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National Environmental Management Strategy

Niue

Niue

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E*nvironmental*
M*anagement*
S*trategy*

USP Library Cataloguing-in-Publication data:

Niue : national environmental management strategy.
—[Apia, Western Samoa : SPREP, 1993]

xx, 57p. : 29cm

ISBN 982-04-0098-8

1. Environmental policy—Niue 2. Environmental protection—Niue I. South Pacific Regional Environment Programme

HC79.E5N58 333.715099626

Prepared for publication by the South Pacific Regional Environment Programme, Apia, Western Samoa

Editor
Suzanne Grano

Editorial assistant
Roslyn Sharp

Design and production
Peter Evans

Photography
John Lane (unless indicated otherwise)

Artwork for symbols
Catherine Appleton and
from Ailsa Robertson, *Patterns of Polynesia—Niue*, Heinemann Education, Auckland, New Zealand, 1989

Cover design by Peter Evans based on an original design by Catherine Appleton

Maps supplied by MAPgraphics, Brisbane, Australia

Typeset in New Baskerville and Gill Sans
Printed on 110 gsm Tudor R. P. (100% recycled) by ABC Printing, Brisbane, Australia

Produced with financial assistance from the United Nations Development Programme (UNDP)

Cover photograph: In a number of villages on Niue, access for boat launching is by narrow and steep sea tracks. Launching boats across the reef flat into seas which can often be rough is a major challenge to inshore fishing.

Niue

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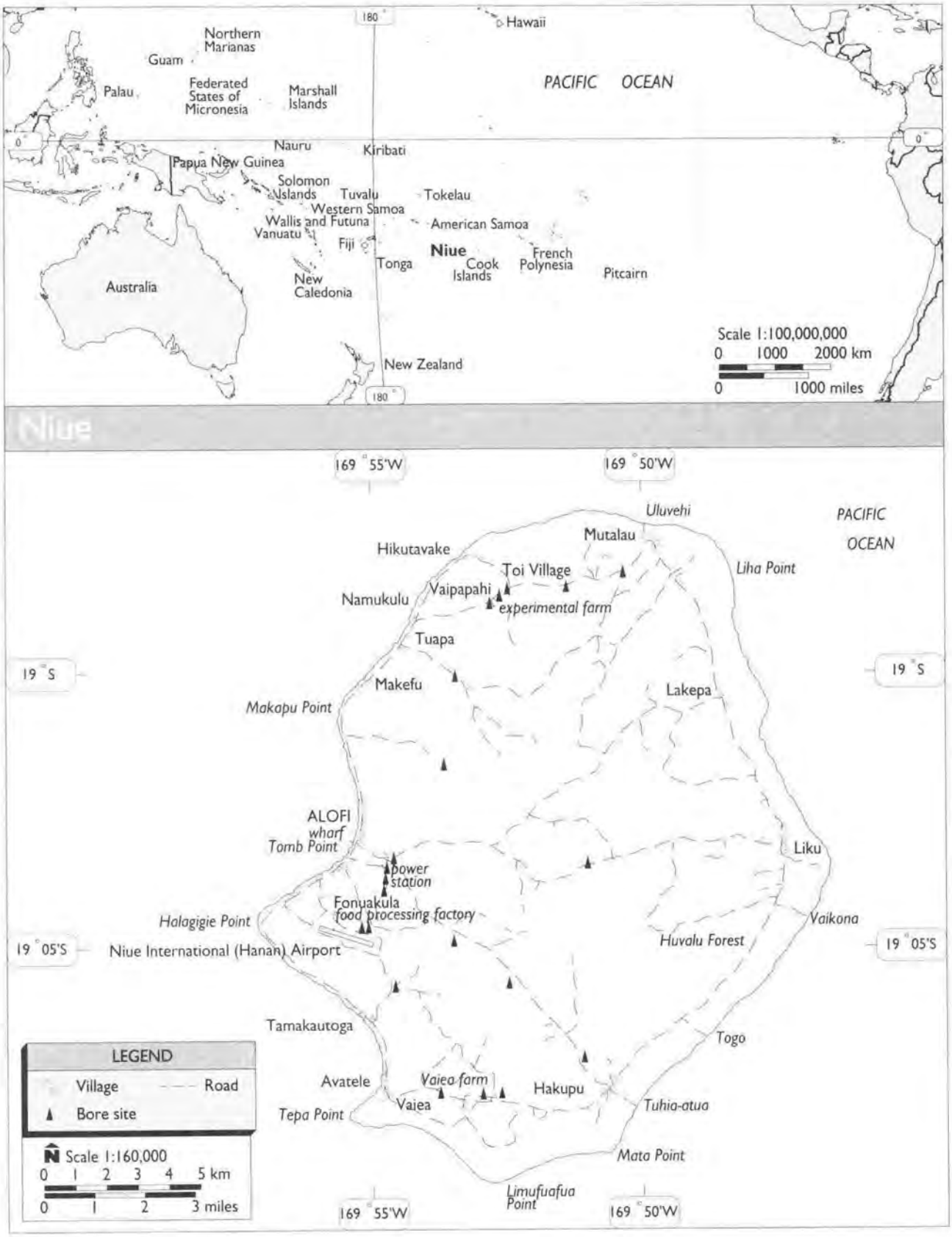
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Halagigie Point
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Niue International (Hanan) Airport
Tamakautoga
Togo
LEGEND
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Bore site
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Foreword

The Niue Government fully supports Niue's National Environmental Management Strategy (NEMS) programme. This programme is an important step towards linking economic growth and environmental management in the development of our country. The scope of the NEMS is broad and includes the development of appropriate environmental legislation, the development and implementation of environmental management training and awareness programmes, and the development of appropriate methods for Environmental Impact Assessment (EIA) of all intended projects.

This document is an important step for Niue to guide and assist the country towards its ultimate goal of sustainable development. It is also vitally important that this document be exercised wisely and be reviewed accordingly to incorporate any changes that may or do occur that could jeopardise the future of our generations to come.

I would like to thank all those who participated in the preparation of this document nationally, the Niue Environment Taskforce, SPREP for their invaluable support and service, and UNDP for their generous assistance in funding this programme.

The Honourable Frank Fakaotimanava Lui
Premier of Niue

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Notes The currency of Niue is the New Zealand dollar. All monetary amounts are in $NZ unless otherwise specified. Currency amounts in the Appendix (Programme profiles) are in United States dollars ($US).

A financial year spans the period 1 July to 30 June.

Acknowledgements

Many people have generously contributed their time and expressed their support in a variety of ways, and it would be impractical to attempt to list all of them here. At the same time, the significant contributions made by a special core of people must be gratefully acknowledged.

Hon. O'love Tauveve Jacobsen, Minister for the Environment; Mr Bradley Punu, Secretary to Government; Mr Terry Chapman, former Secretary to Government; Mr Toeono Tongatule, former Acting Secretary to Government; Mrs Fifita Talagi, Director of Community Affairs; Mrs Sisilia Talagi, Director of Agriculture, Forestry and Fisheries; Mr Atapana Siakimotu, Director, Department of Education; Mr Hakai Pihigia, Deputy Director of Works; Mr Holo Tafea, Principal Health Inspector; Father Kevin Glover, Catholic Mission; and Mr Herman Tagaloailuga.

The people with closest involvement in this activity deserve special thanks. For her ongoing assistance, Mrs Fifita Talagi, Director of Community Affairs, and for his work as the person formerly responsible for environmental coordination, Mr Bradley Punu, we extend our appreciation. Our thanks are also extended to the newly appointed Environment Officer, Mr Wayne Tagelagi.

The SPREP Team has been made up of a number of people, both staff members and consultants, providing specific technical assistance. Our thanks go to Mr Iosefatu Reti, Mr Iosefa Maiava, Mr Clark Peteru, Mr John Lane, Dr Steve Brown, Mr Navitalai Litidamu, Mr Laisiasa Tulega and Mr Shoadesh Chandra Debb.

Neva Wendt

Neva Wendt
Team Leader
National Environmental
Management Strategies (NEMS)
South Pacific Regional Environment Programme

Message from UNDP

UNDP's Environmental Strategy and Action Plan focuses on supporting governments in integrating environmental considerations into their development plans. It provides environmental management guidelines that can be applied to all programmes and project cycles, as part of UNDP's effort to aid governments in their pursuit of sustainable development.

In this regard, UNDP is proud to be associated with the preparation of National Environmental Management Strategies (NEMS) in seven Pacific Island countries through its institution-building project designed to enhance the capacity of the South Pacific Regional Environment Programme (SPREP) to effectively service its mandate from member governments of the South Pacific Commission with regard to environmental assessment and management. Under this project, UNDP provided SPREP with legal and financial consultants to working groups which were charged with guiding SPREP to institutional independence, as well as a strategy consultant to formulate its long-term corporate plan and an environmental management specialist to oversee the development of NEMS in seven countries. UNDP further supported the UNCED process by providing funds not only for Pacific regional workshops but also for air fares and subsistence allowance to enable participation by Pacific Island governments and NGOs in the UNCED Preparatory Committee meetings.

UNDP is also currently planning a follow-up programme which will focus on building capacity in fifteen countries of the Pacific region for the implementation and mainstreaming of the NEMS process in national development efforts.

Economic development strategies in any country must be compatible with environmental goals and the challenge is knowing how to do this. It is, however, possible to make choices and decisions that will eventually promote environmentally sound development by understanding how the environment functions; by identifying what needs to be done to protect, conserve, enhance and preserve it on a long-term basis; and by linking national objectives with environmental management activities.

The National Environmental Management Strategies are a mechanism which seek to enable such choices and decisions to be made through a participatory process which brings together government departments, non-government organisations and communities in a spirit of inclusiveness and social integration in the decision-making process on environmental management.

UNDP therefore applauds the timely publication of the National Environmental Management Strategy for Niue. This document will undoubtedly provide a further stimulus to the integration of environmental considerations into the national process for the planning and management of development in a sustainable manner.

Anthony R. Patten
Resident Representative
United Nations Development Programme

Message from SPREP

We Pacific Islanders share a common aspiration for economic development and improved living standards for our people. However, we are aware that this development cannot be at the cost of the environment. We have lived in close harmony with our island environment for thousands of years and we are well aware of its importance to our way of life. We face the complex challenge, in common with many other countries of the world, of achieving economic development in a way which will not significantly affect our environment. This major challenge must be addressed if our Pacific way of life is to survive.

The preparation of National Environmental Management Strategies (NEMS) in several Pacific Island countries has been a major tool in addressing these issues. This undertaking was made possible through the generous financial assistance of the United Nations Development Programme (UNDP). This assistance is gratefully acknowledged.

The Niue National Environmental Management Strategy (NEMS) is a practical document which aims to identify Niue's major environmental issues and the priority environmental programmes required to address them. The emphasis has been on ownership of the NEMS by the government and the people of Niue. The process which has resulted in the preparation of the NEMS has involved many participants and has been directed by a National Task Force, comprising relevant government and non-government organisations in Niue.

The NEMS process has proved a most useful vehicle for raising awareness of environmental issues. However, the success of the NEMS exercise will ultimately be judged by its implementation. If the NEMS sits on a shelf and gathers dust, then the exercise has failed.

SPREP looks forward to working with Niue and with other regional and international organisations in the implementation of the NEMS.

Vili A. Fuavao
Director
South Pacific Regional Environment Programme

Acronyms

AIDAB	Australian International Development Assistance Bureau
DAFF	Department of Agriculture, Forestry and Fisheries (Niue)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization of the United Nations
FFA	(South Pacific) Forum Fisheries Agency
GEF	Global Environment Facility
GIS	Geographic Information System
IAEA	International Atomic Energy Agency
IUCN	World Conservation Union
NCAP	Niue Concerted Action Plan
NEMS	National Environmental Management Strategy
NGO	non-government organisation
PWD	Public Works Department (Niue)
SOPAC	South Pacific Applied Geoscience Commission
SPBCP	South Pacific Biodiversity Conservation Programme
SPREP	South Pacific Regional Environment Programme
TCSP	Tourism Council of the South Pacific
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations International Children's Emergency Fund
USP	University of the South Pacific
WCED	World Commission on Environment and Development
WHO	World Health Organization
WWF	World Wide Fund for Nature

Glossary

Niuean words

fono	Prohibition placed on an area (land or sea) to protect it and its crops or resources (e.g. coconut leaves tied around fruit trees indicate both trespass and the taking of crops are forbidden).
Fono	Government Assembly.
tapu	Forbidden, protected, placed under taboo.

General

agroforestry	The combination of agriculture and forestry into a sustainable system.
aquaculture	The farming of marine or freshwater plants and animals.
biodiversity	The variety of plants and animals in an area. Biodiversity refers not only to the number of different species but to the full range of genetic variation within each species.
conservation	Managing the way people use natural resources so that they give the greatest sustainable benefit today, while keeping their full potential to meet the needs and aspirations of future generations.
degradation	The result of poor resource use which pollutes, damages or reduces the quality of resources available to future generations.
development	The introduction of new ways to use natural resources to meet human needs and wants.
ecology	Branch of biology which deals with the relation of plants and animals to their environment.
ecosystem	A community of plants and animals and the environment they inhabit.
eco-tourism	Locally managed nature-based tourism that promotes conservation issues.
endemic	An animal or plant which is found only in one region or country and is not present naturally in any other part of the world.
environment	All the living and non-living things in a particular place or on the earth generally, and the way they interact or work together.
fauna	Animals.
habitat	The natural home of a plant or animal species.
hydrological	Relating to water, whether surface water in rivers or groundwater available in wells.

introduced species	A species which does not naturally occur in a particular area but rather has been brought in from outside.
leachate	Water or other liquid which has seeped through the earth, a rubbish tip, mine waste etc., and hence carries impurities.
natural resource	A naturally occurring stock or supply which can be used to help meet human needs and wants.
pelagic fish	Fish that live in the open ocean rather than close to shore.
public sector	Activities and enterprises run by government.
recycle	To convert something to reusable material instead of throwing it away.
resource	A stock or supply which can be used to help meet human needs and wants.
species	A scientific name given to each different type of animal or plant.
strategy	A plan to help achieve certain goals.
subsistence	Producing mostly for own consumption, for example, farming which directly supports the farmer's household without producing a significant surplus for trade.
sustainable	Using a resource in such a way that its supply and quality are maintained indefinitely into the future.
terrestrial	Relating to the earth.
toxic	Poisonous.

Executive summary

Background

This National Environmental Management Strategy (NEMS) is a long-term perspective of a set of strategies and programmes through which Niue may achieve sustainable national development; that is, development that meets the needs of today's population without jeopardising the ability of future generations to meet their own.

The development of the NEMS involved a number of tasks, which included the preparation of the Sector Environmental Reports and the State of the Environment Report for Niue, all in consultation with the national government. Reviews were also made of the educational and the legal frameworks in Niue.

The National Task Force on Environment and Development, set up to oversee the preparation of the Niue Country Report for UNCED (Government of Niue 1991), was retained by government for the preparation of this NEMS. The National Task Force, together with the participants of NEMS national seminars and workshops, identified opportunities for sustainable development, and these are incorporated in the document either as programme areas or programme profiles. But it is also important to note that policy decisions on the strategies and programmes which should receive priority attention are rightly matters for government, and any suggestions made in this NEMS document should be viewed in that light.

