Republic of Seychelles

ENVIRONMENT MANAGEMENT PLAN OF SEYCHELLES 2000-2010

MANAGING FOR SUSTAINABILITY

Environment Management Plan of Seychelles EMPS 2000 – 2010

Managing for Sustainability

Final Draft for Review
April 2000

Table of Contents

Contact: Ministry of Environment and Transport, P.O. Box 445, Botanical Gardens, Mont Fleuri, Mahe, Seychelles. Tel: 248 224644; Fax: 248 224500; email: MET@seychelles.net

Preface

I clearly remember the day we unveiled the plaque confirming Seychelles as an avant-garde of sustainable development and declared Aldabra, not only a Seychelles symbol of purity, but as a gift for all humankind from every Seychellois.

Since then, during the last two decades and following Rio, we have made significant progress. With the implementation of the Environment Management Plan 1990-2000, we have given environment centerpiece in our development vision. We have made environment the reason for our present and future existence, and with the setup of the Ministry of Environment we have established the necessary foundations for sound environment management for us and for the generations of tomorrow.

We have many success stories. One that stands out is that nearly every week our press is vibrant and bursting with environmental news, some which show our successes and new initiatives, and others depict the growing participation of everyone.

Our vision, embedded in this document is to make Seychelles a 'living' biosphere where Man co-habits with and manage its environment sustainably. We sincerely believe that through the systematic implementation of this plan in close collaboration with local and external partners, we will be able to address emerging issues at both national and community level.

This new plan clearly shows that there is much more for us to accomplish, however, we cannot do so alone. Environment and economic vulnerability continue to be our two most feared risks. The need for international support is therefore even more critical, as we invest considerably to protect species, some of which are migratory. Slow international commitment in addressing emerging global threats such as climate change and sea-level changes severely increases our vulnerability and threatens many of our habitats, some found nowhere in the world.

The Environment Management Plan of Seychelles 2000-2010 thus provides the key impetus towards sustainable development, and it is my wish that many countries will follow this Seychelles Way.

France Albert Rene
President of the Republic of Seychelles

Foreword

Seeing the children of today come together to show us how they see tomorrow through the many paintings reproduced in this document embodies the attention my Ministry gives in the involvement and participation of everyone in the sustainable development of Seychelles. Likewise, the Environment Management Plan of Seychelles 2000-2010 process, has since its beginnings been a highly consultative process and I have noted the benefits of such an approach to mapping the environmental vision of our small country.

This plan, which aims to achieve the best environmental quality in the Seychelles, will also seek to reinforce the leadership of the Seychelles in environment. The previous EMPS was a success and the lessons learned will enable us to face the challenges of this new plan.

The Government of Seychelles, together with various countries and international organizations, have all contributed towards this success. Funding agencies have played a very important role in catalyzing the implementation of the previous EMPS 1990-2000. It is my wish that they will continue to play an important role in the EMPS 2000-2010. As with the previous EMPS, government's sustained commitment in financing many activities within the various programmes will be consistent.

Government's commitment in building upon wise practices is evident in a number of sectors and highlighted in the audit. This document is therefore our blueprint for realising our green vision within the new international order for wider stakeholder involvement in the decision process and good environmental governance. Furthermore, the EMPS process identified a number of areas were further action is required. The strengthening of institutions and revitalization of some entities to facilitate this process are ongoing. Capacity building will be one of the most important challenges for this new EMPS, as the importance of planning and environmental responsibility continue to permeate throughout all levels of society.

Being a small island developing state, severe constraints work against us. Our challenge has always been to achieve much with little because we believe in improving the prosperity of our people and the quality of our environment. Additionally, there is increasing pressures for economic development and international environmental issues. We will continue to integrate economic development and environmental protection as guided by Agenda 21.

We acknowledge the assistance provided by the World Bank, the French Government, other international organisation and all stakeholders in embarking on this process. It is our hope that we will implement this plan with an even higher level of commitment and participation by everyone.

James Alix Michel
Vice President of the Republic of Seychelles
Minister responsible for Environment & Transport

Joint Statement to the EMPS 2000 - 2010

(Joint statement by PS - MET, President of SCCI, Chairman of LUNGOS)

Names of above three persons to appear at the bottom of the statement.

Introduction to Seychelles

By a famous (global?) personality (with strong connections to environment of Seychelles

Background to the EMPS 2000 - 2010

The Environment Management Plan of Seychelles (EMPS) 1990 - 2000

The first Environment Management Plan of Seychelles or EMPS covered the years 1990-2000. It was prepared by the Government of Seychelles in 1989 with assistance provided by UNDP, UNEP and the World Bank. It was presented to donors at a meeting in Paris in February 1990 and raised pledges of USD 40 million.

At the time of its formulation and over the last ten years, the previous EMPS provided the Government with a valuable instrument to plan and manage the Seychelles' environment. In terms of project management, the EMPS has been very successful, and about 90% of the projects have been implemented or are under implementation. Environmental problems that were previously thought to be impossible to solve, such as the Hawksbill turtle shell trade, have been dealt with adequately under the EMPS. Shortcomings of the previous EMPS have been carefully analysed and areas needing attention have been incorporated into the new EMPS.

The Environment Management Plan of Seychelles (EMPS) 2000 - 2010

As it approaches the new millennium, the Republic of Seychelles is preparing a major new initiative to manage its environment in a sustainable manner. The country has taken the step to prepare its second environmental management plan, with assistance from the World Bank, covering the years 2000 to 2010 so that protection of the environment is undertaken in a planned and coherent manner involving all stakeholders. It is one of the first countries in Africa to prepare the so-called second generation of environmental management plans.

One of the fundamental principles adopted in designing the new EMPS is that the process should also lead to a greater capacity to understand, monitor and cope with emerging environmental issues, all of which call for a greater and wider involvement of all stakeholders. The formulation process started in early 1999 and has included significant public participation. However, consensus is that the new EMPS progress will be audited and monitored continuously and revised on an annual basis, thus always providing further opportunities for continual improvement and incorporation of new ideas and innovations to improve sustainable development in the Seychelles.

A significant aspect of the new EMPS is the level of local involvement in the formulation process. The EMPS 2000 – 2010 has largely been led and driven by Seychellois. A consultation process involving technical experts within and outside the Working Groups and stakeholders through meetings, presentations and a public workshop has taken place and will continue.

EMPS Process

Guidance and overview
A Steering Committee made up of senior representatives of key Government Ministries, Parastatals, the private and NGO sectors, chaired by the Principal Secretary of the Ministry of Environment and Transport, guided the process from the outset.
Concept
Ownership of the Plan by Seychellois who would implement it in the future was determined as a keystone of the planning process. The Plan was designed and formulated by Seychellois experts from

all relevant sectors, coordinated by a Seychellois Lead Local Consultant (LLC), with assistance from an International Consultant (IC) from the University of Cape Town, South Africa.

Work Plan
The initial process of formulating the EMPS took eight months. This took place in an interactive, consultative manner and involved an audit of the previous EMPS, new programme formulation process, public and funding partner consultations and final drafting.

Themes
The plan was to be more comprehensive than the previous EMPS. Ten thematic areas were chosen to cover all major social and economic sectors as well as certain key subjects of relevance to environmental management such as environmental economics. Other cross-sectoral themes that would cut across the main thematic areas were also identified.

The ten thematic areas are:
1. Society, Population and Health (including Gender)
2. Land Use, Coastal Zones and Urbanisation
3. Biodiversity, Forestry and Agriculture
4. Energy and Transport
5. Fisheries and Marine Resources/Processes
6. Water, Sanitation and Waste
7. Tourism and Aesthetics
8. Environmental Economics and Mainstreaming, and Sustainable Financing
9. Regulatory, Policy and Institutional Mechanisms
10. Commerce, Industry and Production

The cross - cutting themes identified were:
- Education, awareness and advocacy
- Partnerships, public consultation and civil society participation
- Training and capacity-building
- Management
- Science, research and technology
- Monitoring and Assessment
- Vulnerability and global climate change

Creation of Working Groups
Ten Working Groups representing the thematic areas above, led by a senior local expert and composed of an average of four other members, were chosen by the Steering Committee. The Working Groups had the responsibility of formulating the programmes for the thematic areas. The LLC guided and coordinated the work of the groups.

Process of Analysis and Formulation
All the previous EMPS projects were analysed using a standardised project analysis method mutually agreed upon by the Working Groups and the Steering Committee. Audits were then undertaken of each sector or thematic area as a whole (i.e. including any non-EMPS projects), again using an agreed audit form. Using the results, sector goals and objectives were arrived at and programmes formulated. These were then discussed with all other members of Working Groups at a National Workshop in September 1999 and revised accordingly. Further revisions were made following additional comments that came

from the Steering Committee, a national public workshop and an international funding partner workshop held in November 1999.

Participation
The leaders of working groups met with the LLC on a bi-monthly basis to review the work programme and mutually agree on steps to be taken. Two workshops were held with all members of the Working Groups, the first to agree on the nature of the format of the new plan and the second to present the findings and finalise programmes.

In addition, most of the Working Groups sought assistance and input from other relevant parties during their work. Some Working Groups organised small workshops whilst others met with individuals and organisations on a one-to-one basis. Further public consultation was provided through a well-advertised one-day national public workshop held in November 1999.

Public Information
The general public of Seychelles was kept informed at regular intervals through extensive national media coverage (radio, television and print). In addition the LLC briefed various groups on the status of the process. These included a meeting of Chief Executives, the Seychelles Tourism Advisory Board and the District Administrators.

The following table presents a summary of the public participation process:

Formulation of EMPS 2000 – 2010: Participation Process

July 1999 – 1 day National Workshop (all Working Groups) ;40 participants
World funding trends; Donor requirements 1999/2000; general programme approaches.
Fundamental approach and format for new Plan.

September 1999 - 2 day National Workshop (all Working Groups) ;40 participants
Working Group final draft reports with emphasis on future programmes.
Implementation: Moving from Agenda to Action. Mechanisms to keep Plan alive, dynamic, adaptive and "off the shelf". How to achieve continual improvement?

September 1999 – 1 day Workshop (Group leaders only) ;9 participants
Finalise initial programmes and input.

November 1999 – 1 day National Public Workshop;38 participants
Presentation of First Draft EMPS for comments and public discussion.

November 1999 – 1 day echnical Workshop;16 funding partner representatives)
Presentation of First Draft EMPS to selected funding partners for comments and discussion.

Meetings of Steering Committee
Monthly meetings of Steering Committee throughout process.

Meetings with Team Leaders
Bi-Monthly meeting of Group leaders with LLC.

Mini-seminars and smaller meetings/workshops
All Working Groups, from April to August, met with respective stakeholder groups.

Consideration of International Thinking
The formulation process attempted to take into consideration as much as possible international best practices and current thinking in sustainable development and progressive environmental management. To facilitate this, an International Consultant (IC) was appointed and consultations were held with technical representatives of various national and multilateral international funding partners throughout

the process. The multilateral environmental agreements that Seychelles is a signatory to were also considered in the formulation of environmental management programmes that form part of the new EMPS.

EMPS 2000 - 2010 Structure

Plan Format: Flexibility

After taking into consideration the advice of certain international agencies, in particular the World Bank, and after review of some new environmental plans from other countries, it was clear that the new plan would differ fundamentally from the previous EMPS. The main difference was the realisation that the new EMPS should not be a static planning tool but an ongoing process capable of continual improvement. In addition the new EMPS should not be an analysis of problems but should move rapidly in format to a presentation of solutions. It should be brief and should present an overview of the environmental programmes for the country. The plan had to be detailed enough to be understandable but succinct enough to be flexible. Flexibility was considered important because discussions with stakeholders, government, other sectors and donors will take place within each programme on an ongoing basis. This will result in a continuous process of discussions, elaboration and revisions, building synergy and ownership.

Programmes Plan: Continuous Process

As a result of the above, the usual project format used in Seychelles was discussed extensively and abandoned in favour of a programmatic or programmes approach. This has resulted in the adoption by mutual consent of all working groups, of a modified logical framework structure used by the European Union for programme implementation. An important difference between this and the previous EMPS is that, wherever possible, indicators that can be verified at later stages in the life of the programmes are used to peg the objectives and activities described. Activities are integrated within a larger thematic goal, logically framed and not isolated as stand-alone individual projects. Further elaboration of the programmes for the purpose of financing and implementation can be made working jointly with stakeholders and donors.

Background Documentation

The process of elaborating the EMPS has resulted in substantial documentation. The plan itself is a condensation of what was achieved by the Working Groups and all the consultations previously mentioned. All the background material can be made available to any interested parties.

Critical Success Factors

The above, notwithstanding a number of critical success factors, should be taken into consideration. These include the following:

- An institutional culture for continual review and improvement must be engendered.
- The EMPS should involve stakeholders and implementing agencies on an equal, fair and transparent basis.
- Decision-making must take into consideration the opinions of all partners and be consensus-based.
- Resources for programme implementation should be distributed in a manner that ensures that all stakeholders and implementing agencies benefit in a win-win fashion.
- National and local ownership of the EMPS and of its programmes must be continuously reinforced.
- Gaps in capacity should be taken into consideration and bridged through activities in the programmes.
- Cross sectoral participation will be vital to success.
- Continual dialogue with donors will be necessary to ensure coherence, congruence and ownership.

EMPS 2000 - 2010 Implementation Modalities

Institutional Arrangements

The institutional arrangements for the EMPS 2000 - 2010 have been designed around a Coordinating Agency, a professional Coordination Unit (situated within the Coordinating Agency), various Implementing Agencies and a Cross-sectoral Steering Committee.

The Ministry of Environment and Transport (MET) will be the Coordinating Agency for the EMPS 2000 - 2010. The Ministry is well established both legally and administratively to achieve this, in particular with the creation of the new Planning, Policy and Services Division in 1999.

Broad consensus has been reached regarding the formation of a small, professional and permanent EMPS Coordination Unit, situated within the Planning, Policy and Services Division of MET. The formation and proper, transparent functioning of this Unit is seen as a critical success factor of the new EMPS. The main objective of the Coordination Unit is to ensure that the new EMPS is integrated across sectors and that the broader principles of the EMPS are incorporated into all programmes. As such it will not be an implementation unit/agency but will assist implementing agencies with their programmes and provide information to Government, implementing agencies, funding partners and the public regarding the EMPS programmes as they progress over time. It will collect audits of the programmes and assist in the preparation of annual action plans and work programmes. The Coordination Unit will report regularly to the Steering Committee and will, through MET, implement the recommendations of the Steering Committee. The Coordination Unit should consist of a minimum of two permanent staff members, one of whom could be involved in EMPS monitoring, review and co-ordination and the other in cross-sectoral training, communications and information management.

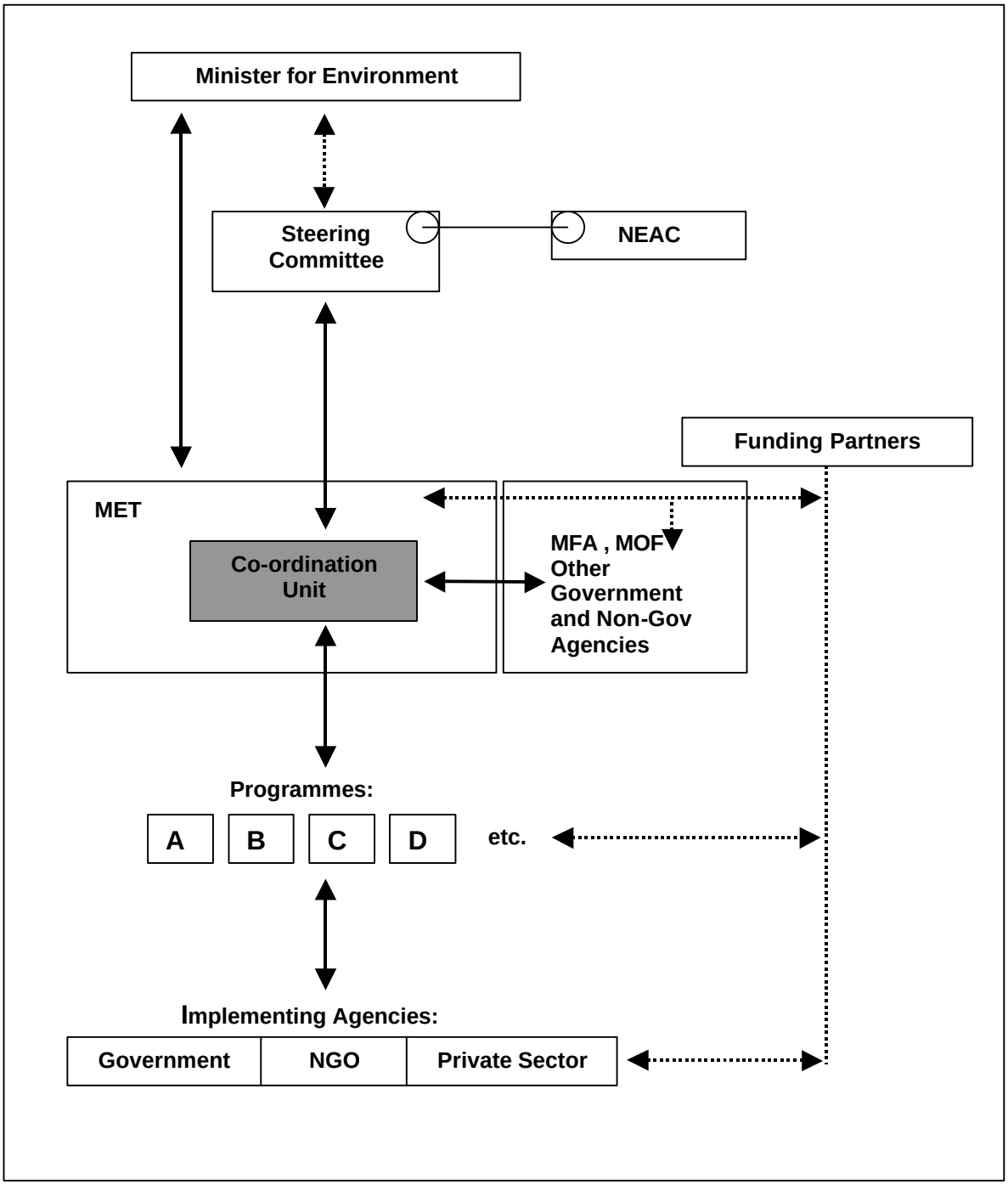
A Steering Committee will be set up by Government and will comprise of representatives from public sector, private sector and NGOs. The Steering Committee will provide advice and guidance and act as an arbitration mechanism in cases where there could be conflicts or disagreements regarding programme formulation, funding or implementation.

