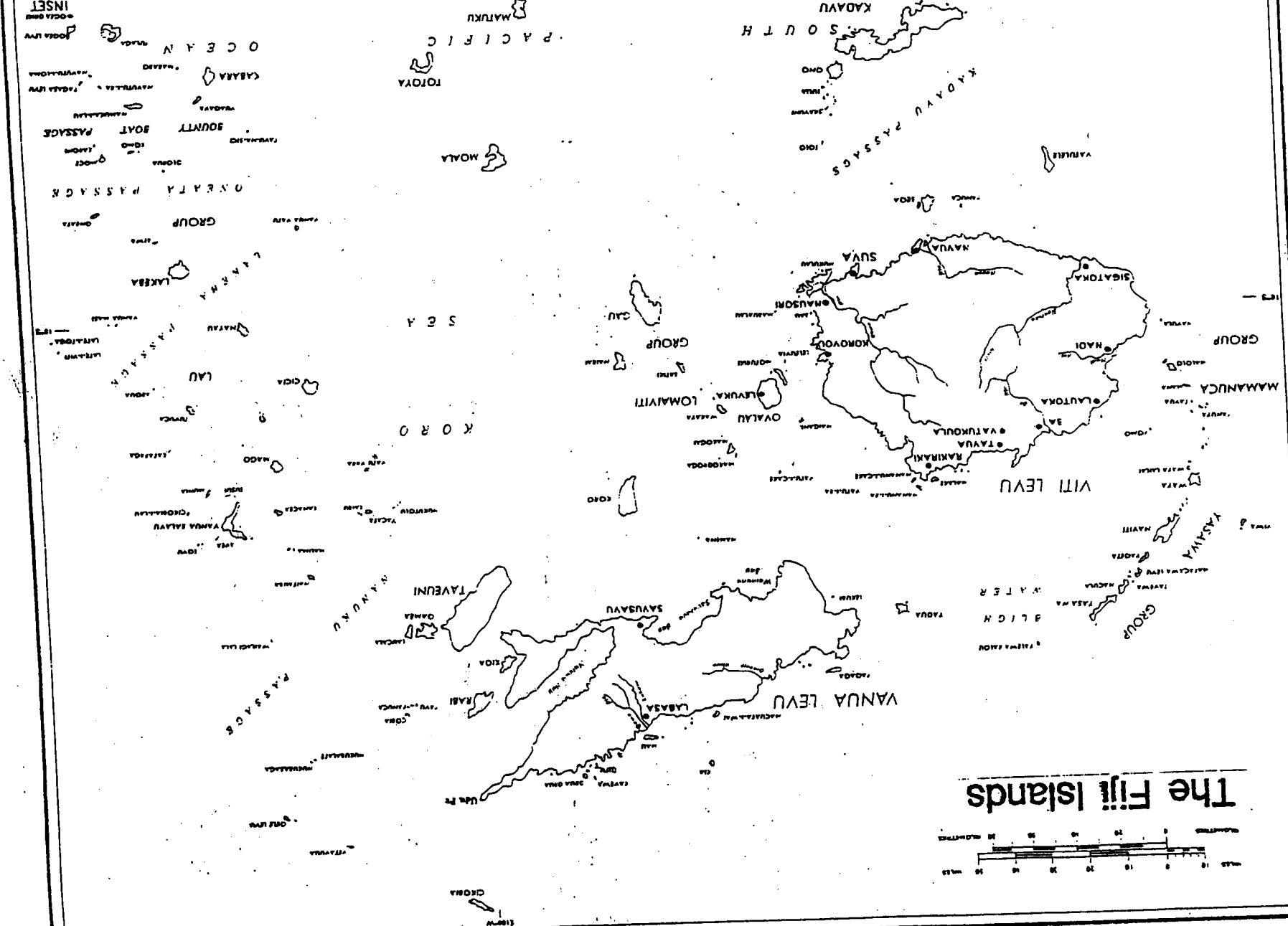
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# The Fiji Islands



INSET  
 PACIFIC OCEAN  
 GREAT PASSAGE  
 SOUTH PACIFIC



## **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)

## TABLE OF CONTENTS

Map of Fiji	i
Foreword	ii
Table of Contents	v
Abbreviations and acronyms	vi
Summary	

### PART I INTRODUCTION

1 Introduction	1
1.1 Background to the National Environment Strategy	1
1.2 Objectives	1
1.3 National Environmental Management Project Activities	2