Overview of the natural environment

A national environmental management strategy must necessarily be formulated in the context of the overall natural, socio-economic, cultural and political environment. Chapter 2 provides a brief overview of Niue in terms of its location and size, climate, land, sea, economy and people. Much of the information in chapter 2 was taken from the Niue Country Report for UNCED (Government of Niue 1991) and while an attempt is made here to summarise the information, the focus is on action strategies. The reader is referred to the UNCED document as well as the State of the Environment Report (Lane 1994) for more details on Niue's natural environment.

Overview of proposed strategies and programmes

The main purpose of the NEMS document is to outline key strategies for the attainment of sustainable development. These are grouped into six broad objectives, which, together, form the overall environmental management strategy for Niue:

(1) Integrating environmental considerations into sustainable economic development (chapter 3)
(2) Improving environmental awareness and education (chapter 4)
(3) Strengthening the resource information database (chapter 5)
(4) Protecting areas of high ecological, wilderness and cultural value (chapter 6)
(5) Improving waste management and controlling pollution (chapter 7)
(6) Sustainable use and management of natural resources (chapter 8).

1. Integrating environmental considerations into sustainable economic development

Niue recognises that the key to sustainability of resource use and the achievement of environmental conservation is the integration of environmental safeguards into economic decision making. This is a complex task, which needs to be addressed at all levels, from the national policy level through to the local level. There are five practical steps that can be taken immediately on a national level to ensure that such integration takes place. These are:

(a) Adopt an integrated approach to environmental policy and planning. Such an approach would entail:

- formal adoption of the principle of sustainability, with integration of environmental and economic considerations built into the terms of reference of government agencies dealing with national and sector policy and planning;
- the continuation and strengthening of the Environment Taskforce to be responsible for the integration of economic, environmental and physical planning with the policy evaluation process, and to have the mandate to examine departmental policy and development or investment proposals before they go to Cabinet;
- upgrading the capacity of the Environment Unit to carry out initial screening of project proposals received, and to make recommendations to the Taskforce concerning the need (or otherwise) for Environmental Impact Assessment;
- incorporation of the principle of sustainable development into the mandates and policies of the sectoral line departments;
- promotion of common approaches to economic and environmental planning, both in the public and private sectors; and
- promotion of open consultation mechanisms with local communities, and the pursuit of traditional consensus approaches to decision making.

(b) Submit proposed policies, development programmes and projects (government and private, local and foreign) to Environmental Impact Assessment (EIA).

The Environment Taskforce and others involved in the preparation of the NEMS fully recognised EIA as an indispensable tool for ensuring that development is pursued on a sustainable basis. Thus, for all projects which are likely to have a significant environmental impact, and are allowed to go ahead, there is a need to:

- include an environmental management programme in the project design document; and
- ensure that the capacity exists for proper monitoring in order to compare reality with the predicted effects, thus permitting adjustments of the planned development process.

Indeed, EIA is so crucial that it must extend beyond development projects to all national and local programmes. In this respect, the institutional EIA capacity of the Environment Unit and the Environment Taskforce should be strengthened to ensure that any major development initiatives can be properly evaluated.

(c) Introduce a comprehensive framework of national and local environmental law, together with the means for its enforcement in a communally acceptable manner.

In order to achieve harmony between environmental policy and economic decision making at national and local levels, comprehensive and consistent legislation will need to be introduced. Such legislation should contain a set of clearly defined principles of sustainable use and conservation of the nation's natural and cultural resources.

Already, a comprehensive piece of legislation (Environment Management Bill) is now in draft form and is expected to be ready for Parliamentary approval in 1994. This legislation seeks to empower a Council with environmental responsibilities and broad enforcement powers, including search, arrest and seizure powers. The Council, consisting of five persons, would be appointed by and responsible to Cabinet. The stated purpose of the Bill is "to establish a Conservation Service and to make provision for the conservation and protection of the environment and national resources, and the establishment of national parks and reserves".

(d) Review adequacy of institutional mechanisms and administrative controls and strengthen them as necessary.

During the preparation of the NEMS, a number of institutional mechanisms and administrative arrangements for the management and oversight

of the environment were considered. For example, at a NEMS workshop in early May 1993, it was recommended that in the interim period, before the Environment Management Bill is passed, the Environment Unit should remain under the Community Affairs Department, but that there was a need to strengthen the capacity of the Unit to perform its functions more effectively. The Unit, however, will also be answerable to the Environment Taskforce (or Council) which will comprise most (if not all) the members of the current Taskforce.

The NEMS workshop also recommended that the Environment Taskforce (or Council) have overall responsibility for screening development project proposals for their environmental impacts and make recommendations to the Development Finance Committee and the Cabinet, the two bodies that make the final decision. Further, it was recommended that each member of the Taskforce be appointed by Cabinet for a specific period, with the aim of broad representation from both public and private sectors, including non-government organisations.

More importantly, there is a need to continually review institutional arrangements and capacity to ensure they are in line with the evolving environmental needs and policies of government.

(e) Institute economic policy for achieving sustainability.

There are many broad economic instruments which countries can apply as flexible and efficient means of promoting sustainable development. In Niue, as in all other Pacific islands, there is a need to review existing monetary and fiscal policies for their impacts on sustainable resource management and environmental protection. Those taxes, or subsidies, supporting activities which damage ecosystems or resources should be reviewed.

New economic instruments should also be considered as a way of promoting sustainability. For example, where the full cost of a service or resource is not borne by the user, this serves to lessen the interest in conservation. The introduction of the "user pays" or "polluter pays" principle in some parts of the Pacific has been an effective way of reducing unnecessary depletion of resources in the first instance, and in the second, providing a strong incentive for pollution control. For example, importers and users of non-degradable materials should pay for at least part of the costs of collecting and disposing of the materials in a safe manner.

Pricing policies and standards can also be used to encourage government, industry and communities to adopt resource-efficient technology. For instance, high prices for imported fossil fuel and for electricity from such imports can promote greater use of solar energy, which, for a country like Niue, would seem natural.

2. *Improving environmental awareness and education*

It is generally accepted that an informed and supportive public will ensure effective long-term environmental management. The seminars held during the preparatory phase of the NEMS stressed the priority need for environmental education and awareness if the people of Niue are to participate fully in, and be supportive of, efforts to protect the country's environment and natural resources.

Niue is fortunate in that it has a relatively small population which can easily be reached. On the minus side, appropriate environmental education is yet to be fully integrated in the formal school system, with a lack of appropriate educative materials and teacher ability and confidence as the main stumbling blocks. There is also a general lack of public awareness regarding the need for, and ways of, protecting the environment, a problem compounded by the lack of appropriate materials for community-type awareness programmes. The absence of truly sustainable resource-use experience, brought about by the disappearance of the more traditional forms of knowledge and resource-use practices, is one area which is highlighted in this NEMS.

Given these concerns, some specific activities to improve current environmental education and awareness programmes could include:

(a) the review and upgrade of the status of environmental education in both the formal and informal sectors; and

(b) the preservation and application of traditional knowledge and resource management systems.

3. *Strengthening the resource information database*

So far, only sporadic attention has been paid to the natural resources of Niue, with the result that the

fundamental, vital information base needed for resource development planning is absent or weak. The only way this deficiency could be addressed is to conduct more systematic ecological surveys. The existing and new information could be stored in a computerised database for ease of use.

4. Protecting areas of high ecological, wilderness and cultural value

Niue has no formal protected or conservation area operating at the moment although the Hakupu Forest, which had received protection for many years through a community decision, has been much more successful in protecting biodiversity than the many so-called "protected areas" in other countries, and is being looked at for lessons which could be applied elsewhere.

There are four strategies for attaining this broad objective:

(a) Develop protected areas and reserves incorporating sustainable use and development of resources.
(b) Promote eco-tourism as a strong rationale for protecting the environment.
(c) Investigate measures for the protection and management of wildlife, particularly birds.
(d) Protect biological diversity through better understanding of Niue's fauna and flora, and by taking immediate action to protect large areas of land which are important for biodiversity conservation before they are lost to development pressure.

5. Improving waste management and controlling pollution

The current level of pollution in Niue is relatively insignificant compared to other countries in the South Pacific, which means that Niue has the opportunity to prevent any such problem from getting out of control. A major concern, however, is the underground water lens which is vulnerable to land-based contaminants. The following strategies will ensure that Niue and its people and natural resources remain clean, healthy and productive.

(a) Improving disposal of solid waste and sewage which is becoming a major concern given the lack of a suitable landfill site.
(b) Reduction of pollution from development activities through EIA and effective monitoring of waste emissions.
(c) Controlling the already widespread use, and abuse, of biocides and other hazardous chemicals.

6. Sustainable use and management of natural resources

Niue is fortunate in having a small, stable population. However, the following terrestrial resource-use strategies need to be followed if its limited resources are to sustain growing development requirements.

(a) The management of land resources, particularly land itself, with its lack of soil and a water-retaining capacity.
(b) Promote sustainable management of Niue's forest, one of its very few terrestrial resources of importance.
(c) Improve community awareness and information flow regarding the status and full value of its terrestrial resources, particularly the forestry one.
(d) Increase reforestation in order to sustain the local demand for forest produce and, more importantly, to provide a vegetation cover for exposed soil after land-clearing operations.
(e) Promote traditional forms of crop production, as they have proven to be more sustainable than many of the introduced farm practices.
(f) Management of the coastal environment, which, given the population's tendency to live in coastal areas, is one of the most stressed of Niue's ecologies.

With regards to marine resources, there is already concern about the probable over-harvesting of some species. A marked decline in fish catches has caused a number of village communities to impose sanctions on certain fishing grounds, and these measures have been found to be effective in controlling the excessive exploitation of certain marine species. The ban on certain fishing methods has also helped protect the untargeted species from being destroyed. The management of Niue's marine resources is as critical as the management of its land resources, and would require that the government cooperate closely with traditional (i.e. village) authorities.

The need for an environmentally safe way of exploiting non-living resources has been an issue in Niue due to previous proposals for mining,

which included the exploration for uranium. There have also been proposals to mine the island's relatively abundant limestones, and, at the moment, there is a likelihood that a cement-making plant might be established to take advantage of such resources. There is a need, therefore, to consider in advance any impact that future mining might have on the environment. Such plans may include the development and enforcement of legislation and guidelines for mineral exploration and extraction.

Implementation

The implementation of this strategy will inevitably place an even heavier burden on those in government who will be made responsible. The international community has an important role to play in supporting certain activities which will be beyond the government's capacity to pay for. Without that cooperation, the road to sustainable development will be much longer and difficult.

The first step for the effective implementation of this report is the formal establishment of an administrative body to guide implementation. The establishment of an Environment Taskforce to carry out this function is discussed in this report.

On the other hand, it should be reiterated that a National Environmental Management Strategy is in large measure a snapshot in time, framed in accordance with the economic and other circumstances of the time. It is therefore important that the outcome of this NEMS should be reported on annually, perhaps at the time of preparation of forward estimates and of funding requests to development assistance agencies.

This report contains project ideas and programme profiles (with some costings) which will put the NEMS into operation. The total cost of all proposed programme profiles is, of course, greatly in excess of what could be envisaged for an environmental programme over the next five years, even given its vital importance to sustainable development and the seeming urgency of many of the proposed actions. Niue will be fortunate if even a small percentage of the proposed activities attract funding before the turn of the century. However, government should continue to pursue funding vigorously for those programmes to which the Environment Taskforce and the Cabinet have given priority.

In addition to the annual progress report, a major review of the NEMS should be undertaken in five years time (1999). This might best be achieved by holding a national workshop to determine the priorities for the next five years and/or to modify the strategy according to new needs.

PART I
The Niue Island setting

Chapter 1

About the NEMS

1.1 Why an Environmental Management Strategy?

Environmental management strategies are a means of linking environment and development and conservation. They are realistic only if they are derived in part from a wide participatory process of problem recognition, planning and policy generation across all levels of society. The strategies analyse a country's environmental issues in a comprehensive, multi-sectoral framework and set forth a long-term plan for sustainable development that does not degrade the country's natural environment, or jeopardise the health and safety of its population, or its cultural heritage. Strategies will propose remedial measures resulting from analysis of cross-sectoral linkages that affect renewable and non-renewable resources. They consider the effects of development on human activity as well as the effects of human activity on such development. Effective strategies are thus built on facts (IUCN/UNEP/WWF 1991). Information is needed on people, the economy, natural resources and state of the environment, and on institutions, laws and policies which promote or obstruct sustainable development. All this information will be important as the strategies will include actions to turn plans and policies into results; and the results could be incomplete and misleading if the information upon which the strategies were developed was inaccurate and out of date.

Successful strategies would normally have the following four components:

- consultation and consensus-building;
- database development and analysis;
- policy formulation; and
- action plans and implementation.

The consultation process is vital to the development of any management strategy where its implementation is dependent largely on the action of individuals and communities. This is especially true of an environmental management strategy. General agreement means consensus; if there is no consensus, all the legal mechanisms in the world will prove ineffective. The strategy must be "owned" by the people, for without ownership, compliance is unlikely to be achieved in a small, closely knit island society.

Matapa Chasm is one of the many scenic features of Niue's environment that makes the island so attractive to locals and visitors alike.

The importance of factual information as the basis for the development of the strategy has been outlined earlier. This information must be stored in a readily accessible form and be capable of regular updating and ready analysis by non-specialists. However, the information considered necessary for a rational decision on resource use and environmental management is rarely available in the Pacific and the best decisions must often therefore be based on available information. Given this situation, it will be desirable to review and update decisions as additional up-to-date information becomes available.

Agreed policies to achieve sustainable development are formulated on the basis of information analysis, through consultation and consensus building.

The development of this strategy followed a process of consultation and consensus seeking from the outset although consultation with the Village Councillors was limited, and further consultation with NGOs, especially the church, might prove useful.

This strategy is inevitably weakest in the areas of database development and analysis, and existing policy. There is currently no official national government environment policy and consequently there are no clear directives for environmental management and conservation for Niue. Information about the natural resources is scarce and as a result data analysis has been limited.

Limited information and lack of formal policy inevitably result in action plans that are not developed to the extent they might otherwise be. Nevertheless, the strategy and programmes arising out of this exercise are a constructive step along the road to more refined strategies and perhaps different tactics which can evolve as these deficiencies are addressed.

1.2 The World Conservation Strategy

In 1980, the World Conservation Union (IUCN), the United Nations Environment Programme (UNEP) and the World Wide Fund for Nature (WWF) published the World Conservation Strategy which recognised that the pursuit of conservation could not be achieved globally without development to alleviate poverty and misery of millions of people. This interdependence of conservation and development gave rise to the phrase "sustainable development". The clear message it gives is that, if the planet's fertility and productivity are not protected, then the future of the human race is at risk.

The World Conservation Strategy emphasised three objectives:

- Essential ecological processes and life-support systems must be maintained
- Genetic diversity must be preserved
- Any use of species or ecosystems must be sustainable.

The 1987 report of the World Commission on Environment and Development (WCED) brought to the environmental debate a clear understanding of the global interdependence between economics and environment. This same year also saw the groundwork laid for the preparations for the Earth Summit, the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, in June 1992 and for which Niue prepared a National Report (Government of Niue 1991).

In October 1991, the IUCN, UNEP and WWF published in partnership *Caring for the Earth: A Strategy for Sustainable Living.* In preparing the National Environmental Management Strategy for Niue, close attention was paid to *Caring for the Earth* and where some strategies are considered relevant to the Niue situation, these are directly adopted and adapted for this report.