The Seychelles National Environment Advisory Council (NEAC), set to be reinstated in early 2000, will link with the EMPS Steering Committee through at least one shared committee member. The role of the NEAC is seen as distinctly different from the EMPS Steering Committee. The NEAC is a high-level advisory committee to Cabinet on matters of environmental policy and on ad-hoc issues of national concern (e.g. environmental treaties, regional policy stances). The EMPS Steering Committee on the other hand will be concerned with EMPS programmes and their successful implementation and integration.

The various programmes that make up the EMPS 2000 - 2010 will be implemented by various implementing agencies, including non-Governmental agencies such as NGOs and private companies.

The institutional arrangements and relationships between agencies are shown diagrammatically overleaf.

Institutional Arrangements and Relationships between EMPS Agencies



Implementation Modalities

Monitoring, Review and Continual Improvement

The EMPS is structured to facilitate annual audits and programme reviews so that implementation, elaboration and revision of programmes can occur. The EMPS Coordination Unit will work with agencies interested in submitting new programmes for the EMPS. The vision is of a rolling EMPS that is constantly improving to serve the sustainable development needs of Seychelles over the next ten years.

Implementation

Implementation of programmes will be managed by designated implementing agencies. Implementing Agencies will elaborate Annual Work Programmes based on the programmes presented in the EMPS, in collaboration with the Coordination Unit. Financing and Implementation Agreements between the parties concerned will ultimately form the basis of implementation.

Training and Capacity-building

For the new EMPS to be successful, training and capacity-building will play an important role. All thematic areas have capacity-building components built into their programmes. It is vital that all implementing agencies take this important task on board whilst implementing programmes. The EMPS Coordination Unit will ensure the incorporation of capacity-building elements where appropriate in revised or new programmes. In addition, the EMPS Coordination Unit will be involved in cross-sectoral training and capacity-building.

Reporting

The Implementing Agencies will feed all aspects of programme development and implementation on a regular basis and in a pre-determined format to the EMPS Coordination Unit and through the Unit to the Steering Committee.

Public Information and Participation

The need for greater public participation and communication has been identified. The EMPS Coordination Unit will assist in this process by regularly informing public fora and the national media of EMPS news and developments. An EMPS newsletter will be produced and disseminated widely. Besides information dissemination, the EMPS Coordination Unit will hold periodic briefing sessions with other interested organisations and stakeholders to invite their participation in the EMPS in the form of new programmes and/or refined programmes. In particular, information and briefings will be provided to District Administrators, who have been identified as key stakeholders in the drive for improved sustainable development at community level in Seychelles. An annual public workshop will be held to present and discuss the status of the EMPS.

Analysis of the EMPS 1990 - 2000

Overview

The EMPS addressed key long-term issues facing the Seychelles' economy, and presented a solidly based investment programme to respond to critical socio-economic and environmental concerns. It represented an integral part of the Seychelles national planning process, namely the National Development Plan and later the Public Sector Investment Programme. The successful implementation of the EMPS was in itself a test of the Seychelles' planning efforts.

The EMPS portfolio was presented in 11 different programmes, which included in total 45 national and 6 regional projects. The ambitious investment plan totaled over SR 260 million with large infrastructure programmes (such as *C: Waste Management* with an investment cost of SR 200 million) but included also small-scale activities (such as *H: Forest Management Programme* with a cost of SR 0.8 million).

Most of the projects included in the EMPS have been implemented or are under implementation:

Completed projects	16
Ongoing projects	29
Projects not yet started	3
Projects discontinued	3

Taking into consideration the revised costs of projects implemented under the EMPS Investment Programme, the following scenario presents itself:

Status of EMPS 1990 - 2000 Programmes

in SR '000

	Number of Projects	Original EMPS cost	Revised EMPS cost	Foreign funds
Total	**51**	**272,645**	**427,121**	**336,337**

(Note: * Foreign funds include estimates on foreign borrowings and grants raised for project financing)

The difference between the original EMPS cost estimates and the actual cost after project implementation represents the cost of revised projects, the cost of projects not part of the original EMPS, etc. Various projects were revised, expanded and re-packaged in close co-operation between implementation agencies, GOS and donor agencies in order to accommodate changed needs and priorities.

Further analysis of the EMPS investments in the 1990 – 2000 period shows that the bulk of activities only started in the mid 90's. However, the planned EMPS investment programme presented a different forecast with most expenditures occurring in the early 90's. In this regard it should be noted that Government's investments in the early 90's concentrated on social and infrastructure development, whilst around 1995 it shifted its priorities to investments in the environmental sector.

Another factor worth considering is that a large number of projects (mainly large infrastructure projects in the water and waste management sector, as well as responses to emergencies) have been implemented outside the EMPS framework.

Government recurrent budgetary provisions in the EMPS period have been substantial. Recurrent and capital budgets for specialised agencies notably the Ministry of Environment and more recently the Marine Parks Authority and the Solid Waste and Cleaning Agency, as well as to specific environmentally-related portfolios within other organisations: the Ministry of Land Use and Habitat, Ministry of Tourism, Ministry of Local Government, Ministry of Health, Ministry of Agriculture and Marine Resources, the Ministry of Education, the Public Utilities Corporation, the Seychelles Bureau of Standards, the Seychelles Fishing Authority, run up to about SR 700 million in the EMPS period. This does not take into account other important related activities undertaken by the Police, Judiciary, the government-funded media and others that are difficult to quantify. Altogether, Government budgetary (recurrent and capital) flows into environmental management in the EMPS period of 1990 – 2000 may have been up to SR 1 billion.

Status of EMPS 1990 - 2000 Programmes

		in SR '000			
		Number of Projects	**Original EMPS cost**	**Revised EMPS cost**	**Foreign funds**
A	**Environment Guidelines and Assessment Programme**	**5**	**4,015**	**2,044**	**1,644**
	Completed	*3*			
	Ongoing	*1*			
	Not yet started	*1*			
B	**Pollution Monitoring and Control Programme**	**7**	**8,035**	**9,043**	**4,227**
	Completed	*3*			
	Ongoing	*4*			
C	**Waste Management Programme**	**10**	**200,060**	**333,815**	**277,568**
	Completed	*1*			
	Ongoing	*7*			
	Not yet started	*2*			
E	**Water Management Programme**	**3**	**8,600**	**23,300**	**18,640**
	Completed	*1*			
	Ongoing	*1*			
	Discontinued	*1*			
F	**Energy Policy and Conservation Programme**	**2**	**1,410**	**1,350**	
	Ongoing	*1*			
	Discontinued	*1*			
G	**National Parks & Wildlife Conservation Programme**	**10**	**15,335**	**18,695**	**13,844**
	Completed	*4*			
	Ongoing	*6*			
H	**Forest Management Programme**	**3**	**1,460**	**8,160**	**6,528**
	Completed	*1*			
	Ongoing	*2*			
I	**Coastal Management Programme**	**4**	**10,910**	**9,864**	**6,686**
	Ongoing	*4*			
J	**Marine Resources Management Programme**	**2**	**7,620**	**5,800**	**5,350**
	Completed	*1*			
	Discontinued	*1*			
K	**Environment Law & Enforcement Programme**	**1**	**1,340**	**1,190**	**1,090**
	Completed	*1*			
L	**Environmental Information, Education and Training**	**4**	**13,860**	**13,860**	**760**
	Completed	*2*			
	Ongoing	*2*			
	Total	**51**	**272,645**	**427,121**	**336,337**

Note: * Foreign funds include estimates on foreign borrowings and grants raised for project financing.

D Projects were not included in the final EMPS 1990 - 2000

Successes and Limitations of the Previous EMPS

Successes

In the last decade, Seychelles attained some phenomenal environmental achievements, some due exclusively to the EMPS.

- The EMPS, for the first time, brought a long-term project funding structure to environmental management. Major funding, both in terms of donor financing and government budgets was realised. The success in accessing the Global Environment Facility to implement four EMPS projects is laudable. Two other recent GEF-funded projects, one for the national climate change programme and another for an ecosystem restoration programme by an NGO are also highlights.

- The Ministry responsible for Environment has gone through a process of strengthening, with the incorporation of new mandates until its present status as an independent Ministry under the purview of the Vice President. Other institutions have also been strengthened. New organisations, notably the Marine Parks Authority, the Solid Waste and Cleaning Agency and the Environment Trust Fund have been created.

- Important legislative acts, principally the Environment Protection Act, the Plant Protection Act and the Pesticides Control Act were enacted and implemented, other laws reviewed and amended and key standards elaborated.

- Management plans have been elaborated for various sites, sectors and activities.

- A global environmental issue that had remained intractable for many years, the turtle shell trade, was addressed through a multi-disciplinary approach and equitable measures under an EMPS Project.

- A globally threatened endemic species recovery programme started in the Plan period, initiated and coordinated by an NGO, and implemented in partnership with the Government of Seychelles and private island owners, has rescued the critically endangered Seychelles Magpie Robin from immediate danger.

- Sites and habitats have been provided with greater protection with the promulgation of three new protected areas and designation of about 370 areas as ‘Sensitive Areas’.

- A major success has been with solid waste management where collection and handling continues to improve. Privatisation of operations has taken place in this sector.

- Physical planning and development is better controlled through the implementation of the Environmental Impact Assessment process under the Environment Protection Act.

- Pollution control has improved with establishment of standards, laboratories and trained personnel.

- The environment has for the first time become a subject of popular public concern and the media has taken it on board as a major programming subject.

- Environmental education has been introduced at all levels in schools as a result of the EMPS process and important publications and materials have been produced.

- Environmental training has increased dramatically, with implementation by the Government of Seychelles, NGOs and the private sector, and professional development has improved at all levels and cadres.

- Groups of young people are now regularly involved in environmental action and education under the umbrella of the NGO, WildLife Clubs of Seychelles, initiated in 1993 which works in close collaboration with the Ministry of Education.

- Decentralisation of environment activities has begun with government activities at district levels as well as programmes by emergent groups.

- The number of international and regional environmental meetings and workshops, some at ministerial levels, hosted by Seychelles has increased.

- Seychelles' commitments to important international conventions were honoured through several EMPS projects. New multilateral environment agreements, in particular the Convention on Biological Diversity and the Framework Convention on Climate Change have been signed. Commitments to these conventions and others implemented by Seychelles in the period include the National Biodiversity Strategy and Action Plan (NBSAP), the Ozone Depleting Substances Phase-Out Plan, and the Climate Change programme.

Limitations

Many of the limitations in the plan period are related to the overall design and structure of the EMPS and how aspects of the plan were implemented. Other limitations are connected to the general manner in which environmental activities have taken place. Criticisms of the previous EMPS must be seen in the light of accepted global environmental management and funding norms at the time of formulation ten years ago.

- Most of the projects in the EMPS did not contain objectively verifiable environment criteria. It has therefore been difficult to quantitatively analyse the impact of EMPS projects on environment quality.

- Despite the creation of a steering committee, the structure of the previous EMPS was addressed as "a product and not a process" and therefore not particularly conducive to revision of project costs, goals and objectives, or the incorporation of new projects.

- The EMPS has been used largely as a project list and not as a master plan to provide guidance as was originally intended. As a result, many key environmental activities were determined by ad-hoc and reactive actions (whilst acknowledging that in some cases environmental crises require immediate action).

- EMPS project funding was targeted to donors, and as a result the plan was felt to be too donor-driven.

- There was not much thought given to creating a framework for sustainable financing instruments. The Environmental Trust Fund and the Gold Card strategy are notable mechanisms, which were formulated independently of the EMPS.

- The overall state of the environment was not reported on despite a project in the EMPS for this purpose. Financial constraints have prevented this project going ahead. Government reports, many of them internal documents, in particular have increased but peer-reviewed papers and documents have decreased.

- EMPS project implementation has been almost exclusively by Ministries or organisations. One non-government organisation, BirdLife International, and one quasi-government organisation, the Seychelles Island Foundation (SIF), implemented EMPS projects. Private sector participation was mainly limited to turtle shell artisan relocation within the Marine Resources Management Programme, although there were some spin-off benefits from other projects for the private sector, particularly in solid waste.

- There were few EMPS projects that intended creating enabling environments for NGO and private sector involvement and partnerships.

- Environmental decision-making is still largely seen as a Government concern. The EIA mechanism METs provide the means for the public to comment on specific projects, but most structures to enable a wider public voice and consultation in policy-making and decisions, such as the National Environment Advisory Council, are moribund.

- Popular concern for the environment exists, but public understanding of the wide range of environmental issues may be insufficiently developed.

- Environmental policy has been inadequately formulated and not available in the public domain as declared intent or official documentation.

- Environmental legislation development in certain thematic areas, in particular biodiversity and natural resources, has taken too long and some feel that it is still too fragmented.

- Despite the implementation of legislation and EIA enforcement, land use management is poorly connected to environmental protection, and impacts such as deforestation, erosion and inappropriate development have occurred in this period.

- Non-point source sewage pollution in certain areas is still a significant environmental problem and was not adequately addressed by the previous EMPS, due to financial constraints.

- Gaps in knowledge of Seychelles ecology and natural processes still remain a concern notwithstanding a substantial body of scientific literature that exists. Data management is particularly poor.

EMPS 2000 - 2010
Basic Foundations: Vision, Overall Goal and Guiding Principles

Vision

At the dawn of the 21st century it is the vision of the people of Seychelles that this second generation environment plan, the EMPS 2000 - 2010, will serve as a flexible yet robust vehicle for continued improvement of proactive environmental management excellence, so that by the year 2010 the Seychelles will be firmly established globally as a committed leader in sustainable development.

Overall Goal of the EMPS 2000 - 2010

The overall goal of the EMPS 2000 - 2010 is:

- the promotion, coordination and integration of sustainable development programmes that cut across all sectors of society in the Seychelles in order to attain the above mission.

Guiding Principles

This vision and overall goal will be pursued through a strategy that integrates the following core principles. These principles will guide all of the programmes that form part of the EMPS 2000 - 2010:

1. Honouring the Seychelles Constitution

The environmental protection rights enshrined under Article 38 of the Seychelles constitution, which states that it is the right of *"every person to live in and enjoy a clean, healthy and ecologically balanced environment"*, will be honoured and strengthened.

2. Meeting the Provisions of Agenda 21

The 27 principles that form part of the Global Agenda 21 Agreement (formulated at the Earth Summit in Rio de Janeiro in 1992) will be integrated into this national environmental management plan, and programmes to strengthen Seychelles' commitment to Agenda 21 and compliance with its principles will be developed and pursued.

3. Fulfilling International and Regional Environmental Responsibilities

International and regional agreements and treaties pertaining to environmental management will be fulfilled, whilst retaining Seychelles' sovereignty, in recognition of the fact that Seychelles plays a vital role in the regional and world community with regards to sustainable management of small island states and marine ecosystems.

4. Maintaining Basic Ecological Integrity and Controlling Pollution

The diversity, health and productivity of Seychelles' ecosystems will be maintained and managed conservatively. Pollution, particularly of coastal and marine waters, will be minimised to reduce negative environmental impacts to receiving ecosystems. Protected areas (both terrestrial and marine) will be maintained and increased, and programmes to strengthen capacity to successfully manage these protected areas will be developed.

5. Coordination, Integration and Co-management

Environmental management efforts will be coordinated and integrated across sectors and society (Government, NGOs, private sector and the general public) and programmes that strengthen co-management of resources and stakeholder involvement in decision-making will be developed.