### PART II THE ISSUES

2 The State of Fiji's Environment	3
2.1 People	3
2.2 Fiji's Natural Resource Endowment	3
2.3 Land Use	5
2.4 Forestry	5
2.5 Fisheries	6
2.6 Water Supply	6
2.7 Urban Development	7
2.8 Tourism	7
2.9 Mining	7
2.10 Energy	7
2.11 Economic Development	8
2.12 Waste Management	8
2.13 Environmental Management	9
2.14 Protected Area Management	10
3 Implications for National Development	11

### PART III STRATEGY FRAMEWORK

4 Policy Orientation for National Development	12
4.1 Fiji at the Threshold	13
4.2 Sustainable Development	13

<b>5</b>	<b>Achieving Sustainable Development</b> .....	19
5.1	Objectives of the National Environment Strategy .....	19
5.2	Environmental Management Capability .....	19
5.3	Heritage Protection .....	22
5.4	Public Participation .....	23

**PART IV ACTION PLAN**

<b>6</b>	<b>The Challenge</b> .....	25
<b>7</b>	<b>The Foundation - Appropriate Environmental Policies</b> .....	29
7.1	Sustainable Development .....	29
<b>8</b>	<b>The Institutional and Legislative Challenge</b> .....	30
8.1	Outline of an Appropriate Institutional Structure .....	30
8.2	Management Components of The Institutional Structure .....	30
8.3	The Proposed Environment Commission .....	31
<b>9</b>	<b>Institutional Strengthening for the Dept. of Environment</b> .....	32
9.1	A Ministry of the Environment ? .....	32
9.2	Envisaged functions of the Dept. of Environment .....	33
9.3	Proposed National Environment Council .....	34
9.4	The Proposed National Environment Council .....	34
9.5	Pollution and Waste management .....	37
<b>10</b>	<b>Legislation for Effective Environmental Management</b> .....	41
10.1	Priority Requirements .....	41
10.2	Environmental Impact Assessment Legislation .....	41
10.3	Pollution Legislation .....	44
10.4	Land and Water Resource Management Legislation .....	45
10.5	Protected Areas, Historic Sites and Wildlife .....	45
10.6	A Comprehensive Resource Management Act ? .....	46
<b>11</b>	<b>Protecting Natural and Cultural Heritage</b> .....	46
11.1	Measures Required for Appropriate Heritage Protection .....	46
11.2	Conservation Management .....	47
11.3	Site and Species Identification .....	47
11.4	Natural Forest Management .....	47
11.5	Wildlife Issues .....	49
11.6	National Trust for Fiji .....	51
<b>12</b>	<b>Land Use Planning</b> .....	53
12.1	Physical Planning .....	53
12.2	Climate Change .....	54

<b>13</b>	<b>Land Degradation</b> .....	55
13.1	The Issue.....	55
13.2	Current Control of Land Degradation .....	58
13.3	Native Land Trust Board .....	58
13.4	Landowners and Landusers .....	59
13.5	Role of the Department of Agriculture.....	60
13.6	Land Degradations .....	61

**PART V IMPLEMENTATION**

<b>14</b>	<b>Implementing the National Environment Strategy</b> .....	63
14.1	Introduction .....	63
14.2	International Assistance, a 'kick start' for the NES .....	63
14.3	Government of Fiji's Contribution .....	63
14.4	Priorities .....	65
<b>15</b>	<b>Project Outlines</b> .....	68
15.1	Strengthening of the Dept. of the Environment .....	68
15.2	Waste Management and Pollution Control Strategy .....	69
15.3	Legislation for Environmental Impact Assessment.....	70
15.4	National Land Use Plan.....	71
15.5	Introduction of Soil Conservation Practices.....	72
15.6	Feasibility of a Resource Management Act for Fiji .....	75
15.7	Establishment of the Department of Conservation .....	76
15.8	Natural Resource Assessment .....	78
15.9	Establishment of Park and Protected Area System .....	82
15.10	Integrated Development Plan for Taveuni Island .....	84
15.11	Re-organisation of the National Trust for Fiji .....	85
15.12	Environmental Education Strengthening .....	86
15.13	Directed Public Awareness Programme .....	87
15.14	Sustainable Management of Traditional Fishing Rights .....	89
15.15	Utility Carbon Assimilation Funds .....	90

<b>References</b> .....	91
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<b>PART IV APPENDICES</b> .....	92
1 NEMP reports .....	92
2 Principles of a Sustainable Society .....	95
3 Preliminary Register of Sites of National Significance .....	99
4. International Environmental/Resource Convention to which Fiji is Party .....	102

## 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 Claassen   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/km<sup>2</sup> can be considered modest, but this average conceals accentuated densities in excess of 170 persons/km<sup>2</sup> 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 km<sup>2</sup> 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/km<sup>2</sup>. 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