1.3 The scope of the NEMS

This National Environmental Management Strategy (NEMS) is a long-term perspective of a set of strategies and programmes through which Niue may achieve sustainable national development; that is, development that meets the needs of today's population without jeopardising the ability of future generations to meet their own. Given the limitations imposed on the government in human resources, finance, and physical infrastructure, this NEMS must necessarily be viewed as one snapshot in time. While striving to keep strategies and programmes within the bounds of common sense, the NEMS looks towards the ideal situation. Thus the number of programmes and actions suggested for government consideration may be large and may not be achievable in the next five to ten years.

The National Task Force on Environment and

Development, which has been retained for the preparation of this NEMS, had identified opportunities for sustainable development, but it is important to note that policy decisions on the strategies and programmes which should receive priority attention are rightly matters for government, and any suggestions made in this NEMS document should be viewed in that light.

Chapter 2

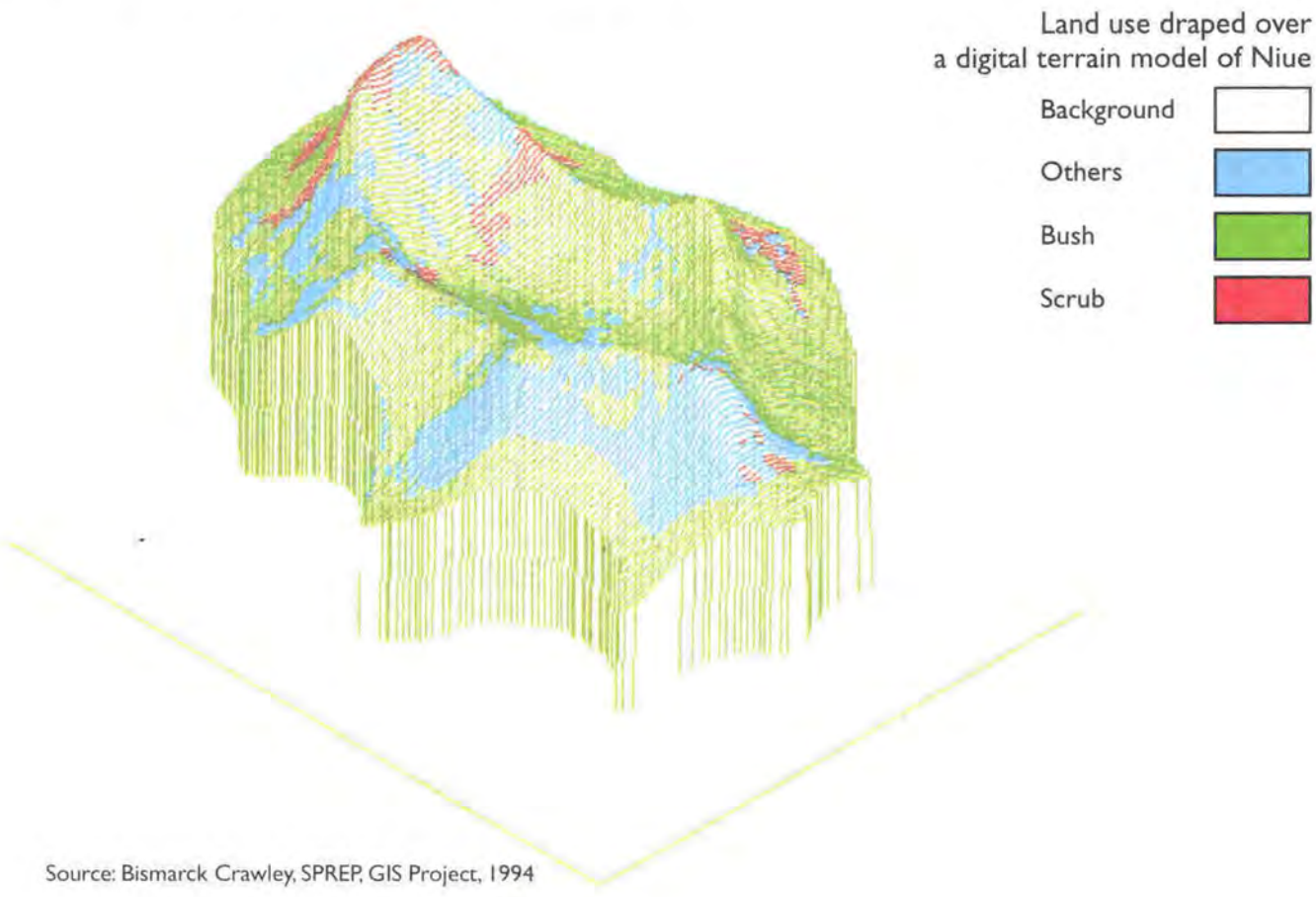
The setting

A national environmental management strategy must necessarily be formulated in the context of the overall natural, socio-economic, cultural and political environment. This chapter provides a brief overview of Niue in terms of its location and size, climate, land, sea and people. Much of this information was taken from the Niue Country Report for UNCED (Government of Niue 1991), but much more has been covered in Niue's State of the Environment Report (Lane 1994).

2.1 Location and size

Niue consists of a single up-thrust coral atoll situated in the south-east Pacific Ocean at latitude 19° south and longitude 169° west. It is approximately

Figure 2.1 Three-dimensional view of Niue, 1994



Source: Bismarck Crawley, SPREP, GIS Project, 1994

480 km east of Tonga, 930 km west of Rarotonga in the Cook Islands, and 660 km south-east of Western Samoa. It is the largest coral atoll in the world, with a land area of 259 sq km.

The atoll is formed of three terraces, the rim of the lower terrace averaging 28 metres above sea level, while the rim of the upper terrace averages 69 metres above sea level. As Niue was once an atoll with a shallow lagoon in the centre, the interior presently dips below the elevation of the rim of the upper terrace. The slopes of the terrace are mostly very rough, with jagged coral rocks and boulders and many crevices and holes. Near the surface, the rock is entirely coral.

The island is characterised by a rugged and rocky coastline, featuring steep cliffs, caves, deep chasms, and blow holes. Some parts of the coastline are fringed by a narrow coral reef but in other parts the ocean plunges abruptly from the cliff face. On the perimeter the lower terrace ends in cliffs above the present fringing reef. The present-day reef is continuous, and is breached at only one small area opposite the Alofi wharf. Below the reef lie two submarine terraces, marking, like the terrace above, previous sea levels.

It is not clear whether the land lifted and settled, or whether the seas rose and fell with the passing of the ice ages. Whatever happened, the coral growth appears to have shifted from the cliffs and ocean depths to the sunny, shallow areas around the perimeter. The stranded coral was weathered by wind, waves and percolating rain, resulting in serrated ridges, cracks that widened into chasms, and hollowed crevices that became caverns. As the elements destroyed former reefs above sea level, the corals built new reefs below sea level.

2.2 Climate

Situated at the edge of the tropical cyclone belt in the zone of the south-east trade winds, Niue has been subject to severe cyclones on the average of once a decade. Cyclones occurred in 1959, 1960, 1969, 1979 and 1990. The latter caused widespread damage to crops and houses, and to Niue's only wharf, jetties and access tracks to the sea.

There are two distinct seasons in Niue, the hot or wet season from November to March, and the cool or dry season from April to November. Most of the rainfall occurs during the hot season, often in torrential downpours. During this season, both the temperature and the humidity are high and cyclones normally occur during this time of the year. The cool season is characterised by warm, sunny days and cool nights, and a much lower rainfall. Severe droughts are experienced periodically in Niue. Average temperature is 27°C in January and 24°C in July. The average rainfall is 2,180 mm, but may vary from 810 to 3,300 mm. Droughts can occur at any time of the year; however, they are frequent during the dry season and are of varying duration.

2.3 Land resources

2.3.1 Water

There is no surface water in Niue. Rainwater seeps down to an underground lens, which is accessible at only one or two places on the island, as outlets near sea level or through deep wells. Artesian water bores are necessary to tap the subterranean reservoir of fresh water for domestic and agricultural purposes.

Hydrological studies of the island indicate that in the centre of the island the fresh-water layer is about 40 to 80 metres thick, and beneath the former atoll rim it is 50 to 170 metres thick. It decreases to zero within 500 metres of the coast, where salt mixing occurs along fissures in the limestone. The irregular configuration of the fresh-water layer is ascribed to permeability differences in the limestone. Estimates of safe yields from fresh-water layers 50 metres thick have been placed at about 4,000 cubic metres of groundwater per year per hectare.

Recent water quality sampling indicates that there has been little change over time in terms of pH, temperature, sulphate, iron, chloride, and nitrate. The water is generally of good drinking quality, but has high levels of iron present. The existence of coliform in several samples is under further investigation.

The rainwater catchment system has been extensively developed through generous budgetary support measures and technical assistance from WHO, UNICEF and AIDAB. This catchment system, however, has been allowed to fall into decay and plans are now under way to revive it. Approximately two-thirds of Niue's rainwater runs off, and remains an

Collecting rainwater in these community catchment systems was common in Niue. Reliance on groundwater, which is piped to individual houses, has led to this older system being mostly abandoned.

important and presently untapped source of water for economic development purposes.

2.3.2 Soils

Given the limestone nature of the island, it is not surprising that the soils on Niue are characteristically poor and shallow although volcanic ash is thought to be present in isolated pockets. Throughout the island, the soils are of marginal fertility for intensive agriculture and long-term monoculture. Much of the land is covered with fern growth which again indicates the poor structure and nutrient content of the soils. Not much more is known about the soils on the island and a mapping of soil types will certainly be a useful exercise.

2.3.3 Flora

The vegetation of Niue has been largely modified by human intervention. A large proportion of the island is now covered by a fernland community dominated by 'mohuku' (*Nephrolepsis hirsutula*). This area was probably originally covered by forests. Several thousand acres of dense forest are still remaining on the island, with the Huvalu Forest being the largest. This area includes a 'tabu' area where human presence is forbidden and this has probably contributed largely to protection of the area. There are also large areas of secondary forest which are said to be richer than the primary forests. Areas which have previously been developed for agriculture are now in various stages of regrowth with species such as 'fou' (*Hibiscus tiliaceus*), 'kafika' (*Eugenia inophylloides*), 'kautonga' (*Psidium guajava*) and 'le' (*Macaranga* spp.) dominating. The cyclones of 1979 and 1990 caused much damage to the vegetation of the island and a milling operation is continuing despite the difficult nature of the surface terrain for such an operation.

2.3.4 Fauna

Of the native fauna of Niue, birds probably have the largest population although much remains unknown about their ecology and status. The loss of forests and the hunting of certain species have affected population growth of the limited number of bird species found on the island. Land crabs are an important food source on the island and hunting for five species is allowed all year round. The other species are partially protected as they are hunted on a seasonal basis. The least studied of the fauna population is probably the reptiles, of which current knowledge is patchy at best. It is believed that most species of animal life on Niue are recent introductions to the island.

2.3.5 Minerals

Except for recent efforts to explore the presence of uranium on the island, no other studies are anticipated to search for the presence of minerals on Niue. Uranium exploration commenced in 1978 and continued until 1979, and in 1991 the licence to continue this exploration was renewed by the government. Advice was sought by the government from the International Atomic Energy Agency (IAEA) in 1979 regarding the possibility of mining and drilling for uranium affecting the water lens. The IAEA study (IAEA 1979) indicated that the drilling methods employed were of no danger to

the water lens; however, the significance of a number of points made in the report to current environmental and developmental concerns needs further investigation and clarification. It recommended that the government would be well advised to terminate its involvement in the exploration programme as the possibility of locating an exploitable and economically attractive uranium deposit was very slight (Government of Niue 1991, pp. 17–18).

Scientists at the South Pacific Applied Geoscience Commission (SOPAC) estimated that there is little likelihood of finding commercially significant deposits of deep-water mineral deposits within Niue's Exclusive Economic Zone (EEZ) since Niue sits upon a seamount such that the depth of the water does not exceed 4,000 metres (Government of Niue 1991, p. 18).

2.4 Marine resources

2.4.1 Inshore fishery

Niue's fishing grounds are not particularly fertile as there is little surface run-off to provide nutrients, and Niue is situated on a relatively barren seamount, with limited access to deep-sea resources. The potential to develop fisheries in the country is further limited by the nature of the difficult access to the sea via the rugged and steep coastline as well as by the unprotected nature of the exposure to the open and sometimes very rough seas, in the absence of a natural harbour or a lagoon system. The rugged coast and the limited access to the ocean bottom mean that fishing is labour-intensive, and that it is unlikely that inshore fishing could develop into a major export industry in competition with other Pacific countries with easier fishing conditions.

In terms of local demand, the small population of Niue and its long coastline suggest that fishing will continue to be a small industry, mostly on a part-time basis. Current exports of fish are solely on the basis of Niueans carrying cooked or frozen fish for friends and relatives in New Zealand.

2.4.2 Offshore fishery

Niue's main use of its 200-mile Exclusive Economic Zone is as a participant with other Pacific Island countries in a joint fishing agreement with the United States of America (Pacific Island States 1987). Its capacity to assess its own pelagic resources is minimal and the country therefore would have to rely on reports by foreign fishing boats that fish in Niue's EEZ. If the pelagic resources prove sufficiently promising to attract bids for fishing rights, then procedures for granting fishing rights, reporting, monitoring, and surveillance could be developed in collaboration with countries with contiguous EEZs.

2.5 The people

The people of Niue are Polynesians and are believed to have arrived from Samoa and Tonga, and possibly Fiji, between 1,300 and 900 years ago. Westerners did not establish a presence in Niue until after 1849 when missionaries converted Niueans to Christianity. The average population level recorded during the last half of the 19th century was approximately 5,000 people; at the turn of the century it was approximately 4,000; from the 1950s to the 1960s it increased to over 5,000 again; at the time that self-government was

Fishing competition at Alofi wharf. (photo: reproduced courtesy of DAFF)

obtained it was just over 3,000; and currently the population level has decreased to slightly more than 2,100 people (Government of Niue 1991). It is estimated that about 12,000 Niueans currently reside in New Zealand. The Niue Concerted Action Plan (NCAP), which was developed as a response to the declining population of Niue as a result of outward migration to New Zealand, concluded that, as a paramount policy objective, the Governments of Niue and New Zealand should work for the maintenance of a "living community" in Niue.

The NCAP aims for a change in migration patterns — not necessarily by decreasing outflow, but rather by establishing an inflow/outflow balance which is sustainable. As it was and still is difficult to forecast accurately the changes which will take place, or how quickly they will occur, the plan was therefore based on the assumption that the population would be between 2,100 and 2,500 for the three-year period (1988–1990).

2.6 The economic situation

Niue's close association with New Zealand has raised the living standards well above a level which could be sustained by local subsistence sector production. Otherwise, there is no realistic prospect of economic self-sufficiency for Niue, and continued economic assistance from New Zealand, with some remittances from Niueans overseas, must remain key elements in maintaining a standard of living above subsistence levels. Occasional booms in fruit, vegetables, taro, and coconuts (both in fresh and processed forms) have been short-lived. Little manufacturing potential exists, and apart from a small "visitor business" and possibly a small yield of very high-value indigenous timber, there seems to be little export potential from the country's natural resources. However, the promotion of economic development is considered essential to the maintenance of a living community because it provides a sense of purpose which can no longer be derived from traditional subsistence activities or even from employment in the Public Service.