6. Transparency, Accountability, Good Governance and Equity

Transparency, accountability and good governance practices will be cornerstones of the EMPS 2000 - 2010 and EMPS activities will be conducted and communicated in an open, inclusive and transparent manner. Social equity (including access to resources by all) will be strengthened through EMPS 2000 - 2010 programmes.

7. Continual Improvement and Programmatic Approach

Continual improvement of national and local environmental practices through the planned and active process of evaluation, monitoring and corrective action at all levels and for all EMPS 2000 - 2010 programmes will be pursued. A programmatic or programmes approach will be adopted (as opposed to a discrete project's driven approach), so as to facilitate the process of continual improvement of sustainability management.

8. Treating the Environment Holistically

Environmental management will be treated holistically in realisation that all systems (social, political, cultural, economic and natural) are really parts of the greater total environment. Programmes that strengthen the understanding of linkages between these systems (e.g. the link between environment and poverty) will be developed and promoted. The development of sustainable development indicators will also be pursued through this EMPS.

9. Capacity-building, Training and Empowerment

Strengthening human capacity through training and empowerment will be a key element of the EMPS 2000 - 2010 programmes, in recognition of the fact that environmental management is really all about people management.

10. Applying the Precautionary Principle

The precautionary principle will be applied to all EMPS programmes in recognition of the reality that the environment is complex and that we do not always have sufficient knowledge about it.

11. Marketing the Seychelles as an Eco-destination

The establishments, areas and places in the Seychelles that are being managed in a particularly sustainable fashion will be actively marketed globally in recognition of the fact that this will promote further sustainability practices in the Seychelles.

12. Use of Appropriate Technology

As the Seychelles enters the 21st century, it is aware that the use of appropriate (environmentally-friendly) technology will increasingly be a strategic national consideration. Programmes to promote proactive eco-business entrepreneurship in the Seychelles will be explored and the Seychelles will be increasingly mindful of environmentally irresponsible international dumping of inappropriate technology over the next decade.

These Principles are reflected in the goals and objectives for each thematic area in this Plan.

Proposed ranking of the EMPS 2000 – 2010 Programmes

All the Working Groups ranked the programmes as a team exercise during a workshop. This attempt at priority-setting was based on a set of mutually acceptable criteria. The ranking did not prioritise one Thematic Area's programmes over those of another in order that inter-Working Group competition was minimised. The criteria were as follows:

A. Programmes that are critical to the national interest and where there are no viable and sustainable alternatives
B. Programmes that intend solving inter-sectoral issues or problems
C. Programmes that intend solving or addressing sectoral issues or problems
D. Programmes that intend solving or addressing institutional issues or problems, or that can be incorporated into an overarching programme

The results of the Working Groups' work are as follows:

Society, Population and Health (including gender)			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Population – Environment Research and Information Programme	65	A
2	Environmental Assessment and Advocacy Programme	338	B
3	Gender Empowerment Programme	15	B
4	Environmental Health Sanitation Programme	930	A
5	Environmental Health (Hygiene) Education/Sensitization Programme	350	C
6	Sustainable Resources for Environmental Health (Human, Material and Financial Resources)	318	D
	Total	**2,016**	

Land Use, Coastal Zones and Urbanisation			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Land use and Coastal Zone Policy and Legislation Programme	0	A
2	Land use and Coastal Zone Management Tools Development Programme	100	A
3	Land Use and Coastal Zone Management Institutional Capacity and Community Involvement Building Programme	3,827	B
4	Land Use and Coastal Zone Sustainable Financial Mechanisms Programme	0	B
5	Regional and International Land Use and Coastal Zone Management Co-operation Programme	50	B
	Total	**3,977**	**3,528**

Biodiversity, Forestry and Agriculture			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Agriculture Capacity-building and Training Programme	1,080	D
2	Sustainable Agriculture Programme	810	B
3	Invasive Species Control Programme	810	B
4	Developed Islands Biodiversity Conservation Programme	755	B
5	Outer Islands Biodiversity Programme	750	B
6	Biodiversity Assessment and Taxonomical Survey Programme	870	A
7	Inland Water Ecosystem Biodiversity Conservation Programme	585	C
8	Biodiversity Reporting and Information Programme	120	B
9	Ex-situ Biodiversity Conservation Programme	260	C
10	Biodiversity Research Promotion and Facilitation Programme	240	D
11	Biodiversity Capacity-building and Networking Programme	465	B
12	Biodiversity Community Partnership Programme	300	B
13	National Biodiversity Policy Development Programme	50	C
14	Integrated Forest Protection Programme	1350	A
15	Forest Conservation Programme	1920	B
16	Integrated Forest Research Programme	1235	C
17	Terrestrial National Parks Programme	3300	C
18	Institutional Forestry Support Programme	150	D
	Total	**15,050**	

Energy and Transport			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Energy Conservation and Renewable Energy Programme	250	A
2	Sustainable Energy Extension and Education Programme	100	D
3	Energy Sector Pollution Monitoring Programme	125	C
4	Environmental Sound Road Design and Construction Programme	5,520	C
5	Victoria Traffic Management Programme	3,020	C
6	Public Transport Improvement and Promotion Programme	15,560	A
7	Upgrading Of Enforcement and Surveillance Programme	250	D
8	Integrated Land-Use and Transport Planning Programme	260	B
	Total	**25,085**	

Fisheries and Marine Resources/Processes			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Inshore Fishery Management Programme	85	B
2	Tuna and Billfish Management Programme	120	D
3	Marine Coastal Assessment and Research Programme	250	B
4	Marine Protected Areas Programme	185	C
5	Oil and Other Minerals Exploration and Extraction Management Programme	50	D
	Total	**690**	

Water, Sanitation and Waste			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Water Demand Management Programme	3,100	
2	Desalination Programme	N/a	A
3	Improvement to Transmission/Reticulation Systems Programme	N/a	C
4	Improvement to Safe Yield of Existing Water Sources Programme	6,230	C
5	Improvements to Water Treatment Works Programme	N/a	C
6	Water management institutional and human resources capacity-building	900	D
7	Water Shed Management Programme	0	B
8	Centralised Sewerage Treatment Systems Programme	41,000	A
9	Individual Wastewater Treatment Systems Programme	1,200	A
10	Wastewater management institutional and human resources capacity-building	900	D
11	Integrated solid waste management for Mahe, La Digue and other islands	46,000	A
12	Integrated solid waste management for Praslin	17,000	A
13	Waste management institutional and human resources capacity-building	900	D
	Total	**117,230**	

Tourism and Aesthetics			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Eco-tourism Development and Marketing Programme	1,000	A
2	Tourism Environmental Impact Assessment Programme	150	B
3	Tourism Sustainable Design and Resources Management Programme	500	B
4	Tourism Environmental Management Capacity-building Programme	500	C
	Total	**2,150**	

Environmental Economics and Mainstreaming, and Sustainable Financing			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Environmental Economics Capacity-building	725	B
2	Environmental Economics Information Provision	525	B
3	Development of Economic Valuation in EIA Programme	200	D
4	Waste Minimisation Incentives Programme	825	B
5	Self-financing Waste Management Programme	325	C
6	Sustainable Financing of NGOs Programme	125	B
7	Training Programme for Development of Financial Mechanisms	200	D
8	Stakeholder Participation Programme	125	B
9	Biodiversity Development and Research Funding Programme	25	A
10	Coastal Zones and Protected Areas Development Funding Programme	525	A
	Total	**3,600**	

Regulatory, Policy and Institutional Mechanisms			
		(costs in USD '000)	
	Support Programmes	**Total Cost**	**Ranking**
1	Environmental Legislation Review and Enactment Programme	80	A
2	Implementation of International Convention Programme	20	B
3	Environmental Policy and Institutional Development Programme	30	B
	Total	**130**	

Commerce, Industry and Production			
	Support Programmes	**Total Cost**	**Ranking**
1	Industrial Sector Environmental Management Capacity-building Programme	400	D
2	Sustainable Management of Resources Programme	750	A
3	Environmental Management Quality Improvement Programme	400	C
4	Industrial Environmental Planning Programme	300	A
5	Cleaner Technology Programme	600	D
	Total	**2,450**	

Thematic Areas Action Plan
Thematic Area: Society, Population and Health (including Gender)

Introduction

This thematic area, which is multi-faceted covers some areas that could best be described as 'intangible' while others can be pinned down much more easily.

In 1995 the population of Seychelles was estimated to be 75,205 with a mean density of 165 inhabitants per square kilometer. Population growth was estimated to be at 1.7% in 1997 and is currently approaching replacement level fertility (about 2.1 children per woman). The most recent census results (1994) show that 99% of the population live on the three main islands. Life expectancy is presently 68.6 years for men and 74.7 years for women.

Gender, as a policy area, is the direct responsibility of the Gender Unit within the Ministry of Social Affairs and Manpower Development. A national strategy has been prepared based on the implementation of the 1995 Beijing Conference Recommendations.

The Population Unit within the Ministry of Social Affairs and Manpower Development is seen as the national centre studying and monitoring Population development in Seychelles. In 1998 it published the National Strategy for the Implementation of the International Conference on Population and Development Recommendations, held in Cairo in 1994. A National Youth Survey was undertaken in 1998 and a draft National Social Development Strategy for Seychelles beyond 2000 produced.

The existing health care system is a three-tier one, made up of the community (or primary health care), the intermediate (or technical) and the central (or strategic) levels. At the central level the Ministry of Health is the lead agency of a multi-sectoral body to provide the muscle for making health the base for socio-economic development.

Review of EMPS 1990 – 2000

The EMPS did not have a programme referring directly to this thematic area. It should be noted that since the overriding principle of the EMPS was sustainable development, society and population benefited from the entire EMPS package. Various programmes were more directly relevant. These were environment guidelines and impact assessment, pollution monitoring and control of waste management, and water management programmes.

Sewerage projects in particular have taken care of the problems caused by the use of bucket latrines and pit latrines - which were a health hazard. Water projects provided safe and potable water and thus reduced intestinal diseases.

A project, carried out by the Environmental Health Section from 1993 to 1996, has significantly reduced the level of infestation of rodents and mosquitoes on Mahe. During the 1990-2000 period a programme on intestinal parasite control in school children was carried out.

The environmental information, education and training programme of the EMPS is considered in this thematic area. The Information and Education Unit of the Ministry of Environment and Transport was set up as was an Information Kiosk in the Botanical Gardens.

Environmental education began with the drafting of a strategy under the EMPS. An environmental education coordinator was recruited and environment as a subject infused throughout the educational curricula. This resulted among other things in a CD-ROM of the environment of Seychelles.

Environmental training was implemented by several external organisations and a series of training courses benefiting persons from the policy maker level to tertiary level staff.

There have been tangible results in the amount of information and educational materials produced, from manuals and books to TV documentaries. Environment Week is held every year as are other events and exhibitions. A Green Line has been established as a contact for the public. A significant event has been the creation in 1993 of the NGO - Wildlife Clubs of Seychelles - with current involvement from all schools in the country.

Main strengths of EMPS 1990 - 2000

- EMPS focus on sustainable development has benefited the entire population.
- Specific projects, such as for water and waste management, had significant benefits.

Main limitation of EMPS 1990 - 2000

- It did not have a dedicated programme for population, society and health and therefore the linkages between population and environment were not examined.

Issues and Management Priority Areas

In spite of increased awareness in recent years, the interrelationships between population and environment have, so far, not been properly addressed.

People's perception of the environment, the cultural values held and concomitant behaviour patterns may be the key to understanding natural resource exploitation and depletion patterns in Seychelles. This is an area that is inadequately researched and thus information is not available to be used for decision making.

Environmental public awareness programmes have increased tremendously over the last decade but their effectiveness has not been assessed. Important issues, such as the need to change certain personal life style choices have not really been addressed.

Various organisations implement environment awareness programmes in unrelated ways; linkages in the delivery of programmes are not the norm. However, partnerships build synergies as proven by national NGOs which work together in this field and share human and other resources.

Gender issues are well handled in Seychelles, but the roles and behaviour of women vis-à-vis the environment (if any different from those of men) are poorly known, unlike the situation in other developing countries.

Management Priority Areas
Management priority areas have been identified as follows:

- Investigate and better understand the linkages between population issues and environment management and degradation, and use for informed decision making.

- Encourage public understanding of the environmental impact of personal life-style and behaviour and foster environmental culture and good environmental stewardship.

- Link local expertise in environmental education, consolidate efforts and launch integrated awareness and advocacy programmes at a national level.

- Investigate gender roles in environment and maximise opportunities for women's participation.

Goals and Objectives

The Goals and Objectives for the plan period are as follows:

Goal 1: Understanding the inter-relationships between population and environment
Objective 1.1: To investigate interactions between population and environment
Objective 1.2: To provide reliable information for planners and decision-makers
Objective 1.3: To create understanding of the effect of personal life choices

Goal 2: Strengthening public awareness and advocacy
Objective 2.1: To consolidate capacity in environmental awareness and advocacy
Objective 2.2: To encourage and foster good environmental behaviour
Objective 2.3: To build grass roots support

Goal 3: Maximising gender efforts to protect and maintain the environment
Objective 3.1: To financially assist women in setting up recycling projects
Objective 3.2: To increase the number of professional women in environmental fields

Support Programmes

- Population-Environment Research and Information Programme
- Environmental Awareness and Advocacy Programme
- Gender Empowerment Programme
- Environmental Health Sanitation Programme
- Environmental Health (Hygiene) Education/Sensitisation Programme
- Sustainable Resources for Environmental Health (Human, Material and Financial Resources)

Action Plan: Society, Population and Health (including Gender)

GOAL 1: UNDERSTANDING THE INTER-RELATIONSHIPS BETWEEN POPULATION AND ENVIRONMENT IN SEYCHELLES				Latest Update: December 1999
	Description	**Objectively verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To investigate interactions between Population and Environment and to support development of a national population policy To provide reliable information for planners and decision-makers To create understanding of the effect of personal life choices (family size, childbearing age, etc) on the environment	Documents with identified policy responses to effectively integrate environmental, economic and demographic concerns Over time a reduction in the number of environmental problems directly related to people's behaviour	Population Unit, MSAMD Local and International consultants	Provision of funding Time to be made available (exclusively) for research
Support Programme	**Population-Environment Research and Information Programme**			
Results	Valid information for planning and decision making Population policy Policy framework to integrate economic, environmental and demographic issues Awareness creation in the average citizen's mind as to how decisions regarding personal life can affect environment	Local knowledge improved Population Policy Awareness increased	Population Unit	Human Resources
Activities	• Preparation of proposal and implementation of research into links between population and environment • Institutional strengthening • Publication and dissemination of information • Series of sensitization meetings with NGOs • Study of vulnerability of certain groups to external forces such as climate change and environmental disasters	Population Policy Awareness increased Institutional settings strengthened	Population Unit, MSAMD	Information needed for study will be made readily available to researchers Involvement of NGOs

GOAL 2: STRENGTHENING PUBLIC AWARENESS AND ADVOCACY				Latest Update: December 1999
	Description	**Objectively verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To consolidate national capacity in environmental awareness and advocacy To encourage and foster good environmental behaviour and sustainable consumption patterns To build grass roots support	Network of skilled participants Sound curricula and other tools	Ministry of Environment, Ministry of Local Gov. , SBC, Written media, NGO representatives	Willingness of all involved to cooperate Financial resources Technical assistance
Support Programme	**Environmental Awareness and Advocacy Programme**			
Results	Ability of Ministry of Environment, Ministry of Local Government, WildLife Clubs and other NGOs to carry out appropriate and adequate environmental A and A programmes Improved compliance with environmental regulations due to better comprehension of inter-linkages that exist Media programmes with clearly defined aims Popularisation of notion of 'environmental responsibility'	Increasing number of quality information programmes and participation of trained staff Fewer people breaking the law Number of programmes Number of participating citizens	Cross-Sectoral	Trained staff and volunteers
Activities	• Build Network for joint implementation • Initiate extension activities at district level • Training and production of kits. • Produce a series of locally based radio and television programmes	MoE , Min. of Local Government, WildLife Clubs, NGOs jointly delivering outputs Numbers of materials used Training programmes and kits disseminated Number of Programmes aired	Cross-Sectoral	Ability to work in a partnership Human and financial resources District commitment Full participation of SBC

GOAL 3: MAXIMISING GENDER EFFORTS TO PROTECT AND MAINTAIN THE ENVIRONMENT				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To financially assist men and women in setting up recycling projects To reduce the use of firewood as household fuel To increase number of professional women in environmental fields	Number of waste recycle projects implemented Reduction to 0-1% of households using firewood. Increase to 50% of women taking career in environment	MIIB, MET & MSAMD MIIB & MET ME & MSAMD	Financial resources Provision of gas cooking equipment Availability of scholarships and qualified women
Support Programmes	**Gender Empowerment Programme**			
Results	Protection of environment through reduction of waste Cottage industry will provide employment as well as provide a cleaner environment More women taking up decision - making positions in environmental fields A more hygienic environment	Number of projects Number of households Number of professional women	Cross-Sectoral	Public Commitment
Activities	• Identify and implement waste recycling projects • Identify households using firewood as fuel and provide substitute • Promote environmental related professions amongst women	Number of projects Number of households Number of professional women	MET, MIIB & MSAMD MIIB MSAMD & ME	Feasibility of projects. Individual commitment Location of households and budget Employment/ professional environment