Niue's economic, social, and cultural institutions constitute a village mode of production which retains the ability to sustain itself, has control over most of the land resources, and accounts for the production of most subsistence goods and cultural services. Alongside this, and closely integrated with it, is the large government sector, built up initially

Locally grown produce on display on Agricultural Show Day, Alofi. (photo: reproduced courtesy of DAFF)

Vanilla trailing on Glyricidia *sp. (photo: reproduced courtesy of DAFF)*

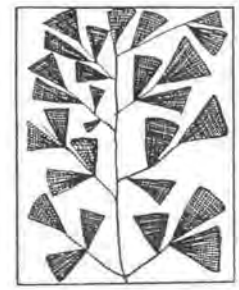
by New Zealand to supply modern services, and now largely maintained by subsidies from New Zealand.

The first National Development Plan for Niue was published in 1979 for the period 1980–1985. Work began in 1984 on the second five-year plan but this was discontinued due to evidence of continuing population decline. The National Development Plan sought to provide increased support for village life and rural development, emphasising the importance of people active in village projects, in strengthening community responsibilities of the village, in production from the land for local and export markets, and in the development of crafts for sale and for cultural satisfaction. Essential services and administrative functions are provided by the government. The objectives for future direction are intended to supplement the essential economic assistance provided by New Zealand with economic development activities which will, first, provide the people with a sense of purpose by generating additional income for Niue; second, avoid a sense of complete dependence on donor countries and organisations; and third, revive and maintain the traditional bases of village life and rural skills.

In the period 1987–1989, New Zealand assistance accounted for 90 per cent of external aid to Niue. The remaining 10 per cent was contributed by Australia, the United States and France on a bilateral basis, and by the UNDP and UN Volunteer Programme on a multilateral basis. Without this high level of external assistance, Niue's balance of payments would have been unmanageable.

PART 2
Environmental Action Strategies and Programmes

Chapter 3



Integrating environmental considerations into sustainable economic development

It is clear that the key to sustainability of resource use and the achievement of environmental conservation is the integration of environmental safeguards in economic decision making. This is a complex task, which needs to be addressed at all levels, from the national policy level down to the local level. There are a number of practical steps that can be taken immediately on a national level to ensure that sustainable development is introduced.

To achieve long-term economic and environmental viability, some comprehensive institutional and legal changes will need to be made. These include the introduction of integrated mechanisms for the generation of economic and environmental policy, and the enactment of legislation at the national and local levels to ensure that policies can be carried out within a consistent and enforceable framework.

Niue needs greater and faster economic growth to secure satisfactory living standards. Broad policies to support such economic needs would conceivably include the following (adopted from *Caring for the Earth*, IUCN/UNEP/WWF 1991, pp. 21–22):

- an overall strategy for sustainability;
- opening of international markets for locally produced goods which can generate a reasonable rate of return;
- 15–20 per cent of GDP invested in future skills;
- action to ensure that decisions about priorities and resource allocations are made locally;
- action and investment to improve the institutional and regulatory framework for environmental management;
- action to ensure that women are able to play a full part in the process of national development;
- provision of greater opportunities for productive employment to raise income and spread the benefits throughout the population. Industrialisation will be needed, but care must be taken to ensure that this is undertaken in ways that safeguard the environment;
- action to promote private initiative, encourage the growth of the private sector, and the development of small- and medium-sized enterprises;
- action to promote foreign investment, including the transfer of technology which allows environmentally sound industrialisation;
- action to help local people and communities undertake their own development through, for example, participation in other development decisions, vocational training, other skills development, and particularly the granting of credit to the cash-poor; and
- monitoring the state of the environment to provide a basis for continuing adaptation of policy.

The Government of Niue is already actively addressing some of these policy elements for sustainable development; the challenge of others has yet to be taken up. Main policy elements can be expressed as five broad strategies for proper environmental management:

(1) Adopt an integrated approach to environmental policy and planning.

(2) Submit proposed policies, development programmes and projects (government and private, local and foreign) to Environmental Impact Assessment (EIA).

(3) Introduce a comprehensive framework of national and local environmental law, together with the means for its enforcement in a communally acceptable manner.
(4) Review adequacy of institutional mechanisms and administrative controls, and strengthen them as necessary.
(5) Institute resource pricing in national accounts and other economic policy for achieving sustainability.

These strategies are elaborated below.

3.1 Adopt an integrated approach to environmental policy and planning

Economic and environmental considerations must be integrated if a society is to be sustainable. Towards this end, it is important for government to ensure an effective, integrated approach and provide a national framework of institutions, economic policies, laws and regulations, and an information base. An early area of consideration for the government is how to integrate, both institutionally and procedurally, its policy evaluation, economic planning, physical planning, environmental protection and sectoral development programming activity.

At present, the Environment Unit within the Community Affairs Department is the prime body charged by the government with environmental administration, but it has a limited mandate, a single position and no clear budget of its own. These conditions have inevitably forced the Unit to be reactive, responding to problems after they have developed, rather than pro-active. It has very little ability to coordinate environmental management concerns with economic development decision-making processes.

Physical planning is central to environmental management. However, physical planning activity appears to be confined to the responsibilities of the Public Works Department in the urban centre. Thus the principles of physical planning are not yet applied to the bulk of the land and sea resources of Niue. There is a need to determine how the science of physical planning could be better used to assist landowners, villages and Village Councils, and how it could be better integrated at the national level with other economic and environment planning, thus assisting the process of rational policy formulation and evaluation.

Economic policy can be an effective instrument for promoting environmental protection and ensuring that the principle of sustainable use of natural resources is followed. Niue's domestic economy depends on the environment not just for raw materials but also to support life itself. The old models of economic planning which many countries are still using do not take the full value of natural resources and services into account. New models being developed take into account the depletion of goods, including natural resources, and the decline in the support services of the environment. The adoption of more effective development models would fall within the mandate of the Planning and Development Unit but there is a prior need to revitalise this Unit under the Department of the Premier and provide it with the financial and expert support it requires.

But the immediate concern is to ensure that development proposals are subject equally to environmental as well as economic and financial appraisal. Just as economic assessment is a routine aspect of project appraisal, so should environmental examination be both routine and have equal status with economic assessment. Indeed, an economic appraisal is deficient in the absence of environmental appraisal.

Policy evaluation must therefore be a combination of economic and environmental considerations together with the many other factors which govern policy formulation and application. The mandate for this function could rest with the Environment Taskforce which was established for the preparation of the national report to UNCED (Government of Niue 1991) and which has been retained to guide the formulation of the NEMS, or some other body agreed to by government. Further discussion on this subject is presented in section 3.4.

Taking the principles of environment and economic planning to the highest level of government, the implementation of this strategy could entail the following:

- formal adoption of the principle of sustainability, with integration of environment and economic considerations built into the terms of reference of government agencies dealing with national

economic policy and planning, and with key sectoral policies;

- the continuation and strengthening of the Environment Taskforce to be responsible for the integration of economic, environmental and physical planning with the policy evaluation process, and to have the mandate to examine departmental policy and development or investment proposals before they go to Cabinet;
- upgrading the capacity of the Environment Unit to carry out initial screening of project proposals received and to make recommendations to the Taskforce concerning the need (or otherwise) for Environmental Impact Assessment (EIA);
- incorporation of the principle of sustainable development into the mandates and policies of the sectoral line departments;
- promotion of common approaches to economic and environmental planning in both the public and private sectors; and
- promotion of open consultation mechanisms with local communities and the pursuit of traditional consensus approaches to decision making.

3.2 Submit proposed policies, development programmes and projects to Environmental Impact Assessment (EIA)

EIA is used to predict the likely economic, social, cultural and biological consequences of a proposed activity (i.e. the effect on the environment). EIA is a very important planning tool for government. It helps identify potential problems and hence aids planning to prevent adverse impacts, or to reduce them to acceptable levels, before investment is committed.

A full EIA is applied only to those development projects which a preliminary screening by the Environment Unit indicates are likely to have major economic, social, cultural or biological impacts. But all development projects — public and private, foreign and local — must be subjected to that initial screening process. The size of the economic investment in a development project proposal is no criterion for the potential magnitude of the environmental impact. For all projects which are likely to have a significant environmental impact and are allowed to go ahead:

(1) an environmental management programme should be included in the project design document; and

(2) the capacity for proper monitoring should be assured (from either internal or external sources), to compare reality with the predicted effects and thus permit adjustments of the planned development process.

EIA should be considered as part of the project planning process and must be undertaken early in the project cycle. For development assistance agencies, EIA should start right from the country programming mission stage and continue through pre-feasibility and feasibility stages. Subsequently, annual programming missions from international agencies and donor countries should include a person experienced in environmental appraisal.

EIA must extend beyond development projects to all national and local programmes. Therefore the institutional EIA capacity of the Environment Unit and the Environment Taskforce, where development programmes and projects are evaluated, should be strengthened.

Programme 1
Development and application of standard Environmental Impact Assessment (EIA) guidelines

see Appendix, page 46

The need for the development of EIA guidelines was very strongly advocated by the participants at the NEMS Seminars who also recommended an assessment of current plans for industrial development.

3.3 Introduce a comprehensive framework of national and local environmental law, together with the means for its enforcement in a communally acceptable manner

In order to achieve harmony between environmental policy and economic decision making at the national and local levels, comprehensive and consistent legislation will need to be introduced.

Talava Arches is an area of outstanding scenic beauty. At present, environmental attributes are not adequately protected by law. The proposed Environment Management Bill will provide a framework for legal protection.

Such legislation should contain a set of clearly defined principles of sustainable use and conservation of Niue's natural and cultural resources.

A comprehensive piece of legislation (Environment Management Bill) is now in draft form (Government of Niue 1992) and is expected to be ready for parliamentary approval during 1994. This legislation seeks to empower a Conservation Council with environmental responsibilities and broad enforcement powers, including search, arrest and seizure powers. The council, consisting of five persons, would be appointed by and responsible to Cabinet. The stated purpose of the Bill is "to establish a Conservation Service and to make provision for the conservation and protection of the environment and national resources, and the establishment of national parks and reserves".

Under this legislation the council will be the responsible body for the following functions:

- administer, manage and control protected areas and reserves;
- protect, conserve, manage and control wildlife;
- protect, conserve, manage and control (native) forest and tree resources, and to carry out afforestation and tree-planting measures;
- protect, conserve, manage and control water catchments and Niuean waters;
- protect, conserve, manage and control soil resources and the coastal zone;
- prevent pollution of air, water, and land resources, and promote litter control;
- provide and assist in the provision of training in the skills associated with performing any of the foregoing functions;
- carry out investigations and research on the protection and conservation of the environment;
- make recommendations to the Minister in relation to the naming of protected areas and reserves, protection and preservation of the environment; and
- prepare, provide, disseminate, promote and publicise educational and promotional material relating to the conservation of the natural and historic resources of Niue.

The Environment Taskforce envisaged in this strategy is not dissimilar to the Conservation Council. However, it is not intended for the Taskforce to perform the above functions which are perhaps better performed by a line department rather than corporate body. This strategy supports maintaining the Environment Unit to perform the above functions, with the Taskforce to serve as overall coordinating body responsible for the screening of development projects (including protected areas proposals by the Environment Unit) and to ensure that the actions of all government and private agencies are consistent with environmental principles.

In the light of the foregoing discussion, it is proposed that the implementation of this strategy should entail the following elements:

- review of existing legislation of relevance to the environment (Peteru 1993; completed under the NEMS project);
- review of the Environment Management Bill to reflect the role of the Taskforce if it should be decided to maintain this body and not the Council with its coordinating functions as discussed above;
- establishment of the Taskforce by appointment made at Cabinet level; and
- agreement on enforcement measures which are acceptable to the community at large.

3.4 Review adequacy of institutional mechanisms and administrative controls, and strengthen them as necessary

During the preparation of the NEMS, a number of institutional mechanisms and administrative arrangements for the management and oversight of the environment were considered. These followed the concerns expressed by a number of other government departments, such as those charged with the administration of the social environment (e.g. health), and those dependent on both the social and physical environment (e.g. tourism, agriculture, public works). At a NEMS Seminar in early May 1993, it was recommended that in the interim period before the Environment Management Bill is passed, the Environment Unit should remain under the Community Affairs Department but that there was a need to strengthen the capacity of the Unit to perform its functions more effectively. The Unit, however, would also be answerable to the Environment Taskforce which would comprise most (if not all) the members of the current Taskforce.

The Environment Taskforce

The recommended Taskforce will have the overall responsibility for screening development project proposals for their environmental impacts. The Taskforce will make recommendations to the Niue Development Bank and the Cabinet, the two bodies that make the final decision. The Taskforce recommendations will be based on EIA reports by a person or a group of persons co-opted by the Taskforce and by the people or agency submitting the proposal. The Taskforce can also have in its meetings all the expertise required to assess the environmental impacts of projects which the Environment Unit, after its own initial screening, determines would require an EIA. It is important that the decisions by the Taskforce are based on sound scientific advice and the Taskforce should therefore have the power to summon any other expertise it may require to give evidence or advice to assist with its decisions. The Taskforce's recommendations are submitted to Cabinet by the minister responsible for the environment.

Functions of the Taskforce

The specific functions of the Taskforce could be summarised as follows:

- Advise the government on environmental policy and long-term strategic plans for sustainable development.
- Advise the Environment Unit, through its minister, on the efficient and effective implementation of environmental policies and strategies.
- Review and advise on national policies relating to the conservation and preservation of cultural and natural resources — including environmental planning, socio-economic assessment, pollution control, and natural heritage conservation — and ensure that all policies are consistent with the National Environmental Management Strategy (NEMS) as approved by government.
- Assist the formulation of policy and programmes of line departments relating to environmental matters, and advise, promote and assist in the implementation of programmes and policies.
- Monitor environmental regulatory and enforcement policies and make available to the public information on guidelines relating to the institution of criminal and related procedures.
- Monitor the progress and effectiveness of programmes related to the conservation of the natural and cultural resources and provide advice to line departments on their activities related to environmental planning and protection.
- Adjudicate in the resolution of controversy relating to the conservation and

development of natural and cultural resources.

- Advise the government on any matter relating to the Taskforce's functions and responsibilities.
- Do such things and perform such other tasks as the Taskforce determines are necessary for the proper discharge of its functions.

Proposed membership of the Taskforce

Each member of the Taskforce will be appointed by Cabinet for a specific period, with the aim of broad representation from both public and private sectors, including non-government organisations. The following representation should ensure the wide coverage of fields and expertise:

- Department of the Premier (Chair);
- Department of Agriculture, Forestry and Fisheries;
- Public Works Department;
- Community Affairs Department;
- Department of Health;
- Department of Education;
- Tourism Office;
- Chamber of Commerce;
- Head of the Environment Unit (Secretary).

Line departments

Staff of line departments serving on the Taskforce will also serve as the point of contact on technical environmental matters within that department. One role for these members will be to monitor the activities of their departments to ensure that they do not have an adverse impact on the environment, or on those natural resources for which the member's sector is responsible.

Environment Unit

Presently, the Environment Unit is placed under the Community Affairs Department and has a single staff position (Environment Officer) who heads the Unit under the Director of Community Affairs. The position is currently externally funded but this funding is ending in June 1994. Funding for the post after this time will most likely be met by the government.

At the current level of staff and support, the Unit will not be able to undertake the responsibility of looking after the environment and managing its resources on a sustained-yield basis.

Additional staff and funds will be required if the Unit is to make any headway in the management of the country's natural resources and environment. Financial assistance for the implementation of field

Niue's rugged and attractive coast is a great asset and one that needs to be protected for present and future generations.

activities may not be as difficult as the funding of in-line positions within the Unit as these would normally be the responsibility of government. For the next year or two, the Unit will need to have at least two permanent staff members in order to deal with the existing and projected workload.

Proposed functions of the Unit

The following functions are proposed for the Unit:

- Implement the environmental and conservation policies and programmes of government.
- Liaise with all government departments, NGOs and Village Councils on all environmental matters and ensure coordination and planning of assessment activities.
- Identify and plan for the protection of unique botanical and wildlife heritage, for the establishment of protected areas and for the protection of the country's cultural heritage.
- Provide initial screening of all major development proposals and determine their need for EIA.
- Provide a secretariat function to the Environment Taskforce.
- Maintain liaison with regional and international environmental organisations.

Location of the Unit

The location of the Unit within the government structure may have a significant bearing on its ability to integrate environment and development. Presently, and as in many other countries of the region, environmental concerns are, as a rule, superficially considered after a plan has already been drawn up and its economic benefits endorsed and accepted by government. It is imperative that environmental considerations be taken into account *during* the planning phase of development projects and this can happen if the Unit is located with a department responsible for the preparation of development and economic plans for the country.

Niue does not at present have a central planning office. Economic and development planning at the national level was formerly the responsibility of the Office of the Secretary to Government. Planning is at present guided by sectoral plans of individual government departments.

The best option for the integration of environment and development in Niue would appear to be the placement of the Environment Unit under a central planning office, but first such an office would need to be established. With the present growth of interest in the development of tourism and industry, such an office may be inevitable. Serious thought should to be given to locating the Environment Unit under this office when established.

Programme 2
Review and recommend appropriate mandates, policies, and institutional arrangements for public institutions

The long-term objective of this programme is to adopt and incorporate the principle of conservation and sustainable development in the mandates, policies, and institutional arrangements of all the key public institutions, particularly those dealing with economic planning. This does not need external resources and could be carried out by the government using local resources.

Programme 3
Review and upgrade the capacity of the Taskforce and the Environment Unit

The long-term objective of this programme is to strengthen these two institutional arrangements for the coordination of environmental management initiatives. Of particular interest in this case is the need to spearhead efforts to integrate environmental concerns with development planning. This may require some external assistance, but the government must first make a decision regarding the scope and location of these bodies.

3.5 Institute economic policy for achieving sustainability

There are many broad economic instruments which countries can apply as flexible and efficient means of promoting sustainable development. In Niue, as in all other Pacific islands, there is a need to review existing monetary and fiscal policies for their impact on sustainable resource management

and environment protection. Taxes or subsidies supporting activities which damage ecosystems or resources should be reviewed.

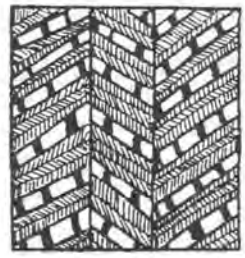
New economic instruments should also be considered as a way of promoting sustainability. For example, where the full cost of a service or resource is not borne by the user, this serves to lessen the interest in conservation. The introduction of the "user pays" or "polluter pays" principle in some parts of the Pacific has been an effective way of reducing unnecessary depletion of resources in the first instance, and in the second, providing a strong incentive for pollution control. For example, importers and users of non-biodegradable materials should pay at least part of the cost of collecting and disposing of the materials safely.

Pricing policies and standards can also be used to encourage government, industry and communities to adopt resource-efficient technology. For instance, high prices for imported fossil fuel and for electricity serve to promote greater use of solar energy, which, for a country like Niue, would seem natural.

Programme 4
Instituting economic policy for achieving sustainability

The requirements for this programme could be met through the two programmes suggested above — under Programme 2 "Review and recommend appropriate mandates, policies, and institutional arrangements for public institutions"; and under Programme 1 "Development and application of standard Environmental Impact Assessment (EIA) guidelines". Otherwise, the adoption and implementation of pricing/policy instruments could be effectively undertaken by the government itself.

Chapter 4



Improving environmental awareness and education

An informed and supportive public will ensure effective long-term environmental management. The seminars held during the preparatory phase of the NEMS stressed the priority need for environmental education and awareness if the people of Niue are to participate fully in and be supportive of efforts to protect the country's environment and natural resources. The people who own the land and the resources are important targets for education and public awareness programmes and it is highly desirable that they be informed about legislation and policies which may affect their right to use the resources they own and to apply traditional extractive methods.

Niue is fortunate in that it has a relatively small population which could be easily educated about the environment. The young people can be reached at the two schools run by government, and the local radio and television reach all parts of the country. Specific environmental programmes for the use of the media will need to be developed, and while environmental topics are already taught in the schools an environmental curriculum will need to be developed so that the environment can be seen as an equally important field of study for the young people of Niue.

While attempts are being made to integrate environmental education in schools, there are difficulties due to:

(1) non-availability of appropriate (i.e. based on Niue and using Niuean language) materials suitable for primary schools;
(2) lack of teachers specifically trained to use environmental science materials; and
(3) non-inclusion of environmental science in examinations.

There is also a general lack of public awareness regarding the need for and ways of protecting the environment, a problem compounded by the lack of appropriate materials for community workshops.

Given these concerns, some specific activities to improve current environmental education and awareness programmes could include the following:

4.1 Review and upgrade the status of environmental education in Niue

Every endeavour must be made to ensure that environmental education is:

(1) made an integral part of formal education at all levels; and
(2) directed to the community at large to raise public awareness of environmental issues and sustainable development practices.

For the period 1993 to 1997, the strategy is broken down into the following goals and programmes.

Strategy goals

Through this strategy it is anticipated that:

(1) The environment content in curricula will be increased at primary and secondary education levels.
(2) The ability and confidence of teachers to develop and/or use environmental science materials will be improved.
(3) Public awareness of the environment and of environmental issues will be enhanced, with a resultant increase in public support for environmental management initiatives.
(4) A better informed public will be more aware of the environmental consequences of their own actions, and more capable of making well-informed decisions on sustainable development issues.

Programme 5
Strengthening the Department of Education's capacity to coordinate environmental education

see Appendix, page 47

To ensure the implementation of these goals a Focal Point responsible for the planning of public awareness programmes and the production of environmental education materials relevant to Niue is proposed within the Department of Education. Rather than relying on short-term consultancies that are often only a one-off solution to information needs and which do not leave an on-going capability in the country, funding could more effectively be spent in support of a local person to be trained in and responsible for the preparation of environmental and resource materials for use by the teachers and for environmental awareness programmes. This person will also be responsible for producing high quality audiovisual materials as well as information leaflets and posters. The Focal Point would also assist in coordinating environmental awareness components of extension programmes of other government departments and agencies. The position would have to be a new one with outside funding as the department is not in a position to take up extra duties with its present complement of staff and funding.

Programme 6
Development of resource materials for schools in Niue

This could be done either through an in-country or a sub-regional workshop, with teachers making an input and using materials already developed by SPREP and USP as a basis for further development. This would need external assistance.

Programme 7
Teacher-training workshops

There is a need to follow up resource development with teacher training workshops to ensure that materials will be used effectively. This would need technical assistance.

Programme 8
National and village environmental awareness workshops

see Appendix, page 49

The need to target the whole nation, particularly the village communities, in environmental awareness workshops lies in the fact that the cumulative effects of actions by individuals on the environment constitute some of the most pressing environmental problems today. At the same time, changing the attitudes and the actions of the communities is one of the most sensible and cost-effective strategies for environmental management.

Programme 9
Development of environmental fact sheets, educational resources and audiovisual aids

see Appendix, page 51

This programme would develop information resources for NGOs, church groups and local communities which are generally keen to bring matters of social and environmental concern to people's attention but often lack correct information or knowledge about specific environmental issues pertinent to local situations. The development of factual resource materials for them would significantly support the goal of enhanced public environmental education.

Programme 10
Environmental awareness training for government officials

see Appendix, page 53

Many government departments already have good access to village communities. However, most officials from these departments have little background in the environment field and have specific mandates to emphasise economic development. This programme would increase awareness of environmental issues and emphasise sustainable development by incorporating a specific component on environmental management into the annual in-service training of these agencies and through topic-specific workshops to be organised by the Environment Unit with possible technical assistance and support from SPREP's Environmental Education Officer.

4.2 Preserve and apply traditional knowledge and management systems

The traditional lifestyle of Niueans was centred around sustainable reef exploitation, and many uses of the land resources were based on a close harmony with, and total reliance on, the environment. Some traditional practices are still valid today. Certain superstitious beliefs are still effective in protecting certain species or areas of land. However, traditional systems for resource management and the ecological knowledge on which these systems were based are beginning to be lost with the growing emphasis on the cash economy and the erosion of traditional authority.

There have been attempts to record the oral history of Niue, the most notable of which have been the efforts of the National Museum to recover artefacts of historic significance to Niue so that the young people of Niue can better relate to their past history. Despite these efforts, the vast reservoir of information and knowledge has barely been touched. This is not a short-term strategy. Of necessity, it is continuing and long-term. The urgency of the work increases as the risk of knowledge being lost increases with passing generations.

Strategy goals

(1) To protect and conserve the unique culture of Niue.
(2) To document traditional knowledge and management systems.
(3) To reinforce the use of traditional knowledge and management systems in contemporary resource management.

Programme 11
Documentation and application of traditional knowledge and management systems into the education system and modern management practices

see Appendix, page 54

This programme would aim to boost current efforts to document traditional knowledge and management systems to ensure that they are not lost to future generations. As well, the programme will support the incorporation of such knowledge into school curricula, general educational materials, and introduced resource management practices.

Chapter 5

Strengthening the resource information database

5.1 Resource surveys

So far, only sporadic attention has been paid to the resources of the island. A timber resource analysis, carried out in 1966 by the New Zealand Forest Service (Frost & Berryman 1966), estimated that some 270,000 cubic metres of merchantable forest was available on the island and this volume was assumed to be the same in 1979 (Government of Niue 1991, p. 15). A survey carried out after Cyclone Ofa in 1990 revealed a dramatic drop in the remaining volume of merchantable timber and a considerable increase in the area of open forest (Government of Niue 1991, p. 15). This survey had been limited to the areas of merchantable forests but did not expand to its other potential values, hence the need for a more comprehensive analysis of the island's ecology and total resources.

Systematic botanical surveys and in particular, ecological surveys, together with surveys of wildlife and other natural resources, are fundamental to the development of the scientific database necessary to make informed, environmentally relevant decisions. The data from the New Zealand Forest Service will form part of that database, but only a part. A national botanical survey would document all plant life and their ecological associations and give considerable emphasis to the traditional use of species.

The distribution and habitat requirements of most fauna species are also poorly understood, making it difficult to assess threats to species from habitat destruction. Thus, with the current rate of habitat change, wildlife surveys are urgently needed if biodiversity is to be preserved.

The knowledge of Niue biota is patchy, at best. Systematic fauna and flora surveys would address this deficiency. These surveys are costly, but they are the only way in which the fundamental, vital information needed by the country for resource development planning can be obtained.

Niue contains some splendid forest areas but this is a resource which is under threat from clearance for agricultural production.

Strategy goals

(1) To institute a programme of surveys of the natural resources of Niue which add significantly to the knowledge of those resources.

(2) To establish a computerised resource database for Niue.
(3) To ensure that all future data collection and handling are undertaken in a manner compatible with the computerised resource database in use in Niue.

Programme 12
Ecological survey of terrestrial vertebrate fauna

This programme would improve the resource database on terrestrial vertebrate fauna through a systematic survey of ecosystems and habitat types. This will enable assessment of the status of species and the identification of threatened species. The improved database will permit better management decisions and effective environmental planning.

Programme 13
Systematic botanical survey

This programme would improve the resource database on the flora of Niue through a systematic botanical survey concentrating initially on those areas which have received the least botanical attention to date. As far as possible, this survey will be combined with the vertebrate fauna survey since habitat information is crucial to wildlife survey.

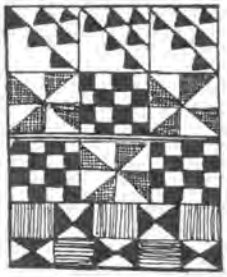
Programme 14
Marine resource survey

To date, very little scientific information is known about the in-shore marine resources of Niue. Concern has been expressed at the possible over-harvesting of reef systems in some areas and at the lack of adequate information to formulate sustainable harvesting regimes. This programme would address this deficiency in information.

Programme 15
Computerised resource information database

see Appendix, page 56

This programme would seek to establish a computerised resource database in which information gathered from the resource surveys can be easily stored and retrieved for environmental and resource management planning purposes.



Protecting areas of high ecological, wilderness and cultural value

Niue has no formal protected or conservation area operating at the moment although the Hakupu Forest which had received protection for many years through a community decision has, for all intents and purposes, received far greater protection than many so-called "protected areas" in other countries. The success of this traditional reserve provides a practical and sensible approach for the protection of other areas of high ecological, wilderness and cultural value in Niue. Approaches which attempt to impose sanctions on the people's rights and use of resources without community consent have not been successful in other countries of the South Pacific, and there is reason to believe that such approaches will also be met with a great deal of resistance in Niue. On the other hand, conservation approaches which are compatible with traditional ownership rights and customs are necessary if the long-term security of protected areas is to be assured.

Presently, there is no legislation allowing for the establishment of protected areas in Niue and few incentives for local people to establish such areas. This situation must be rectified as the future of protected area development in Niue lies in the ability of the government and village communities to agree on the setting up of protected areas on customary land, since more than 90 per cent of the total land area of the country is under this type of ownership. This is also why it is extremely important that the type of protected areas adopted for Niue must be appropriate to the land tenure system of the country and must take into account the traditional rights of the people to use the resources of the land they own. The "conservation area" concept promoted by the South Pacific Biodiversity Conservation Programme (SPBCP) has many attractive features which are likely to meet these requirements.

6.1 Develop protected areas and reserves

Protection of biodiversity has a high priority in international and regional environmental programmes. Progress in this area has been severely hampered in Niue by the lack of information to help it identify areas of ecological and cultural significance. Some areas have been suggested but these have been based on existing information with little detailed survey to assess their merit.

Perhaps the major limitation to the establishment of a conservation area system in Niue has been the lack of a role model which is a demonstrable success. This is fundamental if groups of landowners are to be convinced of the economic and other benefits of protecting special areas. Without this landowner awareness, there is little chance of successfully developing a system of protected areas for Niue.

Strategy goals

(1) To protect the biodiversity of Niue.
(2) To ensure that the measures adopted for the conservation of biodiversity are appropriate to Niue situations.
(3) To promote and encourage the participation of local landowning groups in the establishment of protected areas.

Programme 16
Identification of areas of conservation significance

This programme would undertake detailed verification studies of areas already identified as being of ecological, wilderness and cultural significance. It would include both terrestrial and marine reserves. The identification of further conservation areas would be an integral component. The programme would include a special education project directed to the landowners of the identified areas in order to explain the rationale for the establishment of such reserves, and the benefits of such conservation action. The ecological surveys suggested above (chapter 5) should facilitate the process of identifying such conservation areas.

Programme 17
Development of a model conservation area with full landowner participation

Preliminary analysis of the Hakupu Forest Reserve has shown its potential as a model conservation area for Niue and other countries with similar land tenure systems. The protection of the area over a long period of time through traditional practices implies that this area can continue to be protected with the full support and participation of the local communities. This programme would aim to support the continued protection of the area by supporting the efforts of the local people and by providing information and other resources to assist them in the management of the area.
This programme will be supported by the SPBCP.