GOAL 4: PROMOTING A HEALTHY LIVING ENVIRONMENT WITHIN THE SEYCHELLOIS POPULATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To create a supportive environment for health	Number (%) of households with good waste water disposal system Number (%) of households with unsanitary disposal of refuse % of sites inspected that are infested with rodents **Mosquito Larvae Indices**: House Index (%) (Percentage of houses that are positive for larvae) Container Index (%) (Percentage of water holding containers that are positive for larvae) Breteau Index (%) Number of positive containers of species per 100 houses	Ministry of Health Environmental Health Services Public Health Laboratory PUC SWAC	Funds will be made available for the Programme. (Ministry of Health Budget, PUC, SWAC)
Support Programmes	**Environmental Health Sanitation Programme**			
Results	Commitment to Environmental Health Policies Prevention and Control of risks to the population Equitable access to healthy environment Public co-operation in preventing unsanitary disposal of waste/refuse	% of premises with clean environment Decrease in the propagation of insect/ pest of medical importance. (House Index (%), Breteau Index (%), Container Index (%))	MOH	Public Commitment
Activities	• Inspection/monitoring of domestic premises • Sampling of water and food supplies • Environmental control of insect/pest • Surveillance of disease outbreaks	% Population with basic amenities Number (%) of infested premises Insect/pest prevalence Number of samples collected Cases of vector borne diseases Presence, identification of new vector species	Ministry of Health Environmental Health Services EPIPRES Public Health Laboratory.	Human and Financial Resources Public Commitment

-continued-

Objectives	To increase community awareness and understanding of the relationship between health, the environment and development	Number of workshops/seminar organised Number of media programmes, leaflets, posters, etc. Number of schools that have incorporated environmental health issues in curriculum	Ministry of Health Ministry of Education	Human and Financial Resources
Support Programmes	**Environmental Health (Hygiene) Education/Sensitisation Programme**			
Results	Creation of support facilities to provide an enabling environment to maximise community participation	Support Facilities established	MOH	Financial Resources
Activities	• Organisation of sensitisation and information campaigns through workshops, seminars and mass media • Production of a series of Radio and Television programmes • Inter-sectoral information exchange and co-operation mechanism • Public participation in decision making/policy formulation mechanism. • Discussion with target communities	Public Awareness increased Local knowledge improved	Ministry of Health Environmental Health Services/ Health Education Unit of Ministry of Health SBC	Public Commitment

GOAL 5: TO STRENGTHEN CAPACITIES TO BETTER PARTICIPATE IN PROJECTS AND PROGRAMMES RELATED TO HEALTH, THE ENVIRONMENT AND DEVELOPMENT				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To establish a human resources development plan for Environmental Health including training To acquire the necessary equipment for better efficiency in the daily activities of the Environmental Section	Presence of a human resources development plan % of trained personnel in the Section Necessary equipment per unit Number of vehicles for environmental health activities per region	Ministry of Health Ministry of Health	Human Resources
Support Programmes	**Sustainable Resources for Environmental Health (Human, Material and Financial Resources)**			
Results	Sustained human resources programme Motivated pro-active team Efficient data storage, and analysis, and section report production Timely and complete investigations	% of trained personnel per the section's demand Level of attrition and recruitment Level of action oriented activities by personnel Number (%) of finished projects and reports per year Number of timely and completed investigations and reports per year Level of quality control	MOH	Efficient Environmental Health Services
Activities	• Establishment of Human Resources Development Plan for Environmental Health. • Selection and training of Environmental Health personnel • Organising in-service training • Acquisition of vehicles and computers for data management	Development Plan for Environmental Health Number of posts to be created Number of Environmental Health Personnel selected and trained in appropriate fields Number of trainees available Presence of at least 2 new computers and accessories Presence of at least 5 new vehicles	MOH with external assistance	Enhance the capacity of the Environmental Health Section

Thematic Areas Action Plan
Thematic Area: Land Use, Coastal Zones and Urbanisation

Introduction

Seychelles inherited a well-defined system of land tenure and rights. This has been strengthened more recently. In spite of the acute shortage of land to meet the demands of development, the country has maintained an effective conservationist approach to land use. Areas protected for environmental purposes now cover about 47 % of the land area. Virtually the entire country has been considered to be "coastal". Coastal zone management is considered to be an important element of environment management.

The scarcity of land and the high environmental and infrastructure servicing costs of hillsides prompted the country to undertake four major land reclamation works off Victoria and the East Coast of Mahe from 1973 to date. Development and population concentrations have tended to be located on a very narrow coastal strip, particularly on Mahe but now extending to Praslin as well, thus exacerbating land use problems. The Government has pursued a policy of providing every needy family with housing through home-ownership. The urbanisation rate has been the highest in Africa; about 60% of the population are considered urban. There are presently over 18,000 houses.

The Town and Country Planning Act is the primary instrument dealing with land use and development for the last 28 years. It has established an inter-ministerial body, Town and Country Planning Authority, which is the authorising body for all land development proposals. In 1992 the National Land Use Plan (*Plan d'Aménagement du Territoire – PAT)*, was introduced for the three main islands providing zoning schemes and indicating land use patterns up to the year 2000.

The main institution involved is the Ministry of Land Use and Habitat (MLUH). The MET is also involved as is the Ministry of Local Government, Youth and Sports (MLGYS).

Review of EMPS 1990 – 2000

Several EMPS projects dealing with utilities have been of benefit to this thematic area. The relevant projects include particularly water, sanitation and sewerage projects, Coastal Zone Management Plans, Revision of Environmental legislation. A definition of the "coastal strip" and some coastal management responsibilities are found in the Environment Protection Act. However, a fully developed EMPS programme was absent. Major reclamation works have taken place outside the framework of the EMPS; environmental controls used in reclamation works in the past have therefore not taken place in a planned and long term manner. New conventions and international agreements, in particular Habitat II that has led to the Seychelles Plan of Action were not incorporated in the EMPS. Several non-EMPS environment related projects have taken place in this thematic area, but specific information is lacking.

Main strengths of EMPS 1990 - 2000

- Basic infrastructure projects (sewerage, etc.) identified and some implemented.
- Forestry and biodiversity programmes implemented, benefiting land use management.
- Important legislation in related areas reviewed, new ones enacted and some existing ones revised.

Main limitations of EMPS 1990 - 2000

- There was no clear and definite policy articulated for this thematic area.
- A basic weakness was the lack of environmental management projects for the reclamation.
- No clear programme was identified, despite the huge importance of the thematic area.
- Direct linkages with other EMPS programmes, which could have assisted multi-disciplinary management, were not explicitly identified.

Issues and Management Priority Areas

The Land Use Plan has only been used as a planning instrument on an ad-hoc basis as it was not a regulatory instrument; the plan was also not followed through with detailed Land Use/Development Plans at district level.

Inappropriate land use has occurred throughout the islands in the EMPS period, leading to deforestation, erosion, pollution and aesthetic problems. Coastal zones in particular have received the brunt of impacts.

The current planning system has shown signs of strain brought about by rapid economic activity, which has to be managed within the confines of a legal, technological and administrative framework that has remained unchanged for close to 28 years.

A review of the Town and Country Planning Act (1972) was initiated in early 1995 to solve these constraints. The review has been delayed.

There is a strong imperative to develop environmental management planning and implementation programmes for the ongoing reclamation works. There is also a need for environmental systems to be put in place to manage rapid urbanisation and growth, particularly in light of integrated coastal management.

Urbanisation is creating problems for other sectors, such as tourism, where aesthetic matters are of great concern.

Human resource remains one of the most prominent constraints within the management authority (the Ministry of Land Use and Habitat), as well as others involved in this area. Staffing, educational levels and competency remain low, and availability of graduates has been a problem over the years.

Landslides in 1997, due to El Nino, led to massive impacts on infrastructure and the environment. The country was ill-prepared to deal with this. Large investments, Government as well as donor funds, were used to mitigate the damage.

Management Priority Areas

Management priorities have been developed based on the Habitat II Seychelles Plan of Action and reviewed during this current planning process. They have been identified as follows.

- Finalise the review and implementation of the Town and Country Planning Act (1972), including new institutional structures and sustainable development (to be implemented by the Regulatory, Policy and Institutional thematic area).

- Review the *Plan d'Aménagement du Territoire (PAT)* for the preparation of new Land Use/Development Plans for all the Districts and Victoria in conjunction with Coastal Zone Management Plans in particular for Mahe, Praslin and La Digue.

- Prepare a programme to implement the new Plans, emphasising consolidated zoning in line with guidelines and restricting development in sensitive, protected and areas of high altitude, as well as redirecting growth.

- Prepare and implement environment management programme for ongoing and proposed coastal reclamation projects.

- Develop integrated sector strategies/actions for sustainable land uses and practices.

- Further develop existing Geographic Information Systems for informed decision-making and for wider application and use.

- Strengthen the institutional capacity to deal with land use planning and management of all territories of the Seychelles effectively.

- Emphasise integrating structures and joint management of resources between Government, the private sector, communities and NGOs.

- Make effective use of economic instruments, market and other incentives and integrate environmental and economic accounting in settlement planning.

- Develop shared regional facilities and exchangeable network of experts, in particular, to assist in potential large scale disasters.

Goals and Objectives

Goals and Objectives of the thematic area for the plan period are:

Goal 1: Manage scarce land and coastal resources sustainably
Objective 1.1: To revise and implement existing land use and coastal zone management policy and legal mechanisms
Objective 1.2: To develop tools for better land use and coastal zone management
Objective 1.3: To develop human resources, partnerships and to promote and facilitate ongoing community involvement in coastal zone management issues through education and activities
Objective 1.4: To develop sustainable financial mechanisms for land use and coastal zone management

Goal 2: Promote regional and international cooperation
Objective 2.1: To develop partnerships and shared resources and to strengthen Seychelles' ability to comply with relevant regional and international coastal zone management protocols, treaties and agreements.

Support Programmes

The following Support Programmes have been identified to achieve the above Goals and Objectives:

- Land Use and Coastal Zone Policy and Legislation Programme
- Land Use and Coastal Zone Management Tools Development Programme
- Land Use and Coastal Zone Management Institutional Capacity and Community Involvement Building Programme
- Land Use and Coastal Zone Sustainable Financial Mechanisms Programme
- Regional and International Land Use and Coastal Zone Management Cooperation Programme

Action Plan: Land Use, Coastal Zones and Urbanisation

GOAL 1: MANAGE SCARCE LAND RESOURCES SUSTAINABLY				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To revise and implement existing land use and coastal management policy and legal mechanisms	Number of policy documents and laws	MLUH	Benefits are seen
Support Programme	**Land Use and Coastal Zone Management Policy and Legislation Programme**			
Results	Comprehensive and integrated planning Comprehensive legal powers Increased awareness and good practice Established Land Use Plan.	New Legislation New Plans Institutional powers increased Number of sensitised people Environmental indicators	MLUH, Legal Affairs	Policy and legislation used effectively.
Activities	• Review and implementation of the Town and Country Planning Act (1972). • Review and revise PAT and develop District Plans in conjunction with Coastal Zone plans	Legislation enacted New plans in use	Legal Affairs (*Cross reference to Regulatory, Policy and Institutional thematic area)*	Government commitment. Technical and financial resources
Objective	To develop tools for better land use management	Number of mechanisms developed	MLUH	Benefits are seen.
Support Programme	**Land Use and Coastal Zone Management Tools Development Programme**			
Results	Comprehensive and integrated implementation and decision making Use of standard methods Increased awareness and good practice Environment management of new reclamation Use of modern technology	Number of tools/methods Number of people using new tools/methods Number of sensitised people Environmental indicators District management improved Reclamation damage reduced.	MLUH	Tools/methods used consistently
Activities	• Implementation programme for PAT, District and CZM Plans. • Implementation programme for reclamation environment management • Integrated sector strategies and implementation programmes. • GIS application	Plans implemented Reclamation environment programme implemented. Sector strategies accepted and implemented Decision makers using GIS widely	MET, MAMR, MYC, MLGYS MI, MT, PUC, private sector, NGOs	Government commitment. Sectoral and District commitment. Human and financial resources.

-continued-

Objective	To develop human resources, partnerships and to promote and facilitate ongoing community involvement in coastal zone management issues through education and activities		MLUH	
Support Programme	**Land Use and Coastal Zone Management Institutional Capacity and Community Involvement Building Programme**			
Results	Increased human resources Increased education and good practice Better and more participatory decision- making	Number of training programmes Number of staff Number of organisations actively involved		Education and training leads to good practice
Activities	• Develop Human Resource plan. • Implement local training, and identify and secure a package for overseas scholarships. • Develop staff exchange and internship system. Strengthen inter-sectoral consultation. • Develop policy and mechanisms for popular and wider participation and implementation	Plan developed and implemented Local staff trained Overseas education for selected staff Number of exchanges between organisations Innovative mechanisms for consultation used. Number and variety of groups and areas of intervention	MET, ME, SIM, MYC, SCCI	Government commitment. Human and financial resources.
Objective	To develop sustainable financial mechanisms	Number of mechanisms developed.	MLUH	Benefits are seen.
Support Programme	**Land Use and Coastal Zone Sustainable Financial Mechanisms Programme**			
Results	Integration of planning with industry and trade Use of economic instruments in land use and environment management Transparency and participation	Economic benefits Mainstreaming of environmental concerns People benefiting	Cross-Sectoral	Tools/methods used consistently
Activities	• Investigate use of economic instruments , market and other incentives • Reinforce systems for environmental and economic accounting in settlement planning	Number of Instruments. Changes in, planning, practices and the market Number of groups involved. Amount of financing for sustainable development	MLUH, MF, MFA *(cross reference to Environmental Economics, Mainstreaming and Sustainable Financing thematic area)*	Government commitment. Human and financial resources.

GOAL 2: PROMOTE REGIONAL AND INTERNATIONAL CO-OPERATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To develop partnerships and shared resources.	Number of partnerships	MLUH	Benefits are seen.
Support Programme	**Land Use and Coastal Zone Management Regional and International Co-operation Programme**			
Results	Increased sharing of resources and information. Increased national expertise and knowledge Better management and decision-making. Increased international best practice Increased regional cooperation Increased compliance with signed regional and international protocols, treaties and agreements	Amount of resources. Number of better informed people. Environmental quality indicators	MLUH	Tools/methods used consistently
Activities	• Identify needs and potential partner organisations and develop agreements • Identify local counterparts and develop an exchangeable network of experts	Number of agreements and MOUs Amount of useful information Amount of needed material Number of experts circulated and benefits gained	MLUH, MET	Government commitment Commitment by external organisations Human and financial resources

Thematic Areas Action Plan
Thematic Area:Biodiversity, Forestry and Agriculture
Biodiversity

Introduction

In Seychelles, a wide range of ecosystems exist from sea level arid scrub, through lowland intermediate and mist forests to arid mountain top inselbergs. There are small inland water systems and coastal and marine systems such as mangroves, coral reefs, sea-grass beds and the open ocean. The geographical and evolutionary isolation of the islands coupled with the extreme antiquity of the granite islands has resulted in high endemism among certain animal and plant groups. The Seychelles islands are host to about 1500 known species of endemic plants and animals. The biodiversity, similar to those of all small islands, is highly vulnerable to changes.

Conservation has a distinguished history in the Seychelles dating back to the first settlements. Modern conservation started in the 1960's, a point marked by some authors with the purchase of Cousin in 1968 by an international conservation NGO. Various institutions have been set up over the years. Various types of protected areas exist, to date covering 47% of the land area, but *sensu lato* under the Sensitive Areas designation, virtually the entire nation is protected by legislation. Legislation exists to protect species, sites and habitats. The main institution is the Ministry of Environment and Transport; but various other Government and quasi-government agencies are involved as are five NGOs.

Review of EMPS 1990 – 2000

Various projects of the EMPS included a component of inventory and monitoring. Training and monitoring components under *G1*:*Wildlife inventories and Protection of Rare Species* were implemented largely with assistance from an NGO and a volunteer service but other components in the same project have not started.

The EMPS *J1:Protection of Endangered Sea Turtles* project funded by the Global Environment Facility (GEF) through the World Bank addressed turtle exploitation and all turtle species are now protected by law in the Seychelles. The Sooty Tern project, funded under the Dutch Trust Fund (an offshoot of the EMPS donor pledging process), recommended that revenue from sale of Sooty Tern eggs be partly utilised to fund conservation. This has been implemented such that harvesting now finances conservation and working activities.

The *G10:Conservation Strategy and National Parks Management Plans* project (merged with *G9: Establish a Conservation and National Parks Service* and funded by the EU) produced management plans for all marine parks and a special reserve, and a draft conservation strategy. Effectiveness was diluted because of institutional fragmentation with the creation of the Marine Parks Authority.