Programme 18
Participation in regional and international biodiversity programmes

Niue will continue to participate in international and regional biodiversity programmes being coordinated by both government and non-government regional and international conservation organisations, particularly in the context of the South Pacific Biodiversity Conservation Programme (SPBCP) implemented by SPREP with funding from the Global Environment Facility (GEF).

6.2 Promote eco-tourism

It is clear that any efforts by the government to promote tourism in Niue would depend largely on the ability of its people to protect the environment and landscape of Niue. There is at present no tourism plan for Niue but it is not difficult to envision that such a plan would be focused principally on the promotion of nature-based tourism, or eco-tourism, as the sole basis of the tourism industry in Niue. The development of scenic sites and the continued protection of the unique landscapes will be important to the promotion of tourism. The strategy endorses the preparation of a Tourism Master Plan for Niue and the designation and development of scenic sites for the promotion of a nature-based tourism industry in Niue.

Strategy goals

(1) To prepare a Tourism Master Plan for Niue.
(2) To establish and manage tourist sites.

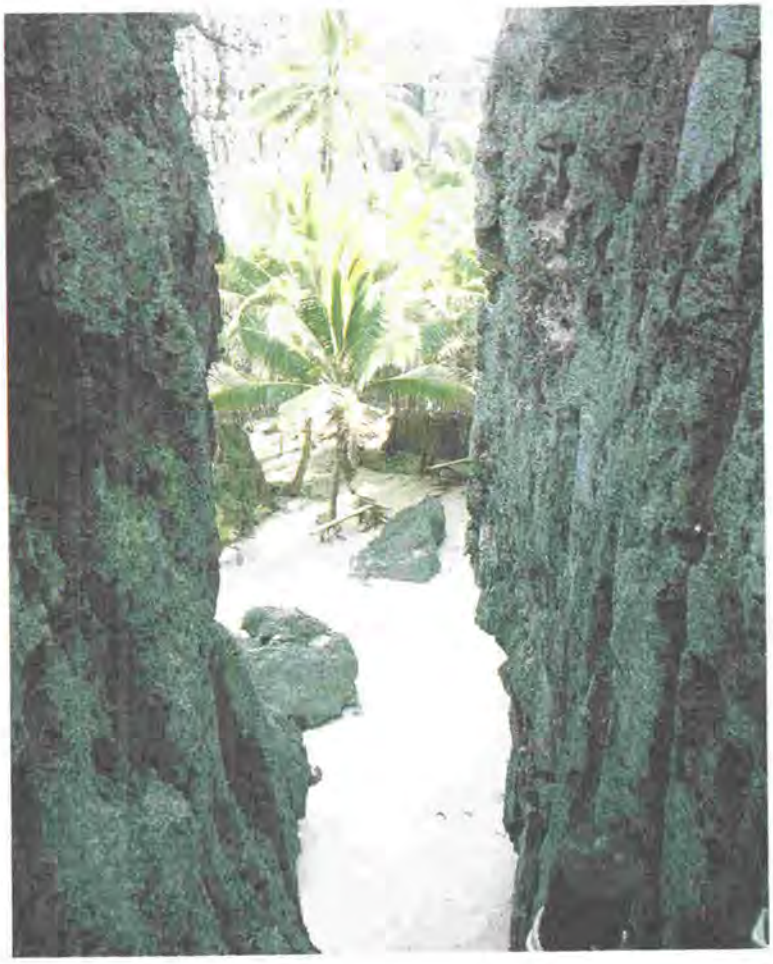
Programme 19
Development of a Tourism Master Plan

This programme would seek support for the preparation of a Tourism Master Plan for Niue. Assistance from the Tourism Council of the South Pacific (TCSP) may be possible.

Programme 20
Tourist sites development

This programme would aim to identify and develop nature sites and landscapes throughout Niue as tourist sites. Of particular importance will be the unique features of the coastline including the steep cliffs, caves, deep chasms and blow-holes. This work could be carried out by the government itself.

The walk into Togo Chasm shows the variety of plant communities in Niue. From dense forests and coastal scrublands, visitors soon find themselves in a coconut grove deep within this narrow limestone chasm.



6.3 Protect and manage wildlife

Interest has been expressed in undertaking a survey of the bird population in Niue although financial support for such a survey has previously been difficult to obtain. However, through the SPBCP implemented by SPREP, this survey will be undertaken in 1994. This information should help with the management of birdlife in the country.

Strategy goal

To instigate measures to protect and manage wildlife.

Programme 21
Population survey of birds and other species of fauna
This survey will assess the population status of bird species on Niue. Other surveys should be undertaken to assess the status of other species of fauna found on the island.

6.4 Protect biological diversity

Because of its isolation and distance from the other islands in the Pacific, Niue has limited naturally occurring fauna and flora. These factors have, however, also contributed to the relatively small number of foreign species introduced into Niue in the past several years. Increasing access into Niue in recent times would almost certainly increase the risk of exotic species being brought into the country and there is therefore a need to preserve endemic species from being replaced by some of these more aggressive and fast-spreading species such as lantana and mimosa.

Information relating to the diversity and particularly the level of endemicity of plant and animal species in Niue is not readily available. Hence, there is a need for systematic studies of the island's biodiversity before investing in its development. However, some immediate action would need to be undertaken in order to protect large areas of land which are important for biodiversity conservation

before they are lost to development pressure. The establishment of locally managed conservation areas would relieve much of the pressure but it is important that the measures adopted for the identification and establishment of such conservation areas are appropriate to the customary land ownership of Niue. There is currently a proposal for the establishment of the Hakupu Forest as a "conservation area" under the South Pacific Biodiversity Conservation Programme (SPBCP), a Global Environment Facility (GEF)-funded project executed by SPREP. This proposal, which is based on the use of customary owned land, could conceivably serve as a model for other areas in Niue or in other Pacific countries with similar land tenure systems.

Strategy goal

To increase and support efforts to conserve biological diversity.

Programme 22
Costs and benefits of biodiversity conservation in Niue

This study would examine the costs and benefits of biological diversity conservation in Niue including (1) the level and value of biological diversity in Niue; and (2) the specific costs and benefits of establishing conservation areas on customary land. This could be undertaken as part of the two programmes suggested above: Programme 16 "Identification of areas of conservation significance" and Programme 17 "Development of a model conservation area with full landowner participation".

Programme 23
Establishment of conservation areas on customary lands

This programme would aim to support efforts for the establishment of conservation areas on customary lands. Village-managed conservation areas would be particularly important and careful consideration will be given to the Hakupu Forest Reserve as a possible model for adoption in other areas of the country (see Programme 17).

Improving waste management and controlling pollution

The current level of pollution in Niue is relatively insignificant compared to other countries in the South Pacific. This means that Niue has the opportunity to act now to prevent the problem before it gets worse, and it will get worse as deforestation and other forms of development increase.

Waste and sewage disposal facilities are considered inadequate and expert guidance is needed if Niue is to remain clean and healthy. These are the areas which are likely to cause immediate concern.

Strategy goals

(1) To improve the management of waste.
(2) To reduce solid waste generation and to improve its collection and disposal.
(3) To control the level of pollution from deforestation and other industrial activities.
(4) To control the use and handling of pesticides and other toxic and hazardous chemicals.

7.1 Improving disposal of solid waste and sewage

The inadequate disposal of solid waste and the lack of suitable landfill sites for garbage dumps are the main pollution issues in Niue. Whilst garbage collection from households is regular and consistent, the disposal of this garbage in open dumps results in obnoxious smells and swarms of flies. The potential contamination of the groundwater lens from these dumps is a continuing worry for the government and its people.

Programme 24
Improved solid waste disposal programme
This programme would seek to improve systems for the collection and disposal of waste and the management of garbage dump sites.

This rubbish dump near Alofi presents a number of health and environmental hazards. More active management of Niue's dumps is necessary.

Programme 25
Waste disposal education

A programme would be launched blending public education and incentives to help induce people to reshape their attitudes concerning the disposal of waste. This will be done either as part of the community/village workshops suggested above (Programme 8) or in conjunction with them.

Programme 26
Alternative sanitation technology: pilot study

see Appendix, page 57

The lack of an adequate sewage disposal system is causing concern and it is predicted that this problem will continue to pose a threat to the health of the population. Testing by the Department of Health has previously indicated the presence of coliform concentrations in some bore holes resulting mainly from septic tanks and piggeries. High coliform concentration in the groundwater lens is likely to increase unless sewerage facilities are urgently upgraded.

7.2 Reduce pollution from development activities

Niue has a small industrial base and pollution problems are therefore confined to point sources. It is essential that future industrial development be governed by appropriate environmental standards to control pollution emissions and that these standards be rigorously enforced. For industries which generate liquid or solid wastes, particularly those which could pollute the groundwater lens and coastal waters, the conduct of Environmental Impact Assessment should be mandatory.

Programme 27
Strengthen monitoring of industrial wastes

This programme would lay the base for strengthening the capability of the Environment Unit and the Department of Health to routinely monitor the environment for industrial pollution. Capability strengthening will require the planning of a practical monitoring programme, training of staff and the provision of appropriate analytical facilities. The requirement of this programme could be met through the capacity-building programme suggested above (Programme 3).

7.3 Use and abuse of pesticides and other toxic and hazardous chemicals

Pesticides include the wide range of insecticides, herbicides and other highly toxic poisons. The use of Paraquat for agricultural purposes has been widespread in Niue and there has been no, or very little, assessment of environmental impact. Pesticide use is likely to continue but there has been little education regarding safe use, application and disposal. Concern about the possible seepage of hazardous materials and leachates which may result in the contamination and pollution of the groundwater lens has been expressed several times at various fora in Niue. It is important that this concern should now be taken seriously as Niue might soon have to make a choice between increasing locally produced agricultural crops and the risk of rendering its only sources of water supply unsuitable for consumption.

Programme 28
Education programme on the proper use and control of chemicals

This programme would aim to inform and educate the public and school children about the potential hazards of chemical use and of the correct procedures for safe handling and disposal. Again, this could be done as part of, or in conjunction with, the educational programmes suggested above under chapter 4.

Sustainable use and management of natural resources

8.1 Terrestrial resources

8.1.1 Land

The management of land resources must be considered within the context of the land tenure system. Niue's economic, social and cultural institutions constitute a village mode of production which retains the ability to sustain itself, controls most of the land resources, and accounts for the production of most subsistence goods and cultural services.

With little prospect of industrial development, it is important to properly manage Niue's limited land resources. Land not only provides the basis of some economic self-reliance, but it is also essential to the maintenance of a living community. The scarcity of soil and the absence of surface water mean the potential for agriculture is limited. However, if managed properly and provided the soils are not destroyed by unsustainable agriculture techniques, there is enough productive land to sustain the present population and perhaps maintain a small export trade in cash crops to New Zealand. In fact Niue is already producing more than it can consume and the government is looking for overseas markets for surplus produce.

8.1.2 Promote sustainable forest management

Niue has large areas of forests which have been able to supply the domestic demand for forest produce. However, prior to the first National Development Plan (Government of Niue 1979), only sporadic attention had been paid to the potential development of this resource. An analysis of the properties and volume of this resource done in 1966 (Frost & Berryman) estimated that there was about 270,000 cubic metres of merchantable forest remaining dominated by only two species, "kafika" (*Eugenia inophylloides*) and "Kolivao" (*Eugenia richii*) which account for 35 per cent and 32 per cent respectively of the total volume. Forest surveys conducted after Cyclone Ofa in 1990 suggested that the area of merchantable forests had been reduced from 5,500 to 3,200 hectares but logging activity accounted for only 250 hectares of the area lost. Using pre-1990 deforestation rates therefore, it was estimated that a sustainable timber yield for Niue was in the order of 8,000 cubic metres per annum (Government of Niue 1991, p. 15).

Production statistics are not available from the only sawmill operating in the country but it is estimated that several hundred cubic metres of timber are cut each year to supplement imports for construction purposes. Planning for logging in the forestry sector has been on an ad hoc basis because the land tenure system has yet to be clarified through current land titling efforts. It is extremely important for future forestry planning that the land tenure system be clarified and made acceptable to the local communities as soon as possible.

Since forest is one of the few precious resources of Niue, the need for its sustainable management was stressed by the NEMS Task Force as a national priority. But the achievement of sustainable forest management in Niue offers many difficult challenges which the government and people of Niue must be prepared to overcome. Some of these challenges go to the very heart of customary land use, and any management solutions must therefore involve a number of interrelated factors, including:

- launching an effective reforestation programme on customary land;
- developing effective community awareness programmes relating to forestry;
- development and application of a practical forestry policy and legislation which are

firmly based on the principles of sustainable development;

- developing and using a sound and readily updatable information base for forest management decisions; and
- upgrading and implementing forest practice guidelines which minimise the environmental impact of forestry operations.

The Department of Agriculture, Forestry and Fisheries, which currently has responsibility for the management of the country's forest resource, is already addressing some of these issues but it is clear that there is a long way to go before many of these requirements are appropriately incorporated into a comprehensive forest policy for Niue.

8.1.3 Improve community awareness and information flow

There appears to be very little information available about logging operations on customary land, how logging concessions are negotiated and what benefits are offered in return, and the means employed to ensure compliance both by the sawmillers (government) and the landowners once the concessions are agreed to. Indications are that logging is carried out as a means of clearing land for agriculture and government therefore is often regarded as "responding to a community request" for logging and is not responsible for the impacts of such an operation. This attitude is common with many governments but it is often forgotten that it is the government's responsibility to provide adequate up-to-date information upon which the local community can base its decisions. When communities are not aware of the adverse consequences of their decisions, the responsibility is shared with their governments.

There is a need for development of a greater community awareness about the use and value of forests. Target groups for information include landowners, government agencies and non-government organisations. This need should be addressed through a clearly focused campaign which would aim to enhance awareness of the forest under customary land as well as the rights of landowners in relation to logging operations, the protective values of forests, and alternatives to clear felling of forests for agriculture development. A closely related aspect that could also be addressed is the documentation of traditional knowledge relating to the use of forests and its incorporation, where relevant, into forestry policy and practices.

Strategy goals

(1) To increase the awareness of local communities about the values of forests under their control.
(2) To clearly identify the respective roles of government and local communities in the management of forest resources under community control.
(3) To document traditional knowledge held by

Programme 29(a)
Community forestry awareness and traditional knowledge programme

This would include:

(1) development of a community awareness programme on forest management, forest processes and the values of forests;
(2) documentation of traditional knowledge on silviculture forest use, and incorporation of appropriate aspects of this knowledge into forest policy and practice.

This programme should be made an integral part of the community/village awareness workshops suggested above (chapter 4). This would provide a key focus for such workshops while minimising costs and duplication of efforts.

Programme 29(b)
Government forest policy and awareness programme

This would include:

(1) development of a national forestry policy based on sustainable use principles;
(2) development of an awareness programme aimed at government officials to make them more aware of their roles and responsibilities with respect to the administration of forests under community control.

An appropriate forestry policy could be developed as part of the overall policy initiatives suggested under chapter 3, while the forestry awareness programme for government officials should be made an integral part of the environmental awareness programme for government officials suggested above (Programme 10).

local communities about forest use and incorporate this information, where appropriate, into forest policies and management practices.

8.1.4 Increase reforestation

Although the Department of Agriculture, Forestry and Fisheries had initiated a reforestation programme on the island, the rate of replanting lags far behind forest clearing. The 1990 forest survey also indicated that the area under natural regeneration had dropped by one-seventh. This suggests that not only are natural forests being lost at an accelerating rate but the areas left for natural regeneration are also being reduced in size, further suggesting that the fallow period which the cultivated land is traditionally subjected to has become shorter (Government of Niue 1991, p. 15).

A modest reforestation programme for Niue would help sustain the local demand for forest produce and, more importantly, provide a vegetation cover for exposed soil after land-clearing operations. With land being so limited, tying it to any one particular use would be difficult to justify, so there is often a need to look beyond the simple objective of reforestation. Agroforestry and the broader social implications of reforestation also need to be considered at an early stage of programme development. In Western Samoa, a major reforestation programme provided employment for more than 90 per cent of the population of a small village such that traditional village life was disrupted five days each week. A programme of this magnitude is not expected in Niue but it is nevertheless important to bear in mind the social implication of this type of operation on a closely knit community.

This plantation is part of DAFF's forestry programme and is located on previously cleared land.

Strategy goals

(1) To increase the level of reforestation.
(2) To increase the level of awareness and support by local communities for reforestation on their land.

Programme 30(a)
Expanded reforestation programme

This programme would greatly increase reforestation activity on customary land by encouraging the involvement and participation of landowners in forestry development planning and management.
This programme could be part of on-going efforts in forestry development under the New Zealand bilateral programme as well as multilateral programmes including the UNDP/FAO South Pacific Forestry Programme (Suva).

Programme 30(b)
National tree planting programme

This programme would encourage public participation in replanting activities through the declaration by government of a national tree planting day (Arbor Day).
The programme could also be part of on-going efforts in forestry development under the New Zealand bilateral programme as well as multilateral programmes including the UNDP/FAO South Pacific Forestry Programme (Suva).

Use of bulldozers for clearing forested areas and inappropriate application of agricultural chemicals may cause environmental degradation that is much more costly to Niue than the value of the taro crops.

8.1.5 Promote traditional forms of crop production

Agriculture is the major activity in Niue. More than 80 per cent of all households are agriculturally active, with fragmented patterns of land parcel holdings. Agriculture makes a large contribution to subsistence food production and socio-cultural activities, and the potential for a market for Niue produce in Auckland appears good, but the management of production, harvesting, inspection, packing, storage, transportation and marketing must first be improved in order to secure this market from other competing Pacific Island produce.

The Department of Agriculture, Forestry and Fisheries plays a key role in the development of agriculture in Niue. It helps to identify, test and introduce crops with commercial potential; it helps to develop and advise growers on systems of crop culture and control of pests and diseases, and to enforce quality and plant health standards by inspection throughout the production process. Other directions the sector is currently looking at include assistance to growers to secure high yields of good quality produce in an environmentally friendly manner, and to secure reliable supplies for the hotels and the hospital. The department is also looking at ways in which it may be able to assist local farmers who want to produce and export high-value crops.

The fragmented nature of land holding in Niue unfortunately inhibits large-scale commercial production which is often necessary to capture and sustain export markets. Given this situation, agriculture in Niue will continue to depend on the total output of the subsistence growers for both local consumption and for export. Taro production, which accounts for the majority of land clearing but only about 7 per cent of total export value, will inadvertently affect the production of other more profitable cash crops such as passionfruits and lime. Handicraft production, which is developing as a significant industry in Niue, is also likely to be affected when the high-quality tree species are logged out.

To ensure the continued viability of the agriculture sector, the Department of Agriculture, Forestry and Fisheries is keen to encourage conservation farming focusing on traditional agricultural practices which are considered environmentally friendly. Practices which maintain plant cover for the impoverished soils of the island are particularly suitable. Mixed cropping agroforestry systems which have been tried in other parts of the region with very encouraging results have potential in Niue, and should be promoted. Extension activity which in the past has favoured cash crops must be expanded to also include subsistence food production, or to include forms of subsistence production which will satisfy local food demands and provide a surplus for cash sale including export. Practices of mulching which provide a low-cost means of improving crop yields and a continuous form of soil cover are certainly worth consideration.

Programme 31
Agroforestry development programme

The proposed programme would support the development of improved agroforestry systems to enhance sustainable agriculture. The programme would also require the improvement of the department's extension capability to introduce agroforestry practices more widely to the farmers. This programme could also be part of the on-going efforts by the government and its development partners (NZ, UNDP, FAO, SPREP) to encourage community-based reforestation programmes.

8.1.6 Management of coastal environment

Most if not all of Niue's population live in coastal areas. It is therefore not surprising that the "coastal" environment is the most stressed. Land-based activities are feared to be causing pollution in the coastal waters but it is the effects of cyclones and strong wave action that are most destructive to the fragile coastal ecosystems. Niue will benefit from the preparation and implementation of coastal management plans, but it is important that the status of the country's coastal resources be assessed first. Such an assessment is likely to cost the country dearly and it might be advisable therefore to use whatever funding might be available to focus on areas which are of particular concern. The coastal area of Alofi might be a priority for consideration.

Strategy goal

To improve the management and utilisation of the coastal zone and coastal resources.

Programme 32(a)
Coastal environment management plan for a priority area

This programme would develop a coastal management plan for the Alofi area. Technical assistance for this will be sought from SPREP.

Programme 32(b)
Manage and monitor the impact of development of coastal areas

This programme would determine the type and extent of development in the coastal areas to ensure that the utilisation of coastal resources is sustainable. This work would be facilitated by the ecological/resource surveys suggested above, as well as the policy initiatives and capacity-building programmes also suggested above.

The bulk fuel store at Alofi is not only vulnerable to cyclones but its position means that any accidents lead to a high likelihood of petroleum being spilt into the sea.

In a number of villages, access for boat launching is by narrow and steep sea tracks. Launching boats across the reef flat into seas which can often be rough is a major challenge to inshore fishing.

8.2 Marine resources

Very little is known about the resources of the three distant reefs (Antiope, Harran's and Beveridge) of Niue. Indications are that the reefs contain a substantial resource of clams and crayfish but the isolation and open ocean exposure of these reefs can pose problems for developing the resources from Niue. The isolation of the reefs could also limit the potential for recolonising them with fish from other sources if they were to be over-exploited. An assessment of the reef resources is urgently needed.

The fishing grounds of Niue are not particularly fertile as there is little surface run-off to provide nutrients for marine life. The potential to develop fisheries in Niue is also limited by the nature of the difficult access to the sea via the rugged and steep coastline as well as the unprotected nature of the coast and its exposure to the open and, sometimes, very rough seas. The rugged coastline and limited access to ocean bottom mean that fishing is labour-intensive, and that it is unlikely that inshore fishing could develop into a major export industry in competition with other Pacific countries with easier fishing conditions.

Despite the difficult access to the resources of the sea, there is deep concern about the probable over-harvesting of the marine resources. A marked decline in fish catches has caused a number of village communities to impose sanctions on certain fishing grounds and these measures have been found to be effective in controlling the excessive exploitation of certain marine species. The ban on certain fishing methods has also helped protect the untargeted species from being destroyed.

The management of Niue's marine resources is as critical as the management of its land resources. The recent introduction of fish aggregating devices (FADs) has made pelagic fish more accessible not only to Niueans but also to other fishing expeditions from outside the country. FADs will almost certainly intensify fish harvest and Niue will therefore need to have an accurate knowledge of this resource if it is to ensure sustainable management.

8.2.1 Reduce over-harvesting of reef resources

The management and regulation of the harvesting of marine resources in Niue will depend heavily on the support and cooperation of the village communities. But the government can facilitate this process by providing relevant information relating to the size and distribution, variation in annual recruitment levels and interaction among species. This will require detailed studies of the reef resources. The development and effective enforcement of conservation legislation at the national and community levels to control the use of destructive fishing practices such as dynamiting and fish poisoning will be crucial. The initiation of public awareness programmes to inform the people about the consequences of destructive fishing is an essential element of programmes to protect and regulate the exploitation of reef resources. A search for more appropriate forms of communally acceptable sanctions against those persons who use destructive practices or wilfully destroy reefs will be an important step towards cooperative efforts between government and local villages in the protection of Niue's reef resources.

Programme 33
Impose seasonal sanctions on endangered reef resources

This programme would involve negotiation with local communities about seasonal bans on the exploitation of endangered species, the imposing of more appropriate forms of sanctions against those who cause damage to reefs and resources, and the development of communally acceptable legal measures to support such sanctions. This is related to the efforts to design an appropriate legal framework (see chapter 3) and could be facilitated through community workshops such as the ones suggested under chapter 4.

8.3 Environmentally safe exploitation of non-living resources

In 1978, Avian Mining Pty Ltd was issued a licence by the government to explore primarily for uranium. This licence was renewed in 1991 although it was stated in 1979 that no conclusive results had emerged as to the presence or absence of uranium on the island. Advice was sought from the International Atomic Energy Agency (IAEA) regarding the possible dangers that drilling and mining might have on the water lens on the island. IAEA advised that whilst the drilling methods used were of no danger to the water lens, the significance of a number of other points made in its report in 1979 on present-day environmental and developmental concerns needed further investigation and clarification. This report indicated that an irregular, and in some instances, unusually high incidence of radioactivity was found in both soil and water samples taken, but to date no further monitoring of the levels of radioactivity in water samples has been performed. The 1979 report further cautioned that the government would be well advised to terminate its involvement in the exploration programme as the possibility of locating an exploitable and economically attractive uranium deposit is slight.

Despite these concerns, interest in continuing exploration of uranium deposits is still very much alive. However, it will be wise for the government to carefully weigh the benefits against the social and environmental cost of such an undertaking. Assuming that a deposit will be found, it must be large enough to be commercially viable, otherwise the cost of exploitation could far exceed the financial returns from exploitation. Further, there is a need to consider in advance the environmental risk of transporting uranium, especially in Niue where the port and harbour facilities may not be safe enough for an operation of this nature.

In the UNCED Report (Government of Niue 1991, p. 18) scientists have also suggested that there is very little likelihood of finding commercially significant deposits of deep-water mineral deposits within Niue's Exclusive Economic Zone, but it is important that, should exploration for such minerals be considered in future, environmental considerations should first be taken into account. Mining companies should be required to undertake specified monitoring and reporting programmes, but these would need to be supplemented by random checks of company-supplied data to ensure compliance with established environmental pollution control standards.

Discussions are also under way regarding the establishment of a concrete plant on the island. Indications are that the plant would aim to satisfy the local demand and to provide a surplus for export to neighbouring Pacific islands. The limestone deposits on the island are quite substantial and might sustain an industry of the size envisioned by the government. However, the potential impact of limestone mining on the island's environment has yet to be assessed and this will have to be determined before plans are too far advanced for the establishment of this type of industry.

Strategy goal

To ensure minimal damage from mineral exploration and exploitation.

Programme 34
Strengthen monitoring capacity for mining activity

This programme would aim to strengthen government agencies to monitor environmental impacts of mining activities through EIA training courses and workshops.

Programme 35
Develop guidelines for mineral exploration and extraction

This programme would aim to prepare draft guidelines for mineral exploration and extraction for use by government officials in undertaking random checks on mining activities.

Programme 36
Develop and enforce legislation for mining activities

This programme would provide assistance for the development of appropriate legislation to control and monitor the impact of mining on the environment.

Programmes 34, 35 and 36 could be undertaken as part of the programmes which have been suggested above, including the capacity-building programme for the Environment Unit (Programme 3), the formulation of EIA guidelines (Programme 1), and the development of appropriate legislation and policies for environmental management (Programme 2).

Chapter 9

Implementation

This National Environmental Management Strategy is the result of the input from the NEMS Seminars and consultations with several agencies of government and the private sector. The involvement of SPREP was to facilitate the seminars and to assist with the preparation of the NEMS report whilst ensuring that the process had strong local participation and resulted in Niue's own National Environmental Management Strategy.

But even as a Niue initiative, implementation simply will not happen by itself. The implementation of this strategy will inevitably place an even heavier burden on those involved as it is additional to routine tasks. The international community has an important role to play in supporting certain activities which will be beyond the government's capacity to pay. Without that cooperation, the road to sustainable development through the implementation of this strategy will be much longer and difficult.

The first step for the effective implementation of this strategy is the formal establishment of an administrative body to guide implementation. The establishment of an Environment Taskforce to carry out this function is discussed under section 3.4. It is extremely important that careful and urgent consideration be given to the practicality of this recommendation, especially as an alternative to the Conservation Council proposed by the Environment Management Bill. The composition of the Taskforce is also suggested under the foregoing section but the Taskforce itself may wish to review this suggestion and/or co-opt other members as it sees fit. The Taskforce would have an advisory role to the Environment Unit and the Cabinet, the former being the agency directly responsible for the implementation of the strategy. The Taskforce could also assist the Unit's effort in raising funds in time for the implementation of the strategy and could ensure that review of progress takes place regularly. The Taskforce might not need to meet more than four times a year but the Chairperson should be able to convene other meetings of the Taskforce on advice of the Minister to discuss any urgent business.

NEMS implications

The preliminary draft of this strategy document was taken to the NEMS Task Force where it was discussed with representatives from the Chamber of Commerce, Tourism Association and Niue Youth Council. Comments from other sources were incorporated into the document and the revised version submitted via the Task Force to Cabinet for endorsement by government. Although the Task Force has prioritised strategies for action for consideration by government, Cabinet may wish to further assess these priorities in order to ensure that actions which are considered priorities by Cabinet are also converted into high priority programmes for implementation under the NEMS. Cabinet may also wish to endorse programmes to be forwarded to SPREP and other potential donor agencies for financial assistance. Efforts should be made to ensure that proposals are submitted to funding agencies in time for scheduled implementation.

Progress Review

A National Environmental Management Strategy is in large measure a snapshot in time, framed in accordance with the economic and other circumstances of the time. It should be seen as a planning tool that will be regularly updated.

The outcome of this NEMS should be reported on annually, at the time of preparation of forward estimates and of funding requests to development assistance agencies. The total cost of all proposed programme profiles is, of course, greatly in excess of what could be envisaged for an environmental programme over the next five years, even given its vital importance to sustainable development and the seeming urgency of many of the proposed actions. Niue will be fortunate if even a small percentage attracts funding before the turn of the century. However, government should continue to pursue funding vigorously for those programmes to which the Environment Taskforce and the Cabinet have given priority.

In addition to the annual progress report, a major review of the NEMS should be undertaken in five years time (1999). This might best be achieved by holding a national workshop to determine the priorities for the next five years and/or to modify the strategy according to new needs.

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Programme profiles

Note Detailed profiles have been produced here for some activities (see profiles 1, 5, 8, 9, 10, 11, 15 and 26). For other programmes, titles only are included. (See Key on page 45 for further details.)

Contents list

21	Population survey of birds and other species of fauna (title) *	
22	Costs and benefits of biodiversity conservation in Niue (title) †	
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32(a)	Coastal environment management plan for a priority area (title) *	
32(b)	Manage and monitor the impact of development of coastal areas (title) §	
33	Impose seasonal sanctions on endangered reef resources (title) ‡	
34	Strengthen monitoring capacity for mining activity (title) §	
35	Develop guidelines for mineral exploration and extraction (title) §	
36	Develop and enforce legislation for mining activities (title) §	

Key

* These require external assistance and although some of it is forthcoming, there is a need to clarify with government what exactly are the requirements.

† These programmes are related to or subject to the success of other programmes of this strategy document and may need to be further clarified before they could be profiled.

‡ These do not need external assistance and the government will undertake them using local resources.

§ These programmes are to be undertaken as part of other programmes which are profiled.

Note All currency amounts are in United States dollars ($US).