Project G9 covered the establishment of a National Park and Wildlife Service, created in 1990 and running till 1994 when it was approved to become the Biodiversity Authority. However due to institutional fragmentation, the service no longer exists as an integrated entity.

The EMPS project *G2:Control the Import and Export of Plants and Animals* was designed to deal with the import aspect of the invasive species control. Various measures (largely veterinary and

agricultural) were taken. The EMPS had two major projects which included eradication of alien species, *namely G7: Eradication of feral goats* and *H1: Preservation of endemic tree species*. The G7 project is completed whilst H1 has been partly implemented.

Many activities and projects have been implemented outside the EMPS. The National Biodiversity Strategy and Action Plan was formulated in 1997. Some major verifiable successes include the rescue of the Magpie-robin from the brink of extinction, the discovery of a new and largest population of the White-eye on Conception Island and the eradication of rats from Bird Island.

Main strengths of EMPS 1990 - 2000

- Policy goals and objectives clearly defined
- "Yardstick" by which to measure progress
- Effective document by which to attract funds from donors

Main limitations of EMPS 1990 - 2000

- Projects too large and/or prescriptive i.e. G1 Project
- Overall document inflexible with insufficient scope for revision
- Ignored outer islands except for Aldabra
- Limited inclusion and support of NGOs and private sector

Issues and Management Priority Areas

The country's National Biodiversity Strategy and Action Plan was published in 1997, as part of Seychelles' commitments to the Convention on Biological Diversity (CBD). It identifies priority areas for management. These have been reviewed during the current planning process and are as follows.

Effective conservation is currently handicapped by the lack of comprehensive and published policy. Biodiversity law is a mosaic, in various pieces of legislation, some quite dated.

There is currently a general lack of partnership in this area and mechanisms to foster it are mostly defunct except for one NGO-initiated forum.

Various highly invasive exotic species are causing major ecological imbalances in Seychelles. These not only include animals and plants but also bacterial and fungi species such as the recent Takamaka wilt disease.

Certain critical habitats are under threat especially from development in the inner, developed islands. These include wetlands and riverine systems. There are various outstanding issues to do with management of habitats and species on outer islands that also need attention.

Data is lacking on many species and groups and their status is unknown.

The negative impact of other sectors e.g.: land use, tourism, communications, has been proven to be highly significant in the Plan period.

Many of the reasons for destruction of biodiversity lie in the fact that people do not usually place a monetary or other form of value on biodiversity and conservation.

Conservation education and public information dissemination is ongoing, with many organisations involved, but their comparative advantages and the existing environmental education committee are not being taken advantage of to deliver an integrated package.

Management Priority Areas
Management priority areas have been identified as follows:

- Develop and publish comprehensive policy and review and enact integrated legislation
- Build partnerships and improve networking
- Improve knowledge on certain species and assemblages and remove data-deficiency
- Implement monitoring and protection for keystone species and assemblages
- Study, control and eradicate target invasive species
- Protect critical habitats which are under threat in the developed as well as outer islands
- Develop off-site conservation management for appropriate threatened biodiversity
- Develop economic valuation and incentive systems for biodiversity conservation
- Develop more effective public information and education.

Goals and Objectives

The goals and objectives of the National Biodiversity Strategy and Action Plan (NBSAP) have been reviewed with stakeholders and are presented as follows. These also follow and support the Articles of the Convention on Biological Diversity (CBD).

Goal 1: Increasing In-situ Conservation
Objective 1.1: To control invasive exotic species
Objective 1.2: To augment conservation on the developed islands
Objective 1.3: To develop management system for outer islands

Goal 2: Strengthening Identification and Monitoring of Biodiversity
Objective 2.1: To initiate assessment and taxonomic survey of key biodiversity
Objective 2.2: To establish monitoring and data management systems

Goal 3: Conserving Biological Diversity of Inland Water Ecosystems
Objective 3.1: To identify and conserve representative samples of key inland water ecosystems and limit impacts upon inland water ecosystems

Goal 4: Strengthening ex-situ Biodiversity Conservation

Objective 4.1: To develop and establish a National Biodiversity Centre which serves as:

i) a source of Public information and education
ii) a research facility to enable access to genetic resources
iii) a location for ex-situ and gene pool conservation
iv) a repository for taxonomical collections
v) a library for scientific and research literature pertinent to Seychelles and the active compilation thereof

Goal 5: Strengthen Biodiversity Capacity-building, Community Partnership and Networking

Objective 5.1: Enhance institutional and NGO capacity and networking

Objective 5.2: Development of a decision-making mechanism, which is consultative with and accessible to communities and private sector

Goal 6: Development of National Biodiversity Policy

Objective 6.1: To develop, formalize and publish a National Biodiversity Policy Framework compatible with National strategies and goals as set out in NBSAP and EMPS 2000 - 2010

Support Programmes

- Invasive Species Control Programme
- Developed Islands Biodiversity Conservation Programme
- Outer Islands Biodiversity Programme
- Biodiversity Assessment and Taxonomical Survey Programme
- Biodiversity Monitoring and Data Management Programme
- Inland Water Ecosystem Biodiversity Conservation Programme
- Biodiversity Reporting and Information Programme
- Ex-situ Biodiversity Conservation Programme
- Biodiversity Research Promotion and Facilitation Programme
- Biodiversity Capacity-building and Networking Programme
- Biodiversity Community Partnership Programme
- National Biodiversity Policy Development Programme

Action Plan: Biodiversity

GOAL 1: INCREASING IN-SITU CONSERVATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objective	To control invasive exotic species	Spread of invasive exotics reduced. Invasive exotics controlled or removed from key areas.	MET	Invasive exotic species are a primary factor in endangerment of native biodiversity and this is an ongoing process
Support Programme	**Invasive Species Control Programme**			
Results	National control, mitigation and prevention established.	Controls, mitigation and prevention implemented.		Inter-agency agreement and cooperation
Activities	• Import controls strengthened • Survey of invasive exotics and Assessment of impacts • Eradication of exotic predators from smaller islands • Control of freshwater aquatic weeds. • Control of invasive plants in key biodiversity habitats. • Incentives/ inducements to encourage private landowners to control invasive species • Public awareness	Assessment and inventory produced Action plan developed Eradication attempted on at least four islands Exotic predator-free refugia established Exotic species removed from key habitats Abundance of invasives on private properties reduced Media programmes and articles	MET, Customs/ MAMR, NGOs, island owners	Government commitment Technical Assistance and funding NGO and Private sector commitment
Objective	To augment conservation on the developed islands	Maintain viable Biodiversity populations of representative, and particularly endangered, species on populated islands.	MET, MLUH Planning	With correct planning and application of information, species diversity can be maintained on developed islands
Support Programme	**Developed Islands Biodiversity Conservation Programme**			
Results	Lowland habitats assessed Habitat fragmentation limited Critical habitats requiring protection/management identified Remnant turtle nesting beaches maintained Bat populations managed sustainably	Habitat corridors maintained rehabilitated or created. Use of stateland and rivers reserve Act to maintain/"Create" habitat networks, along public highways and watercourses. Turtle-friendly beach front development implemented. Harvesting of fruit bat monitored in tandem with roost populations. Sheath-tailed bat populations stabilized.	MET, MLUH, Local Communities	*(Cross reference with Land Use, Coastal Zones and Urbanisation thematic area)* Government commitment Inter-agency agreement

-continued-

Activities	▪ Survey of lowland habitats ▪ Habitat corridors identified and rehabilitated ▪ Beachfront development programme ▪ Sustainability of fruit bat assessed ▪ Ecological requirements of sheath-tailed bat assessed	Minimum areas required to maintain diversity calculated Improvement of species diversity in habitat fragments Policy of turtle-friendly beach front development adopted Beaches continue to be utilized by turtles and nesting activity stabilized Bat population stabilized	MET/MLUH Hotel managers/private land owners, NGOs	Technical assistance. Human and financial resources Study of various habitat remnants will provide information on habitat size and species diversity
Objective	To augment conservation of biodiversity on outer islands	Maintain viable Biodiversity populations of representative, and particularly endangered, species on outer islands	SIF, IDC, MET, MTCA	With correct planning and application of information, species diversity can be maintained on outer islands
Support Programme	**Outer Islands Biodiversity Programme**			
Results	Aldabra and SIF potential maximised	Increased use of facilities Increase in research International profile heightened Revenue increased	SIF, IDC, MET, MTCA	Potential of Aldabra is currently unrealized Practical, logistical and financial realities dictate that outer islands' biodiversity needs to be addressed separately
Activities	• Greater marketing of Aldabra • Investigation of means of sustainable financing	Increased use of facilities Increase in research undertaken International profile heightened Revenue increased	SIF, IDC, MET, MTCA	Financial and Human Resources
Results	Biodiversity Assessment	Viable priorities for management identified Status of biodiversity of outer islands redefined	SIF, IDC, MET, MTCA	Numerous priority areas for biodiversity conservation exist in the outer islands but financing is a great limiting factor, and viable and sustainable financing options need to be identified
Activities	• Intensive survey and identification of fauna • Survey population occurrence and status • Identify viable options for management • Threats to islands' biodiversity from climate change considered and included in action plan.	Species distribution mapped New species identified Conservation requirements better understood Action plan drafted Financing mechanisms proposed	IDC/SIF/ MET	Inter-agency agreement on options and approach

GOAL 2 : STRENGTHENING IDENTIFICATION AND MONITORING OF BIODIVERSITY				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objectives	To initiate assessment and taxonomic survey of key biodiversity To establish monitoring and data management systems.	Enhanced understanding of ecosystem assemblages.	MET, MIIB (SBS), MYC	Large components of Seychelles biodiversity are little studied; this greatly limits the capacity to make informed management decisions *(cross reference to Environmental economics).*
Support Programme	**Biodiversity Assessment and Taxonomical Survey Programme**			
Results	Greatly enhanced taxonomic knowledge	Species list and keys New endemic species identified.	MET, SBS, MYC	Technical assistance obtained. Montane regions and exotic mammal-free islands represent key biodiversity areas and refugia.
Activities	• Intensive survey and identification of fauna • Species, lists and Keys produced. • Specimen collection, storage and display • Action plans and implementation programmes for key species/groups	New species identified , particularly invertebrates Species guide produced Remnant faunal populations identified Conservation priorities identified and implemented	MET, SBS, MYC	(Threats from Climate Change to notable/endangered species and populations considered) *(Cross reference with invasive species programme and ongoing Avian Ecosystems programme)*
Support Programme	**Biodiversity Monitoring and Data Management Programme**			
Results	State of Environment monitored Data management system for biodiversity management established	Changes in status noted and brought to attention of decision makers Database set-up.	MET	Funding and capacity incorporated into recurrent budget.
Activities	• Current monitoring systems reviewed. • Methodology developed • Expert consultation • Data management team established	Key indicators Identified methodologies standardised (workshops etc) Workshops for and training of staff Monitoring implemented Appropriate software obtained and formats utilised Facilities provided National database established	MET/MYC/ SBS	Funding and capacity incorporated into recurrent budget.

GOAL 3: CONSERVING BIOLOGICAL DIVERSITY OF INLAND WATER ECOSYSTEMS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objective	Identify and conserve representative samples of key inland water ecosystems and limit impacts upon inland water ecosystems.	Development of rapid assessment techniques.	MET	Inland water ecosystems have and continue to suffer serious degradation by reclamation, adjacent developments, erosion and siltation, and pollution whilst their Biodiversity is little studied or understood.
Support Programme	**Inland Water Ecosystem Biodiversity Conservation Programme**			
Results	Management of inland water systems enhanced Conserve and study threatened Biodiversity Integrated approach to land, watersheds, catchments and river basins adopted.; incorporating consideration of climate change factors	Cross Sectoral Policy Development incorporating MET, planners, engineers and economists in the planning and implementation of development EIA's of proposed developments to fully consider cumulative effects of existing and proposed developments Inventories compiled Key systems identified Monitoring implemented Reinforcement of river reserve legislation Enhanced management of and where necessary, rehabilitation of catchment areas.	MET	There is a high number of endemic species in Seychelles inland water ecosystems. Capacity available to undertake survey. *(cross reference with taxonomical survey programme element)* *(Cross reference with Forestry Programme)*
Activities	• Species Conservation • Invasive species Management • Monitoring • Identification of river pollution impact on biodiversity	Species inventories compiled Threatened species identified Biodiversity sites requiring protection identified and protected Conduct inventories and Impact Assessments of invasive species Indicator species identified, techniques developed and tested and staff trained in implementation Biological and biochemical profile of rivers defined	MET	Technical assistance acquired/employed Financial capacity and political will *(Cross reference with alien invasive species programme element)*

GOAL 4: STRENGTHENING EX-SITU CONSERVATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objective	Develop a Biodiversity Centre which serves as: i) a source of Public information and education, ii) a research facility to enable access to genetic resources, iii) a location for ex-situ and gene pool conservation, iv) a repository for taxonomical collections. v) a library for scientific and research literature pertinent to Seychelles and the active compilation thereof.	Biodiversity Centre established	MET	Financial Resources
Support Programmes	**Biodiversity Reporting and Information Programme**			
Results	Upgrade interactive, education and information system. Education and information facilities meet international standards. Increased garden-based Educational programmes with schools. Establish library of scientific research papers.	Education staff trained to create, manage and maintain a comprehensive information system. Standard information documents increased by 50%. Programmes increased by 90%.	ME, MET Biodiversity Centre	Funding is made available. Staff is highly motivated. Cooperation between educational institutions. An Information Centre is set up at the Biodiversity Centre.
Activities	• Human resources development in education and information system. • Establish a network with international Botanical institutions. • Produce education and information documents. • Actively source and compile scientific literature on Seychelles.	Seminars, training and workshops. Establish and develop working relationship with Royal Botanic Gardens, Kew Gardens, Sabonet etc. Reports, brochures and other documents are revised and reprinted.	Biodiversity Centre/ MYC/ Stakeholders	External assistance secured. Recurrent budget in place.
Support Programmes	**Ex-Situ Biodiversity Conservation Programme**			
Results	Establish a core of Local Botanists and Taxonomists. Ability to do long term monitoring programmes. Reduce loss of genetic diversity. Availability of required information. Establish facilities for ex-situ conservation of faunal taxa – notably invertebrates, amphibians and reptiles.	Availability of 5 trained Botanists locally in 3 years . Produce documents and Database in 5 years. Show reduction in Loss of Botanical Diversity in 7 years.	Natural History Museum S.I.F	Funds are made available; policy makers and developers take informed decisions with regard to sensitive areas. Proper in-situ and ex-situ conservation practices are adopted.

-continued-

Activities	• Training of staff. • Develop proper documentation facilities and establish plant database. • Organise and do plant surveys and field trips. • Networking with other Botanical institutions. • Strengthen and upgrade scientific facilities.	Organise formal training for technicians. Set up documentation Centre and acquire the necessary software. Establish monthly work programmes and field trips for technicians. Establish and develop working relationship with Royal Botanic Gardens, Kew Gardens, Sabonet etc. Purchase literature documents, computers and relevant software. Set up a herbarium and laboratory.	Biodiversity Centre	External assistance secured. Recurrent Budget received. Recruitment of 5 Technicians feasible. *(Cross reference with Biodiversity assessment on Taxonomical survey support programme)*
Support Programme	**Biodiversity Research Promotion and Facilitation Programme**			
Results	Reduce depletion of genetic pool by 70%. Increase availability of mother plants. Document findings and inform local communities. Make plants available to public. Provide facilities for research on certain faunal taxa.	Within 3 years plants are available. Mother plants are grown. Documents are available within Centre. Availability of plants from nurseries.	MET	70% of plants can be found and grown. Enough materials can be produced for the general public. Plants can be properly identified.
Activities	• Human Resources Development. • Organise meetings with resource persons. • Collect information and data on all economically important species. • Document and promote findings.	Officers complete training. Seminars and meetings with resource persons held. Complete research. Produce scientific papers and make them available. Plants propagated and grown.	MET	Funds are made available. Resource persons cooperate and provide information. Seminars and meetings are successful. Plants can be propagated/grown.

GOAL 5: STRENGTHENING BIODIVERSITY CAPACITY-BUILDING, COMMUNITY PARTNERSHIP AND NETWORKING				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objective	Enhance institutional and NGO capacity and networking Development of decision-making mechanism which is consultative and accessible to communities and the private sector.	Increased cooperation and collaboration	MET/ENV/NGOs EMPS Steering Committee	There is limited human capacity in Seychelles and it is divided between several agencies True collaboration and free exchange of information is required to maximize progress in biodiversity Conservation
Support Programme	**Biodiversity Capacity-building and Networking Programme**			
Results	Ecology monitoring and management skills enhanced Establishment of Environmental NGO Centre Improving management and effectiveness of wildlife clubs EMPS Biodiversity secretariat Evaluation of Biotech development and application Development of bio-safety legislation and access legislation.	Productivity and efficacy of programmes enhanced Centre establishment Function and coordination of clubs enhanced Secretariat formed Report submitted Legislation adopted	MET/SBS	*(Cross reference with Biodiversity assessment and Taxonomic Survey programme element)* *(Cross reference with Regulatory, Policies and Institutional Mechanisms thematic area)*
Activities	• Training of field staff • Centre purchased, rented or constructed • Training of club leaders • Posts advertised and filled • Evaluation of Biotech development and application • Development of bio-safety legislation and access legislation	Workshop, training programme exams Centre functioning Workshops, training programme exams Secretariat functioning Report submitted Legislation adopted	MET/NGOs	Funds and infrastructure made available.

-continued-

Support Programmes	**Biodiversity Community Partnership Programme**			
Results	Consultative/ advisory stakeholder body formed to assist decision- makers in biodiversity matters Incentive measures for community and private sector contribution to and participation in biodiversity conservation Development of community based cross-sectoral biodiversity plans Development of mechanisms to enable partnership-building and dispute resolution/mediation in biodiversity issues	Body established and functioning Mechanisms identified and instituted Plans developed and published Mechanisms established and instituted	Cross-Sectoral	*(Reinstatement of NEAC or an analogous body proposed by stakeholders in workshop)* *(Cross-reference would have particular pertinence to support programme "Biodiversity conservation on developed islands)*
Activities	• EMPS Steering Committee to establish cross-sectoral interim group to investigate consultative mechanism • Cross-sectoral working group established to investigate and develop proposal for incentive measures • Cross-sectoral workshops organised to develop community-based Biodiversity Plans • Cross-sectoral working group to investigate mechanisms for partnership-building and dispute resolution/mediation in Biodiversity issues	Recommendations to Government National workshops held to provide initial input to working group and subsequently to endorse recommendations Workshops held; plans developed mandated and published specifying targets Recommendations put to EMPS Steering Committee for further development under ongoing EMPS revision	EMPS Steering Committee, consultative mechanism, relevant Government Departments EMPS Steering Committee, consultative mechanism, relevant Government Departments EMPS Steering Committee, consultative mechanism, relevant Government Departments	Human and Financial Resources

GOAL 6: DEVELOPING NATIONAL BIODIVERSITY POLICY				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead Agency**	**Assumptions**
Objective	To develop, formalise and publish a National Biodiversity Policy Framework compatible with National strategies and goals as set out in NBSAP and EMPS 2000 - 2010	Policy in use	EMPS Steering Committee, MET, Consultative Mechanism.	*Cross-reference with Regulatory, Policy and Institutional Mechanisms thematic area*
Support `	**National Biodiversity Policy Development Programme**			
Results	National Policy framework established	Policy published and implemented.	Cross-Sectoral/MET	Human Resources
Activities	• Consultative mechanism and cross-referenced Regulatory Policy and Institutional mechanism working group	Institutional mechanism working group established and operational	Cross-Sectoral/MET	EMPS Steering Committee established Human Resources

Thematic Areas Action Plan
Thematic Area:Biodiversity, Forestry and Agriculture
Forestry

Introduction

It is estimated that the forest area is 40,600 ha, i.e. 90% of the land area. Forest categories include Albizzia forests, mixed forests, plantation forests and bush vegetation. More than 45% of the forests are within the National Parks or other conservation areas, and strengthening the management of these areas must become a priority.

The Sectoral GDP constitution, including wood industries, is no more than 0.4% (1993). However, the indirect economic and environmental benefits of the sector are considerable. The amenity provided by the forest is important for the tourism industry. The extremely vulnerable water supply is highly dependent on the vegetation cover provided by forests.

Forestry was historically an important activity in Seychelles. Modern forestry practices were put in place in the 1950's by the colonial government. In 1993 a Forestry Plan was drafted under an EMPS project and this for the first time identified biodiversity priorities for forestry. The current legislation affording legal protection to trees is the Breadfruit and other Trees (Protection) Act listing 30 species to date. The main institution is the Ministry of Environment and Transport. The private sector is involved in the tree felling and timber industry.

Review of EMPS 1990 – 2000

Apart from the three projects under the Forestry Management Programme of the EMPS 1990 - 2000, seven other projects have been implemented.

A major forestry sector study was completed in 1993 under the Forestry Management Programme, leading to, among other output, a Forestry Sector Master Plan.

A Forest Fire Contingency Plan has been completed, training implemented, a fire tower built and substantial equipment, including a fleet of vehicles received under the EMPS framework.

A project to control hillside erosion on Praslin is ongoing and training has been completed.

In 1995, the World Bank funded the rehabilitation of the Curieuse island hillside with native plant species and the coco de mer palm was chosen. The project attracted further funding from the Dutch Trust Fund and in 1997 SR 400 000 (USD 80 000) were spent on the project.

A management plan for the Morne Seychellois National Park has been completed.

A challenge that the sector had to face was the battle against the Takamaka Wilt Disease. The project is still ongoing and so far has recorded satisfactory results. It was also decided to replace dead and dying Takamaka by replanting indigenous coastal tree species.

Substantial reforestation, some using mostly endemic trees has been undertaken with the assistance of the COI, the Dutch Trust Fund and others. Endemic tree nurseries have been set up.

Training has been undertaken in eco-tourism trail network and management. An inventory of all endemic and indigenous tree species of Seychelles has been made as well as recommendations for conservation and rehabilitation of the most threatened floral species.

An invasive species eradication project has started to control the invasion of Albizzia and creepers into forested areas.

Main strengths of EMPS 1990 - 2000

- Policy goals and objectives clearly defined.
- Forestry Management Programme included in EMPS.
- All EMPS projects implemented
- Provided catalytic base for follow-up project funds from donors.

Main limitations of EMPS 1990 - 2000

- Projects did not place sufficient emphasis on long term institutional strengthening
- Overall document inflexible
- Emphasis on inner islands.
- Strict forestry biodiversity issues not focused on adequately.

Issues and Management Priority Areas

Seychelles' forests are facing a suite of potential problems, including entomological and pathological impacts, bush and forest fires exacerbated by climate change, and invasive exotics such as creepers and woody species.

Forestry legislation is extremely dated with some not being appropriately used. Legislation on forestry reserves has in fact never been used to promulgate forestry protected areas.

Certain commitments to multilateral environment agreements, in particular the CBD, have to be pursued to ensure that the country fulfills its international obligations.

Commercial as well as non-pecuniary values of forests and their conservation in Seychelles need to be calculated using the latest techniques since it is popularly believed that Forestry plays a marginal role in the economy.

Forestry practices in Seychelles have, by and large, not moved in line with current international practices. Guidelines and best practice for sustainable forest management are not in existence.

Precise geographical information on Seychelles' forests is sketchy and at best, dated. The status of River Reserves is not known. Forest mapping using remote sensing and GIS can lay the foundation for better forest and water shed management.

Endemic tree species are notoriously difficult to propagate and grow. Proper research-based trials and follow-up has not been undertaken.

Scientific knowledge on the ecological dynamics of Seychelles' forests is sketchy, but is important for management to have a proper foundation.

A taxonomic field guide to the Dicotyledons exists but one has not been done for Monocotyledons.

Most staff in Forestry are semi-skilled field personnel. The programmes outlined in this plan for forestry cannot be implemented properly with the present staff. Senior staff needs to undergo university level training.

The national emphasis on biodiversity, eco-tourism, sustainable management and sustainable exploitation of Seychelles' natural resources necessitates a review of present management practices of the national parks. It is necessary to review and implement management plans, to elaborate other plans, to study possible extensions or creations and to improve collaboration and networking with other protected areas.

Management Priority Areas

Management priority areas have been identified as follows:

- Implement management of the Morne Seychellois National Park and study its possible extension.
- Elaborate management plans for protected areas currently lacking, including Praslin National Park (while taking into account current and planned projects).
- Assess and review existing and proposed protected areas with a view to rationalising and modernising the system.
- Increase collaboration and networking between all protected areas.
- Provide better protection systems to cope with disease, fires and invasive plants in forests.
- Implement forestry conservation objectives of the CBD.
- Review and revise forestry legislation in conjunction with biodiversity legislation *(see Regulatory, Policy and Institutions Thematic Area).*
- Ensure that forestry resources are properly valued using the latest techniques.
- Develop and implement guidelines for sustainable forest management.
- Implement comprehensive forestry mapping including river reserves and water-shed management and protection.
- Implement research trials on endemic tree species.
- Undertake research on vegetation and species dynamics in the forests.
- Undertake to write and publish the second volume on the flora of Seychelles, specifically on Monocotyledons.
- Implement a University training programme to provide institutional support for programmes.

Goals and Objectives

The goals and objectives of the Forestry Sector Master Plan have been reviewed with relevant stakeholders and are presented as follows:

Goal 1: Provide for a better Forest Protection system
Objective 1.1: To mitigate and cope with disease/disaster

Goal 2: Improve conservation of Forest Biodiversity
Objective 2.1: To increase knowledge and ability to manage forest biodiversity

Goal 3: Enhance Research on Forests and Species
Objective 3.1: To improve data and information on forests and species for better management.

Goal 4: University Training of Personnel in Forestry Science and Forestry Management
Objective 4.1: To train personnel at graduate and postgraduate level for programme support.

Goal 5: Strengthen the management of protected areas.
Objective 5.1: To increase ability and resources to manage existing protected areas and for possible extensions to parks through networking and collaboration as well as through systems planning, institutional and human capacity strengthening.

Support Programmes

- Integrated Forest Protection Programme
- Forest Biodiversity Conservation Programme
- Integrated Forest Research Programme
- Institutional Forestry Support Programme
- Protected Areas Programme *(see also Coastal Zones and Protected Areas Development Funding Programme in the Thematic Area Environmental Economics and Mainstreaming, and Sustainable Financing as well as the Marine Protected Areas Programme in the Thematic Area Fisheries, Marine Resources and Processes)*

Action Plan: Forestry

GOAL 1: PROVIDE FOR BETTER FOREST PROTECTION SYSTEM.				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To mitigate and cope with disease/disaster	Availability of suitable equipment, trained manpower, institutional strengthening and proper management.	MET.	Recurrent budget/External technical assistance
Support Programme	**Integrated Forest Protection Programme**			
Results	Conservation and enhancement of biodiversity in forest ecosystem.	International consultants, publication of technical/progress reports, publicity programmes	MET.	Local and external support to implement the programme.
Activity	• Entomological and pathological trials • Fire fighting plan implementation • Invasive plant control (see Biodiversity sub-theme)	Recruitment of staff, suitable computer packages.	MET.	As above

GOAL 2: IMPROVE CONSERVATION OF FOREST BIODIVERSITY				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To increase knowledge and ability to manage forest biodiversity	Management plans, sustainability in use of products, trained personnel, increased ecological appearance.	MET, PUC, NGOs and eco-groups	Availability of human resources/financial resources.
Support Programme	**Forest Biodiversity Conservation Programme**			
Results	Adequate monitoring and ability to assess and protect forest health, vitality and integrity.	National pilot projects, use of national and international databases, progress reports, minutes of meetings, regional conferences, and scientific case studies.	MET and other stake holders	Collaboration with other stake-holders
Activities	• Revise legislation • Value forest resources • Develop guidelines • Undertake mapping. ▪ Catchment Protection	Increase in Forest yields Reports, minutes of meetings, cross referenced documents.	MET, PUC, NGOs and eco-groups *(Cross reference to Regulatory, Policy and Institutional thematic area*)	Forestry and conservation legislation to be revised.

GOAL 3: ENHANCE RESEARCH ON FORESTS AND SPECIES				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	Improve data and information on forests and species for better management	Existence of a management plan for the different research programmes Reports, negotiations on findings Staff training	MET and other stakeholders	Obtaining the right support both financially and technically. An increased forestry budget
Support Programmes	**Integrated Forest Research Programme**			
Results	• Data and Information on forests and Species Improved	Increased local knowledge	MET and other stakeholders	Human and Financial Resources
Activities	• Trials on endemic tree species • Research on vegetation and species dynamics • Produce Monocots of Seychelles	Population levels of key species and their diversity	MET and other stakeholders	Soliciting government support to consider these programmes as priorities and to consider an increased forestry programme

GOAL 4: UNIVERSITY TRAINING OF PERSONNEL IN FORESTRY SCIENCE AND FORESTRY MANAGEMENT AT GRADUATE AND POST GRADUATE LEVEL				Latest Update: December 1999
	Description	**Objectively Variable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objectives	To train 5 (3 B.Sc., and 2 M.Sc) personnel at graduate and post graduate level in Forestry Science and Forestry Management.	Yr 2001: 1 M.Sc graduate Yr. 2001: 2 B.Sc. graduates Yr 2002: 1 B.Sc. + 1 M Sc graduates	MET/Forestry Section in collaboration with the Ministries of Education and Foreign Affairs.	Forestry technology is hindered as a result of a shortfall of qualified personnel at B.Sc. and M.Sc level.
Support Programmes	**Institutional Forestry Support Programme**			
Results	Trained personnel at graduate and post graduate level to generate and promote sustainable Forestry technologies.	OVI's as above		Recurrent budget Trained personnel involved in programmes that are effective and productive
Activities	• Train personnel from 2001 at University level to obtain first post graduate in 2002.	First post-graduate in 2002 and more graduates in 2005. By 2010, 3 graduates and 2 post-graduates trained.	MET in collaboration with external funding agents.	Candidates available

GOAL 5: STRENGTHEN THE MANAGEMENT OF PROTECTED AREAS				Latest Update: December 1999
	Description	**Objectively Variable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objective	To increase ability and resources for the management of existing areas and for possible extensions	Existence of management plans, maps of area produced, networking agreements with partners, protected status of species and habitats within parks.	MET and other stakeholders	Obtaining the right support both financially and technically; external technical assistance
Support Programme	**Protected Areas Programme**			
Results	Improved conservation of biodiversity, ecosystems, soil and water. Improved monitoring and feedback mechanisms Improved institutions Improved management including ecotourism development. Common framework for protected areas and increased efficiency	Reports and plans, stakeholders meetings, joint consultative forum, monitoring system, educational materials , management centres and visitor infrastructure	MET, MPA, BirdLife, RSNC and other partners and other stake holders	As above
Activity	• Set up of networking and collaborative mechanism and a protected area monitoring system • Assessment of existing protected areas and review feasibility of new proposals such as Silhouette • Harmonisation of plans through systems planning and production of new plans with stakeholders • Visitor management strategy, including ecotourism and public education, and elaboration of tools necessary • Demarcation and construction of management centres and other necessary infrastructure • Institutional strengthening (including training of staff, and acquisition of equipment)	Joint forum Number of staff, written materials, projects and resources shared; monitoring system set up and data contributed and shared Report (including proposed policy, recommendations and other proposals) Morne Seychellois Plan implemented, other plans produced and implemented; a systems plan produced; number of public workshops and materials made available Strategy document accepted and harmonised with systems plan; production of materials including leaflets, brochures, newsletter Areas physically demarcated on the ground, centres constructed and suitable infrastructure in place Training programme, certificates, staff recruited, public awareness campaign undertaken, areas treated, purchase of equipment	MET, MPA, BirdLife, RSNC and other partners	As above Willingness and ability of all partners to collaborate and contribute.

Thematic Areas Action Plan
Thematic Area:Biodiversity, Forestry and Agriculture
Agriculture

Introduction

The agricultural sector of the Seychelles is characterised by small family farms where mixed cropping is practised. There are about 400 registered crop production farms, 47 registered commercial layer farms, 10 registered commercial broiler farms, 1500 pig fattening units and 32 pig breeding units.

Local commercial livestock production allows the Seychelles to be self sufficient in eggs, about 80% self-sufficient in broiler meat although production capacity exists to achieve total self-sufficiency. Local pig production meets about 60% of local demand for pork. It is difficult to quantify the total annual output of fruits and vegetables although estimates would suggest that 60% is met through local production.

There are about 600 hectares under agricultural crops and possibly only 200 hectares are under intensive agriculture. Plantation crops like cinnamon and coconut have lost considerable importance in the last 20 years. Agriculture is recorded in 1999 as contributing to only 4% of the GDP.

The portfolio responsibility for the sector lies within the Ministry of Agriculture and Marine Resources whilst the farming community engages in most of the farming activities

Review of EMPS 1990 – 2000

Between January 1990 and August 1999 a total of twenty-one foreign funded projects at a total cost of USD 20.015 million (SR 100 million) were implemented in the agricultural sector covering also fisheries and environment issues. Of those projects, the Food and Agriculture Organisation of the United Nations (FAO) assisted 16 at a total cost of USD 1.338 million (SR 6.69 million). Twelve of those 16 projects had a direct bearing on arable agricultural development in the Seychelles. The remaining 5 of the 21 projects were either financed by the International Fund for Agricultural Development (IFAD), the African Development Bank (ADB), the European Development Fund (EDF), the European Union (EU) or the German Technical Cooperation Programme (GTZ) at a total cost of USD 18.677 million (SR 93.38 million).