Programme profile 1

Development and application of standard Environmental Impact Assessment (EIA) guidelines

Background

One of the most powerful policy tools available for the control of the impact of human activities on the environment is Environmental Impact Assessment (EIA). In the case of Niue, however, current legislation does not make mandatory any EIA procedures. In fact, EIA guidelines are not applied at all when determining the viability of development projects. Only economic and financial considerations are applied, and when environmental issues are considered at all, they are usually after the fact, and, then, in a rather perfunctory manner. The need for EIA guidelines was strongly advocated by participants at the Niue National Environmental Management Seminar held in 1993, who also recommended, as a practical start, the assessment of current plans for industrial development.

Aim and scope

To develop a set of standard EIA guidelines to be accompanied by detailed administrative procedures for their implementation, and training of responsible officers in EIA.

Description

Guidelines would be prepared for the application of the EIA process to all government and private sector development proposals. The preparation of these guidelines requires technical assistance (a technical expert) for a one month consultation, and another month to prepare and trial proposed administrative procedures and conduct training.

Cost estimates

Technical expert—2 months	8,400
Travel and accommodation	6,000
Publication/dissemination of EIA guidelines and procedures	2,000
Training in EIA	4,000
Total cost	**$US 20,400**

The programme could be implemented quickly if funds could be secured. SPREP has already offered assistance in development of EIA guidelines and in training and the estimated cost could be reduced depending on what more could be offered.

Executing agency

The Environment Unit within the Community Affairs Department in close consultation with the Planning and Development Unit.

In-kind support

The Community Affairs Department will provide a national counterpart and logistics support, while the Planning and Development Unit will provide the service of a senior economic planner to assist the EIA consultant.

Duration

Two months

Programme profile 5

Strengthening the Department of Education's capacity to coordinate environmental education

Background

Environmental education is considered a critical factor in addressing the current, and preventing future, environmental problems. Making people aware of the impact of their everyday actions and giving them a capacity to change the way they do things would be a major achievement in environmental protection. Unfortunately, there is a lack of educational and informative materials pertinent to Niue. Some efforts are under way to address this problem within the formal education sector but these need to target the non-formal education sector as well. More importantly, there is a need for a focal point within Niue's Department of Education to push for and coordinate the production and use of such educational materials, including resource persons. A number of strategies proposed here have an environmental education component requiring the production of such educative materials and the effective planning and coordination of awareness programmes. Reliance on short-term consultancies to provide such information and service allows little chance for skills transfer to Niueans, and would result in an on-going need for short-term consultancies to address information needs.

Aim and scope

To strengthen the capacity of the Department of Education to produce and disseminate resource materials (including persons) and environmental information, and to coordinate environmental awareness campaigns under other proposed programmes in this strategy document.

Description

In order to strengthen the capacity of the Department of Education, a technical expert is needed for two years to initiate the planning process and train a national counterpart. The national counterpart could undergo further specialised training in the planning and coordination of environmental education and the production of educative materials at an overseas institution, perhaps during the second year of the project, and returning to take over from the expert. Initially, the project will locate and supplement resource information for education and public awareness campaigns and coordinate environmental materials for other ministries. The focus will then shift to providing quality audiovisuals, fact sheets, information in poster form, leaflets, newsletters and radio programmes for a variety of end users such as schools, government ministries, NGOs and community groups. The project will also pay attention to the further identification of information needs and liaison and coordination with other extension programmes, particularly agriculture and fisheries.
Special effort will be made to incorporate traditional knowledge (see Programme profile 11) in the development of educative materials and other resources for environmental awareness.

Cost estimates

Technical assistance—2 years	25,000
Equipment for information production (VCR, cameras, desktop publishing capabilities)	15,000
Training	15,000
Office equipment and support	2,000
Printing/production information	5,000
Total cost	**$US 62,000**

The costing for the expert is based on the rate for an Australian or New Zealand volunteer in Niue.

Executing agency

The Department of Education in close collaboration with the Environment Unit.

In-kind support

The Department of Education will provide the national counterpart (Education Officer), logistics and other office support while the Environment Unit will provide the service of the Environment Officer to assist the expert.

Duration

Two years

Programme profile 8

National and village environmental awareness workshops

Background

The need for greater environmental awareness could be further addressed through a series of community/village workshops. At the moment, there is a need for early follow-up to previous workshops so the momentum generated there is not lost. But rather than continue broad scope discussions, the consultative process could now focus more productively on specific major development thrusts, or environmental issues, with an objective of arriving at detailed recommendations for action. National and village workshops would provide opportunities for further sharing of experiences on those specific issues which have emerged from the NEMS as those of national concern. Village workshops in particular will assist in the promotion of environmental awareness in the local communities and in developing environmental policy, planning and strategies at the grass-roots level. This programme would facilitate environmental awareness workshops over a two-year period.

Aim and scope

To promote environmental awareness throughout Niue and to engender "grass-roots" level participation in environmental planning and management.

Description

The planning of national and village workshops would be an appropriate function of the Environment Unit, with assistance from the Environment Focal Point at the Department of Education as a resource person. Forward planning for these workshops, to be done in close consultation with the Village Councils and other community representatives (churches, NGOs, etc.), should begin early after the adoption of the NEMS by the national government. Given their contacts with the communities, the NGOs (including church groups) and the Village Councils should be given the task of organising the workshops, with the Environment Unit, the Department of Education and other government departments providing technical (resource persons and materials) and financial support. An important component of the project is the conduct of some training sessions for groups who will be involved in organisation and conduct of workshops. Such groups include Village Councils, village women's groups, youth groups, community workers etc. The workshops should aim to cover the whole island within three months and must try to cater to everybody including children. Special efforts will be made to incorporate traditional knowledge (see Programme profile 11) into the workshop materials.

Cost estimates

10 workshops at $2,000 per workshop	20,000
Total cost	**$US 20,000**

Executing agency

The Environment Unit will execute the project in close collaboration with the Department of Education's Environment Focal Point, other line departments and the Village Councils.

In-kind support	The Environment Officer of the Environment Unit will be responsible for the planning and coordination of the workshops including the provision of resource persons, workshop materials, and logistics support. Other departments (Education; Agriculture, Forestry and Fisheries etc.) will provide resource persons.
Duration	Three months

Programme profile 9

Development of environmental fact sheets, educational resources and audiovisual aids

Background

As mentioned under Programme profiles 5 and 8 it is also crucial to address the information needs in non-formal education. Also, NGOs, church groups and village groups are expected to participate in the conduct of awareness workshops. There is certainly a need to develop the kinds of materials and to support the type of media (plays, songs, speech competitions etc.) which NGOs and other community groups can best use, and which have proven effective in spreading messages through the communities. Such materials and approaches should be based on what is known about the information and institutional needs of the communities, some of which is contained in the *Review of Environmental Education and Community Awareness—Niue* (Benson & Tagaloailuga 1992) prepared under the NEMS. The establishment of an Environment Focal Point within the Department of Education will provide some capacity to spearhead the efforts to produce educative materials, but the information needs of NGOs and other community groups are considered special enough to warrant a separate effort.

Aim and scope

To identify and develop environmental information resources and alternative media for the community education programmes of NGOs, churches and other groups with extensive community networks.

Description

The initial focus of the project would be to identify the environmental information needs of, and appropriate media tools for delivery of messages by, NGOs, churches and other groups. A number of issues which urgently need the attention of the public have been identified under each of the proposed strategies and these should form the starting point for the development of such information resources; they should be further refined by awareness workshops (see Programme profile 8) and by a special workshop convened for representatives of NGOs, church groups etc. to review and further clarify their information needs. The NGO efforts in alternative media tools also need to be supported. Special effort will be made to integrate traditional knowledge (see Programme profile 11) into educative materials and programmes for NGOs etc.

Cost estimates

Technical assistance (NGO information needs; and alternative media tools)—1 month	5,000
Workshop for needs identification	2,000
Workshop on use of community plays, songs, speeches, sports etc. in environmental education programmes	2,000
Printing and materials production	3,000
Total cost	**$US 12,000**

Executing agency	The Department of Education in close consultation with the Environment Unit, NGOs, church groups, Village Councils etc.
In-kind support	The Department of Education will provide the personnel and other resources to coordinate the project, and the Environment Unit and local community groups will provide some technical assistance.
Duration	One month

Programme profile 10

Environmental awareness training for government officials

Background

Many government departments dealing with natural resource and infrastructural development already have good access to village communities and could have a major impact on the daily activities of the people of Niue. On the other hand, most officials from these departments have little background in environmental management and sustainable development and have specific mandates for the exploitation of natural resources. Thus there is a need for a programme to enhance the level of environmental awareness and skills to manage economic development sustainably among government officers (particularly extension workers). There is obviously a need to make sustainable resource management part of the mandate of all government departments. But there is also the immediate need for practical training on specific resource management issues to enable the extension workers to give proper advice and guidance to farmers, fishermen etc.

Aim and scope

To sensitise government officials to environmental issues and enhance their capacity to assist in the sustainable management of Niue's natural resources and built environment.

Description

The planning of special government officials' training would be an appropriate function of the Environment Unit with assistance from the Environment Focal Point at the Department of Education and SPREP. Forward planning for these workshops, to be done in close consultation with all the government departments concerned, should begin early after the adoption of the NEMS by the government. SPREP's technical expertise could be called upon to provide guidance and support.

Cost estimates

4 workshops at $2,000 per workshop	8,000
Total cost	**$US 8,000**

Executing agency

The Environment Unit will execute the project in close collaboration with the other departments concerned.

In-kind support

The Environment Unit will be responsible for the planning and coordination of the workshops including the provision of resource persons, workshop materials, and logistics support.

Duration

Two weeks

Programme profile 11

Documentation and application of traditional knowledge and management systems into the education system and modern management practices

Background

It is now clear that traditional knowledge and management practices which ensured the sustainable harvest of reef and land resources in Niue for thousands of years are quickly slipping away, being replaced by environmentally untried Western resource management models. Even where traditional resource-use and protection principles may still be adhered to, the detail is being lost. Yet it is the detail which is crucial to the development of alternative management systems for today. The deterioration of traditional agricultural and subsistence systems is seen as one of the constraints to sustainable development in Niue at the moment. One of the problems is seen as the tendency to neglect to stress the importance of, and provide training on, traditional resource values and management. Thus, any effort to revive and incorporate any of the traditional resource-use practices must begin with the documentation of as much of this knowledge as possible for integration in school curriculum.

Aim and scope

To document traditional resource knowledge and management systems and incorporate them into the education system and into modern management practices.

Description

The programme will:

(a) provide a new impetus to documenting traditional resource knowledge;
(b) establish a database of traditional knowledge for possible combination of traditional and imported systems, to create management systems appropriate for Niue;
(c) integrate traditional knowledge into the modern education system through the development of new curriculum materials for schools and in-service training;
(d) integrate traditional knowledge into the proposed environmental legislation; and
(e) integrate traditional knowledge into everyday actions of the population.

The programme would run for two months to initiate the research and documentation. The Environment Officer of the Environment Unit and the Environment Focal Point from the Department of Education will assist the technical expert in collecting and documenting information. The national counterparts will be trained in database maintenance. The programme will work closely with the Department of Agriculture, Forestry and Fisheries, the Department of Education, and the Solicitor-General's Office to ensure the effective integration of traditional knowledge into environmental laws and policies, educational, agricultural/fisheries and other extension programmes.

Cost estimates

Technical assistance—1 month	4,200
Air fares and per diem	4,000
Materials and support for the Environment Unit and the Department of Education (video tapes and VCR/TV, cameras, cassettes, tape recorder)	10,000
Total cost	**$US 18,200**

Executing agency

The Community Affairs Department in close collaboration with the Department of Education, the Solicitor-General's Office and the Department of Agriculture, Forestry and Fisheries.

In-kind support

The government departments involved will provide one counterpart each to assist in and get training on the maintenance and incorporation of traditional knowledge into their various sector programmes.

Duration

One month

Programme profile 15

Computerised resource information database

Background

A technical database on natural resources is vital for making correct technical decisions and is, therefore, an essential tool for formulating sound policies and programmes. There are various efforts being proposed here to fill existing gaps in information. Concurrently, efforts need to be concentrated on establishing a national resource information system and database, with the collation of existing scientific/technical data as the first step. At the moment, there is no resource information system in operation. As a result, available environmental, demographic and climatic data are not accessed through an interactive, geographic-based, resource information system.

Aim and scope

To develop and establish a computer-based, user-friendly resource information system, including establishment of an information retrieval network, and training in system use.

Description

The proposed programme will fund the development and establishment of a computer database to store essential information on Niue's resource base. The programme would fund a Geographic Information System (GIS) specialist for three months to (a) design and establish a national Resource Information System (called NIURIS); and (b) train the main potential users of the NIURIS.

Cost estimates

Technical assistance—3 months	15,000
Air fares and per diem	9,000
Hire of data input staff	1,000
Equipment (computer terminals and peripherals, software)	9,000
Training	500
Total cost	**$US 34,500**

Executing agency

The Environment Unit in close collaboration with the Department of Agriculture, Forestry and Fisheries.

In-kind support

The Environment Unit will collate existing information before the arrival of the database expert, and provide a national counterpart to assist the latter and receive training in systems use and database updating. It will also provide logistical and other office support.

Duration

Three months

Programme profile 26

Alternative sanitation technology: pilot study

Background

A growing concern in Niue is the lack of adequate sewage disposal. The lack of adequate water supplies and the vulnerability of the water lens make it necessary to investigate alternative, discrete, and more environmentally friendly sewerage systems. There is also the problem of poor soils, which, if accepted culturally, could benefit from processed animal waste. Some of the bio-toilet/bio-filter sewage treatment systems have been successfully introduced in other countries, and could be trialled in Niue for possible use in areas outside Alofi.

Aim and scope

To improve sewerage systems in an environmentally safe way, and thereby improve human health.

Description

The proposed programme would fund the preparation of a detailed pilot study of three types of bio-toilet systems:

(a) closed, bio-toilets with fertiliser production for individual households;
(b) sealed tank toilets with pumper truck collection, bio-gas production and fertiliser production; and
(c) the Enviroflow bio-filter system which can provide waste and waste water treatment for communities ranging from 10 to 5,000 people.

Systems would be procured and installed in rural places and their performance evaluated over a year. Training in system maintenance would be provided and a public campaign on the respective health and other community benefits of the systems promoted.

Cost estimates

(Preparatory Phase)

Technical assistance—1 month	4,200
Air fares and per diem	3,000
Total cost	**$US 7,200**

The project proposal will provide detailed cost estimates for system procurement, installation, operation and maintenance.

Executing agency

Department of Health in cooperation with the Environment Unit.

In-kind support

The Department of Health will provide a national counterpart and logistical support.

Duration

One month

nems

National Environmental Management Strategy

About National Environmental Management Strategies — NEMS

Recent times have witnessed increasing threats to Pacific environments, coupled with a growing awareness of the need for action. National Environmental Management Strategies (NEMS) are a measure of this awareness and a positive response to these threats.

NEMS which are being developed in a number of Pacific countries outline the major environmental issues faced by each country, and identify the steps required to address them. They also contain a strong emphasis on the identification of clear, fully costed programmes.

Each NEMS has been developed through a process of extensive in-country consultation and gathering of relevant background information. The end result is a document which "belongs" to the government and people of that country. The involvement of all relevant organisations, as well as a strong commitment by local people, will be essential to the effective implementation of NEMS and the sustainable development of the region over the long term.

South Pacific Regional Environment Programme