Indeed, only 3 out of the 21 projects, or only 14% of the total number of projects featured in the EMPS. Nonetheless, their implementation has had tremendous positive repercussions on the biodiversity and on the natural environment of the Seychelles. In this context, the three projects, assisted by FAO, led to the disposal of 12 tonnes of obsolete pesticides, and to the formulation of the Pesticide Act (1996) and the Plant Protection Act (1996).

Main strengths of EMPS 1990 - 2000

- The EMPS contained projects of relevance to environmental priorities in agriculture.
- Other results from the EMPS such as application of EIAs are also of relevance.

Main limitations of EMPS 1990 - 2000

- It did not have a dedicated programme for agriculture.
- Follow up projects could not be achieved within the framework of the EMPS.

Issues and Management Priority Areas

The overriding objective for agriculture is to achieve food security on a sustainable basis. The Government provides an enabling environment to enhance local agricultural production and to promote agricultural technologies. One of the guiding principles of the agricultural policy of the Seychelles is "To ensure safe and sustainable agricultural development with due regard to biodiversity and the environment".

Progress at all levels of agriculture is hampered by an inadequacy of technically trained staff at the graduate level.

Furthermore, since the beginning of the 1990s, encroachment of agricultural land by social, industrial and tourism infrastructure has been very apparent. Concurrently, there have been numerous reports of under-utilisation of existing agricultural land.

Thus, in order to meet increasing demand for food along with an enhancement of food security in the coming decade, especially in the face of decreasing availability of land, it is imperative that the productivity of existing agricultural land is considerably increased through appropriate technologies and conservation methods.

Consequently, in the face of the necessity to considerably increase agricultural production to meet the increasing need in food demand, there will be a higher intensity of user conflicts.

Collaborating ministries (i.e. Environment, Health & Planning) thoroughly assess all applications for livestock activities and their impact on the environment. However, the impact of the inorganic fertilisers and general pesticides use has never been assessed.

Management Priority Areas

- Augment the number of professionals in agriculture.

- Put in place appropriate systems that will ensure environmental protection whilst securing farmers' livelihoods and long term food security.

Goals and Objectives

The Goals and Objectives for the plan period are as follows:

Goal 1: Upgrade Professionalism in the Agricultural Sector
Objective 1.1: To augment capacity-building

Goal 2: Generate and Promote Sustainable Agriculture Approaches for Food Security and Minimum Impact on Environment.
Objective 2.1: To ensure environmental impacts of agriculture are reduced

Support Programmes

- Agriculture Capacity-building and Training Programme
- Sustainable Agriculture Programme

Action Plan: Agriculture

GOAL 1: TO UPGRADE PROFESSIONALISM IN THE AGRICULTURAL SECTOR				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objective	Capacity-building	Yr 2002: 1 MSc graduate Yr 2003: 1MSc graduate Yr 2004: 1MSc+6 BSc graduates Yr 2005: 1MSc+6 BSc graduates Yr 2006: 1MSc+6 BSc graduates Yr 2007: 1MSc +6BSc graduates Yr 2008: 1MSc +2 BSc graduates Yr 2009: 1MSc +2 BSc graduates	MAMR in collaboration with the Ministries of Education, and Foreign Affairs	BSc and MSc training will assist the successful delivery of programmes.
Support Programmes	**Agriculture Capacity-building and Training Programme**			
Results	Trained personnel at graduate and post graduate level to generate and promote sustainable agriculture technologies	OVIs as above	MAMR in collaboration with the Ministries of Education, and Foreign Affairs	Recurrent budget Trained personnel involved in programmes that are effective and productive
Activities	• Train personnel from 2001 at University level to obtain first post graduate in 2002 and graduates in 2004	First post graduate in 2002 and graduates in 2004. By 2010, 28 graduates and 8 postgraduates would be obtained.	MAMR in collaboration with external funding agents	External assistance Potential candidates available.
	• To implement a programme to retain all trained staff throughout the planned period	At the end of the planned period (2010) all trained staff i.e. 28 graduates and 8 postgraduates will be working in the sector.	MAMR in collaboration with Ministries of Administration and Education	External assistance Budgets Availability of vacant and budgeted posts for promotion

GOAL 2: TO GENERATE AND PROMOTE SUSTAINABLE AGRICULTURE APPROACHES FOR FOOD SECURITY AND MINIMUM IMPACT ON ENVIRONMENT				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead and Delegated Responsibility**	**Assumptions**
Objective	Environmental impact of agriculture to be reduced	50% of farms not more than 100m from sensitive habitat adopt sustainable agricultural approaches (fertigation, IPM, tropicalised green houses etc) by the end of year 5	MAMR in collaboration with the Ministry of Foreign Affairs and the Ministry of Education	Environmental degradation that hinders long term sustainable agricultural growth can be sustainably mitigated by adopting new practices and technology.
Support Programmes	**Sustainable Agriculture Programme**			
Results	Improved Soil Fertility Reduced Soil Erosion Reduced pesticide use Reduced fertiliser use Conserved sensitive biodiversity	30% of farms adopt fertigation by year 5 30% of farms adopt tropicalised green house by year 5 50% of farms with tropicalised greenhouse adopt IPM by year 5 50% of farms with tropicalised green house adopt farm organic resources application along with fertigation. 50% of farms not more than 100m from sensitive habitat adopt sustainable agriculture approaches.	MAMR in collaboration with the Ministries of Education, and Foreign Affairs	Farmers support and adopt programmes Use of agricultural pesticides can be reduced without compromising yield Availability of sufficiently cheap form of organic resources Positive impact on the environment can be measured during programme life
Activities	• Soil conservation • Integrated Pest Management(IPM) • Promotion of farm organic resources • Promotion of tropicalised green house • Support Research/Extension Linkages	Workshops, seminars, field days, publication of technical reports, mass media sensitisation and publicity programmes Similar to (1) above along with specialised University training in IPM As (1) above, and OVIs as specified against Results As (1) above, and OVIs as specified against Results 1 audio-visual facility 1 desk top publishing unit purchase 100 manuals and publications 3 trained personnel at middle level by year 3	Crop Development & Promotion Division (CDP) (CDP) (CDP) (CDP) (CDP)	Mobilise internal resources Support Programme # 1 implemented with the assistance of external organisations like NRI. Widespread availability of farm organic resources. Availability of funds and personnel to be trained. Farmers support and adopt all technology programmes.

Thematic Areas Action Plan
Thematic Area:Energy and Transport
Energy

Introduction

The energy supply of Seychelles is characterised by the importation of refined petroleum products, amounting to about 90% of the primary energy supply of the country. The Seychelles Petroleum Company (SEPEC) has the monopoly for the importation of petroleum products. In 1990, 158,989 toe was imported and in 1998 the import had increased to 241,028 toe. There is storage facility for 74,250 toe. The PUC is responsible for the generation and distribution of electricity on Mahe, Praslin and La Digue. There are three power stations operating on gas and fuel oil. The total installed capacity in 1998 was 42 MW and the units generated were 142.7 GWh.

Over 89% of households are connected to the electricity supply system. The use of renewable energy is very marginal and is limited to the use of charcoal, firewood, and solar water heater. The primary energy demand has increased from 48,267 toe in 1990 to 76,427 toe in 1998. The electricity generation sector is the largest consumer of petroleum products, and is followed by the transport sector.

As a result of the ongoing economic and social development programme, it is foreseen that there will be continuous increase in energy demand. A new power station of 50 MW capacity is presently under construction and this is expected to cater for the electricity demand for the next 10 years.

The energy portfolio lies with the Ministry of Industry and International Business, and the other related agencies are PUC - Electricity Division, Seychelles Petroleum Company (SEPEC) and Seychelles National Oil Company (SNOC).

Review of EMPS 1990 – 2000

Government's policy statement for the plan period was the following: "The government will formulate and implement a coherent and structured energy policy with emphasis on improvement of energy pricing and energy conservation."

The government set out to prepare a national energy policy, which would include the Energy Management Programme. The expected positive impact on the environment was the reduction of emissions of air pollutants, especially greenhouse gases.

The Energy Conservation Programme of the Energy Management Programme was included as part of the EMPS 1990 - 2000 as project F1. The other energy related projects were *C7: Treatment of Waste Oil*, and *C9: Disposal of Sludge from Victoria Power Station*. The Energy Policy and Pricing projects were not included in the EMPS 1990 - 2000 Investment Programme. These projects were implemented as part of the workplan of the Ministry of Industry.

The *F1:Energy Conservation Programme* resulted in the National Energy Efficiency Programme (NEEP) which included 12 energy conservation projects. Government implemented some of the

projects with its own funds, including education campaigns, energy audits, promotion of LPG as a more economic and cleaner fuel for cooking, installation of capacitor banks on the distribution line for power factor correction and promoting the use of solar water heaters. Implementation has helped to limit the overall energy consumption.

The feasibility study for project *C9: Disposal of Sludge from Victoria Power Station* was carried out in 1991, but the recommendations of the study were only partly implemented. There has been a continuous accumulation of fuel oil sludge from the power station. In early 1999, PUC invested in an incineration plant. The project *C7: Treatment of Waste Oil*, was not implemented.

The new electricity tariff structure came into force in January 1995. The new tariff has helped to incite customers to manage their electrical load and consumption more efficiently, and it is helping to limit energy consumption.

The Seychelles' Energy Policy was launched in May 1999. The policy addresses key issues, such as, security of energy supplies and economic sustainability, and efficient use of energy and conservation measures.

Main strengths of EMPS 1990 - 2000

- Identified an Energy Policy and Conservation Programme
- An important energy project was implemented under the EMPS as well as other related projects
- Energy policy and pricing was not an identified project but implemented by Government

Main limitations of EMPS 1990 - 2000

- The project for disposal of fuel sludge was not implemented
- There was limited ability to use the EMPS as an environmental strategy/policy
- Projects that came later were implemented outside the EMPS
- It did not foster participation by private sector and public
- There was inadequate attention paid to coping with climate change

Issues and Management Priority Areas

The Seychelles' Energy Policy acknowledges that in Seychelles, the protection of the environment, both locally and globally, is something that is particularly important. The policy states that energy provision should be environmentally and economically sustainable. It aims to 'Promote energy conservation practices as well as the appropriate utilisation of renewable energy resources and technologies'. The main environmental challenge within this sector is to limit or reduce the negative effects that consumption of petroleum products have on the environment.

The emissions of greenhouse gases and other air pollutants are serious environmental concerns. In 1990, the emissions of CO_2 from the energy sector were 88,604 tonnes, and in 2000, the emissions of CO_2 will increase to 156,852 tonnes.

The increase in electricity demand has led to an increase in the stock of fuel oil sludge for which there is no suitable means of disposal at present. The new 50 MW thermal power station will run on fuel oil and an incineration plant is being set up to ensure safe disposal of the fuel oil sludge. The Solid Waste Agency (SWAC) is currently setting up mechanism for exporting waste oil.

All precautions must be taken to minimise the risk of oil spillage into the marine environment, since all petroleum products are imported in oil tankers.

There is the need for capacity-building to address the environmental challenges, and also to create awareness and commitment to environmental issues.

There is also the need to set up proper environmental monitoring within the sector and enactment of standards. The use of clean and efficient technologies should be encouraged.

Management Priority Areas
Management priority areas have been identified based on the Seychelles Energy Policy and discussed further during the current planning process. They are the following:

- Increase and promote the use of energy conservation, renewable energy and energy efficient and clean technologies to reduce the production of greenhouse gases and other pollutants so as to safeguard both the environment and human health.

- Implement monitoring of impacts by the energy sector and take measures to mitigate them.

Goals and Objectives

The sectoral goals and objectives have been set according to the environmental policies laid out in the Seychelles Energy Policy. Goals and Objectives of the thematic area for the plan period are:

Goal 1: Limit the emission of greenhouse gases and other pollutants
Objective 1.1: To promote and implement energy conservation practices, use of renewable energy resources and technologies, and energy efficient and clean technologies.
Objective 1.2: To develop and implement an energy extension and education programme.

Goal 2: Undertake monitoring and mitigation of sectoral impact
Objective 2.1: To monitor the environmental impact of this sector and undertake measures to reduce and limit them.

Support Programmes

- Energy Conservation and Renewable Energy Programme.
- Sustainable Energy Extension and Education Programme *(see also Tourism and Aesthetics thematic area).*
- Energy Sector Pollution Monitoring Programme.

Action Plan: Energy

GOAL 1: LIMIT THE EMISSION OF GREENHOUSE GASES AND OTHER AIR POLLUTANTS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators**	**Lead & Delegated Responsibility**	**Assumptions**
Objective 1.1	To Promote and implement energy conservation practices, the use of renewable energy resources and technologies, and energy efficient and clean technologies	Limit emission of GHGs and other air pollutants by 10 % compared to if the 'business as usual' approach is adopted.	MIIB, EAD	Year 2000 will be the baseline. No major fluctuations of trends of energy consumption
Support Programme	**Energy Conservation and Renewable Energy Programme**			
Results	Reduction in fuel consumption Reduction of emission of GHGs and other air pollutants Mitigation of climate change Increase in use of solar water heaters	Limit fuel consumption and emission of GHGs by 10 %. 5 % increase in use of solar water heaters	MIIB, SBS	Commitment of all relevant parties
Activities	• Carry out energy audits for commercial, institutional and industrial premises • Prepare and implement Energy Master Plan • Promote the use of energy efficient appliances and clean technology • Incorporation of energy efficient measures and standards in building design • Study for heat recovery system from electricity power generation • Study of alternative technology for electricity generation • Promote the use of solar water heaters in domestic, tourism, industrial and medical establishments	Energy audits report Energy Master Plan Use of energy efficient appliances and clean technology Buildings designed as per energy efficient measures and standards Report of heat recovery system Report of the study Increase in the use of solar water heater	EAD, SBS, MLUH, PUC	Human and Financial Resources Commitment of all relevant parties
Objective 1.2	To develop and implement an energy extension and education programme	Consumers practising sustainable energy utilisation	MIIB	Human and financial resources
Support Programme	**Sustainable Energy Extension and Education Programme**			
Results	Information on sustainable energy practices to all consumers	Public Awareness increased	SBS	Commitment of all relevant parties
Activities	• Set up extension service for energy efficiency use and conservation • Dissemination of information	A fully operational extension service TV/Radio programme, articles, brochures, posters, seminars, workshop, site visits	EAD EAD, SBC	Availability of human resource

GOAL 2: UNDERTAKE MONITORING AND MITIGATION OF SECTORAL IMPACT				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To monitor the environmental impact of this sector and undertake measures to reduce and limit them	Reduction in air and waste oil pollution	MIIB/MET	Recurrent budget and resources
Support Programme	**Energy Sector Pollution Monitoring Programme**			
Results	Ongoing monitoring programme and report of level of pollution from the energy sector	Reports produced	MIIB,SBS	Recurrent budget and resources
Activities	• Develop and implement monitoring programme	Monitoring programme for air pollution	EAD/PC/SBS	Recurrent budget and resources

Thematic Areas Action Plan
Thematic Area:Energy and Transport
Transport

Introduction

The total length of roads is currently 331 km. A dual carriageway is being constructed on the east coast reclamation south of Victoria. Another major road construction will be undertaken on the reclamation to the north of Victoria. The Seychelles Public Transport Corporation (SPTC), a parastatal company, provides the public bus service. In 1997, the SPTC transported 12 million passengers.

Most commodities arrive by sea via Victoria harbour. Most tourists arrive by air at the Seychelles International Airport on Mahe. Other islands are linked with Mahe by small aircraft or helicopters, whilst ferry boats provide regular services between Mahe, Praslin and La Digue, serving tourists and Seychellois and transporting essential goods to the outer lying islands.

In 1990, the vehicle population was 6,050, and by the year 2000, this will reach 8,921. It is to be noted that the energy consumption in the road transport sector represents nearly 43% of the national total energy consumption.

The principal institutions involved are the Ministry of Tourism and Civil Aviation, and the Ministry of Environment and Transport.

Review of EMPS 1990 – 2000

The main features of the development strategies of land transport for the Plan period were the improvement of public transport services and the improvement and upgrading of secondary roads. These strategies were not included for action in the EMPS.

The EMPS 1990 - 2000 did not have a specific programme for transport, and as such, transport issues were addressed under other related programmes particularly the Human Health and Environment: Air and Noise Pollution Programme. The projects that were implemented were:

- Standard Specification for Automotive Vehicle Emissions (part of B1);
- Improvement of Vehicle Tests and Testing Facilities (B3);
- Feasibility Study on Introduction of Lead-Free Gasoline (F2).

The standard for automotive vehicle emissions was developed, declared in 1996 and enacted in law. All vehicles are currently tested for compliance to the standard through the Vehicle Testing Station The project is also part of the mitigation option for limiting emissions of greenhouse gas under the Climate Change Convention.

The main objective of the B3 project was the setting up of a vehicle testing station to carry out all the road fitness and emission tests. It became operational in 1996, and testing is mandatory. Both projects have had positive impacts on the transport and energy sector.

The main objective of the F2 project, which was implemented in 1991, was to study the feasibility of the introduction of lead-free gasoline in Seychelles. As a result of technical difficulties with the process for the introduction of lead-free gasoline, this gasoline was only introduced in the first quarter of 1999. It is expected to have positive impact on human health.

The relevant non-EMPS projects implemented during the period 1990 - 2000 are:
- Improvement of the Public Transport System
- Traffic Management Plan for Victoria
- Road Transport Improvement Programme (ongoing)

There are also a number of measures, which the Government have introduced that have contributed to limit fuel consumption in the transport sector, and these are:
- High import taxes on vehicles;
- Ban on import of second hand vehicles;
- High cost of fuel;
- Road tax for all vehicles depending on engine size.

Main strengths of EMPS 1990 - 2000
- Identified three important projects for limiting emissions.
- Identified other related projects.

Main limitations of EMPS 1990 - 2000
- It did not contain a comprehensive programme for this sub-theme.
- It did not incorporate other newer projects of relevance.
- Mitigation for climate change was inadequately developed.

Issues and Management Priority Areas

The vehicle fleet, particularly with regard to private vehicles, has increased at a rapid rate over the last ten years. The cost and environmental impacts of providing new roads, or significantly upgrading existing roads to service this growing fleet is likely to be prohibitive.

A reliable, convenient, comfortable and affordable public transport service is essential to the future development of land transport in Seychelles. The potential negative effects of excessive growth in private transport usage make it imperative that public transport is upgraded.

There has been an increase in road congestion, especially in Victoria. Traffic needs to be managed effectively to minimise air pollution, congestion, maximise capacity and safety, and/or to favour public transport or pedestrians.

There is the need for integrating land-use and transport planning since this could help to limit the need to travel and maximise the use of public transport.

The proper enforcement of road transport regulations is necessary to ensure that the objectives of the transport policy are met.

Housing development to meet the social development programme has sometimes called for the construction of new roads in environmentally sensitive areas leading to major impacts in some areas. Road design and construction methods must be assessed for environmental sensitivity.

There is the need for more awareness of the impact of land transport on the environment for the staff of the Land Transport Division and also for the public in general. The Land Transport Division should build up capacity to monitor the impact of land transport on the environment, and to measure and assess the performance of its environmental policies.

Management Priority Areas

- Continue to put in place mechanisms to reduce green house gas emissions.
- Reduce the impact of a growing fleet of private cars by promoting public transport service through continuous improvements in the fleet and service
- Improve traffic flow and thus reduce congestion, fuel use and emissions in and around Victoria.
- Improve monitoring, public awareness and enforcement of Road Transport Regulations and exhaust emission standards.
- Improve integration of land use planning and transport planning to improve traffic flow and minimise the need to travel and distance travelled.
- Reduce negative environmental impacts resulting from land transport infrastructure by ensuring that road designs, construction methods and road maintenance are environmentally appropriate and environmentally sensitive.

Goals and Objectives

The goals and objectives have been set according to the policies of the land transport in respect to the environment.

Goal 1: Limit the emission of greenhouse gasses and other air pollutants
Objective 1.1: To reduce traffic congestion and improve traffic flow in and around Victoria.
Objective 1.2: To continue to improve and promote public transport service
Objective 1.3: To ensure compliance to the Road Transport Regulations and emission standards.
Objective 1.4: To ensure integrated land use and transport planning.

Goal 2: Minimize adverse environmental impacts of land transport infrastructure
Objective 2.1: To ensure that road design, construction methods and road maintenance have minimum impact on the environment.

Support Programmes

- Integrated Land-Use and Transport Planning Programme.
- Environmentally Sound Road Design and Construction Programme.
- Victoria Traffic Management Programme.
- Public Transport Improvement and Promotion Programme.
- Transport Upgrading Enforcement and Surveillance Programme.

Action Plan: Land Transport

GOAL 1: MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS OF LAND TRANSPORT INFRASTRUCTURE				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To ensure that road designs, construction methods and road maintenance have minimum impact on the environment	Roads that blend well into the environment with minimum impact	MET, LTD	There will be the full support of the Planning Authority
Support Programme	**Environmentally Sound Road Design and Construction Programme**			
Results	Reduce negative impacts on the environment Reduce soil erosion Proper control of run-off water Restoration of vegetation Adequate road maintenance	Roads that blend well with the environment Less soil erosion Gutter to cater for run-off water	LTD	Human and Financial Resources
Activities	• Assess road designs in terms of their environment sensitivity • Apply construction methods that minimise soil erosion • Accommodate run-off water • Restore vegetation on cut and fill slopes	Approval of road designs Approved construction methods Adequate gutters	LTD/Planning	Human and financial resources

GOAL 2: TO LIMIT THE EMISSION OF GREENHOUSE GASES AND OTHER AIR POLLUTANTS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators**	**Lead & Delegated Responsibility**	**Assumptions**
Objective 2.1	To reduce traffic congestion and improve traffic flow in and around Victoria.	Limit fuel consumption and emission of GHGs and other air pollutants by 10 %	MET	Year 2000 will be the baseline. No major fluctuations of trends of fuel consumption
Support Programmes	**Victoria Traffic Management Programme**			
Results	Limit fuel consumption in the transport sector. Limit emission of air pollutants and GHGs. Mitigate climate change. Improve traffic flow and minimise travel time. Cleaner air in Victoria. Improve human health. Increase safety for pedestrians	Limit fuel consumption by 10 % Limit emission of GHGs and other air pollutants by 10 %	MET, LTD	Human and Financial Resources Commitment by all relevant parties
Activities	• Develop and implement a Traffic Management Plan for Victoria. • Feasibility study for mode shift (Bicycle Lane, Pedestrianisation) of Victoria centre.	Traffic Management Plan for Victoria Report of feasibility study	LTD	Approval and support for plan by all related parties Funds

-contiuned-

Objective 2.2	To continue to improve and promote public transport service	10% increase in the number of passengers 10 % reduction in use of private vehicles Limit fuel consumption and emission of GHGs and other air pollutants by 10 %	MET, LTD, SPTC	
Support Programme	**Public Transport Improvement and Promotion Programme**			
Results	Increase in number of passengers Limit the use of private vehicles Limit fuel consumption Limit emission of GHGs and other air pollutants Mitigate climate change	10% increase in the number of passengers Less use of private vehicles Limit fuel consumption and emission of GHGs and other air pollutants by 10 %	MET, LTD, SPTC	Support by all relevant parties
Activities	• Prepare and implement Public Transport Plan for Mahe, including speed limiters, fleet renewal and maintenance. • Increase PR and public awareness campaign • Study the use of CNG as an alternative fuel. • Feasibility study for light rail network along the east coast.	Public Transport Plan for Mahe New buses, Buses fitted with speed limiters Public awareness campaign Report on the use of CNG as an alternative fuel Report on light rail network	LTD, SPTC, MLUH	Human and financial resources
Objective 2.3	To ensure compliance to the Road Transport Regulations and emission standard	Vehicles complying to emission standards	MET	Financial resources
Support Programme	**Road Upgrading Enforcement and Surveillance Programme**			
Results	Trained personnel Acquisition of adequate resources Limit emission of GHGs and other air pollutants Updated regulations and new regulations	Trained personnel Equipment and instruments 5 % reduction of GHGs and other air pollutants Amended regulations	LTD, Police	Human and Financial Resources
Activities	Recruitment and training of personnel Acquisition of resources Review and revision of regulations.	Trained personnel Equipment and instruments Regulations and measures.	LTD, Police	Human and Financial Resources
Objective 2.4	To ensure integrated land use and transport planning	Less travelling and shorter distance to travel	MET, MLUH	MLUH support; public will use facilities
Support Programme	**Integrated Land use and Transport Planning Programme**			
Results	Improvement in land use and transport planning Master plan and local plan	Plans produced	LTD, MLUH	Human and Financial Resources
Activities	• Set up linkages between land use and transport planning • Prepare master plan & local plans • Assess development as per the Development Control Guidelines	Land use and transport planning committee Master plan and local plans	LTD, MLUH	Human and Financial Resources

Thematic Areas Action Plan
Thematic Area:Fisheries and Marine Resources/Processes

Introduction

Fisheries and Other Marine Resources
Fisheries have traditionally occupied an important place in the life of the Seychellois and the sector has played an important role in the socio-economic development of the country. In 1998 the fisheries sector exceeded the tourism sector by 5 percent of foreign exchange inflows. Export of fish and fish products account for more than 97% of domestic exports.

The fisheries sector in Seychelles is diverse ranging from part time fishing to capital intensive fishing. The artisanal fishery is based mainly on the exploitation of demersal species, the semi-industrial targets mainly tuna and billfishes, whilst the industrial is based upon the exploitation of tuna stocks. The semi-industrial is a newly developed fishery and presently there are only six locally owned vessels. As regards aquaculture, besides the prawn farm of Coetivy Island, which is presently under extension to another 70 ponds, a giant clam and pearl oyster farm operates on Praslin. Management of the fisheries is achieved through management plans and legislation. Seychelles Fishing Authority has an established monitoring programme for much of the fishery.

Coral reefs and associated habitats are vital for the long-term sustainability of marine resources and tourism. The maintenance of Marine Protected Areas continues to fulfil this role. There are currently eight national parks as well as three other Special Reserves with marine components and other protected areas such as Shell Reserves. In total over 23 000 ha of reef and marine areas are protected in Seychelles.

Certain flagship species, in particular marine mammals, are given legal protection in the Seychelles EEZ. Recently Government banned the use of shark nets. Recent legislation provides improved protection for turtles. Other resources such as lobsters and octopus are monitored closely. A charismatic species, the whale shark, has been the focus of attention recently and a tagging programme has started.

The principal institutions of relevance are the Seychelles Fishing Authority (SFA), the Marine Parks Authority (MPA) and the Ministry of Environment and Transport. Various other organizations including NGOs are also involved.

Non-Living Resources
This has been defined as minerals derived from the ocean. The primary interest of Seychelles in non-living marine resources is hydrocarbons. Although no petroleum has been discovered in Seychelles exploration has been conducted since 1977 and in 1996 further exploratory wells were drilled. The primary institution is the Seychelles National Oil Company (SNOC).

Review of EMPS 1990 – 2000

The thematic area was well covered under the previous EMPS. Directly relevant programmes were the Marine Resources Management Programme, Pollution Monitoring and Control Programme, National Parks and WildLife Conservation Programme and the Coastal Environment Programme.

The marine resources plans under the Marine Resources programme have only been partly developed. The EMPS Project *G4: Rehabilitation of Curieuse Marine Park* has been completed and a management plan has been drafted but partially implemented. The EMPS project for improvement of the National Marine Parks has also been completed. Demarcation buoys and anchoring buoys have been placed in some marine parks, however, maintenance has been low. The Conservation and National Parks Management Plans have been partially completed. Though Management Plans have been drawn up under this EMPS project, implementation has been erratic. Presently four marine parks are unmanaged, mainly due to limited human and financial resources.

Capacity-building for Marine Park Rangers was carried out under EMPS Project *G1: WildLife Inventories and Protection of Rare Species* for three years and through unrelated projects, but brain drain has eroded the effectiveness of the training. The Shoals of Capricorn Project (Royal Geographic Society) is addressing a comprehensive training programme in Marine Science. However, to what extent this can solve human capacity and fill the gaps is questionable. The Marine Parks Authority has presently only one qualified marine scientist.

The Coastal and Marine Environment Baseline Study has partially been completed through the Regional Project of the Indian Ocean Commission. A sensitivity-mapping document of Coastal zone of Mahe Island was produced but resulted in restricted distribution. The Shoals of Capricorn has recently completed a baseline study for selected areas in the National Marine Parks. No comprehensive monitoring programme has been set for the coastal zone except those of coral reefs.

Projects defined under the EMPS for non-living marine resources relate to the development of a Control Programme for offshore drilling and the oil spill contingency plan. Both have been fulfilled, but implementation is dependent on resources.

Main strengths of EMPS 1990 - 2000

- A Marine Resources Management Programme was defined and implemented.
- Other directly related programmes, particularly dealing with Marine Parks, coastal zones and control programme for oil drilling were also defined and implemented.

Main limitations of EMPS 1990 - 2000

- New issues and problems were not incorporated.
- Many of the projects were only partially implemented.
- The EMPS has not led to increased human capacity in marine science and conservation.

Issues and Management Priority Areas

The current management of the domestic fishery is inadequate, The priority area of the domestic fishery is to implement the Inshore Fisheries Management Strategy which involves a multiplicity of activities.

A priority in the Semi-industrial fishery is to reduce predation of catches by marine mammals in a benign and non-interventionist manner since marine mammals are protected in Seychelles waters. Preliminary resource assessment and economic analysis need to be carried out to identify management objectives for this developing fishery.

Within the Industrial fishery Seychelles needs to implement its commitments to international conventions, especially UNCLOS, flag state responsibilities, conservation of high seas resources and management of highly migratory and straddling stocks.

Very little is known about the Seychelles marine coastal environment. Oceanographic parameters such as water quality, biological, chemical and physical processes and interactions important to marine life are virtually unknown as are the implications of climate changes.

Continual assessment to determine the extent and rate of bleaching and recovery of corals to the event that took place in 1998 due to El Nino should be given high priority. The status of key ecosystem assemblages, notably fish and turtles also need to be assessed.

Many of Seychelles marine protected areas, such as Shell Reserves, have become 'paper parks'. Management is handicapped by lack of integration, partnerships and capacity. Marine Protected Areas need urgent attention in terms of monitoring, research, capacity and partnership building, awareness and advocacy, and systems planning.

In the non-living resources area, conservation measures for mineral exploration are inadequately developed, although there have been control programmes partiality developed in the past.

Management Priority Areas
Management priority areas have been identified as follows:

- Enhance inshore fishery management in particular to develop a new policy, resource management plans and biological and economic assessment of fisheries resources and database management.

- Manage tuna and billfish resources, in a sustainable manner, in particular implementing commitments to regional and international agreements.

- Initiate research and assessment in the coastal environment, looking at assessment of critical habitats and coastal hydrodynamics and nutrients.

- Develop an integrated approach to marine protected areas management, linking Marine National parks to other marine areas managed by different agencies.

- Promote and ensure correct supervision methods of mineral exploration in Seychelles EEZ with the aim that it is conducted under the best environmental safeguards.

Goals and Objectives

Goals and Objectives of the thematic area for the plan period are:

Goal 1: Manage inshore fisheries sustainably
Objective 1.1: To revise and implement management tools and instruments.

Goal 2: Develop knowledge-based systems for marine coastal zone management
Objective 2.1: To put in place assessment and research for effective management.

Goal 3: Ensure sustainability of Tuna and Bill fish and offshore resources
Objective 3.1: To revise and implement management tools and mechanisms.

Goal 4: Preserve key marine habitats
Objective 4.1: To strengthen the existing marine protected areas network.

Goal 5: Promote safe mineral exploration in Seychelles waters
Objective 5.1: To implement the best environmental safeguards in exploration.

Support Programmes

The following Support Programmes have been identified to achieve the above Goals and Objectives:

- Inshore Fishery Conservation Programme
- Tuna and Billfish Management Programme
- Marine Coastal Assessment and Research Programme
- Marine Protected Areas Programme
- Oil and other Minerals Exploration and Extraction Management Programme

Note: the Marine Coastal Assessment and Research and the Marine Protected Areas Programmes have been bundled into an integrated Marine Ecosystems project which is currently being considered by the Global Environment Facility through the World Bank.

Action Plan: Fisheries and Marine Resources/Processes

GOAL1: MANAGE INSHORE FISHERIES SUSTAINABLY				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To revise and implement management tools and instruments	Number of documents and mechanisms	MAMR, SFA	Government support
Support Programme	**Inshore Fishery Conservation Programme**			
Results	Comprehensive strategy and policy Improved institutional effectiveness Stability in fish stocks and protection of habitats Improved scientific knowledge and awareness	New Strategy and Plans Reduction in inshore over-capitalisation	MAMR, SFA	Technical Assistance. Human & financial resources
Activities	• Fishery Strategy and Policy • Institutional and economic assessment • Resource Management Plans. • Stock assessment, statistical review and database. • Recreational fishery assessment. • Improved enforcement, extension and education campaign. • Training.	Policy documents Management Plans Scientific reports New statistical methods and database New data Improved compliance Number of trained personnel	SFA	Technical Assistance. Human & financial resources

GOAL 2: ENSURE SUSTAINABILITY OF TUNA AND BILL FISH AND OFFSHORE RESOURCES				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To revise and implement management tools and instruments	Number of documents and mechanisms	MAMR, SFA	Government support
Support Programme	**Tuna and Billfish Management Programme**			
Results	Management system for semi-industrial fishery Bio-economic information. Improved institutional effectiveness Sustainability of the fishery Increase in scientific knowledge.	Reduction in illegal fishing. Data query Increased statistics Reports	MAMR, SFA	Government support

-continued-

Activities	• Bio- economic assessment • Resource Management Plans for semi-industrial fishery • Stock assessment, data collection and database • Monitoring, control and enforcement • Marine mammal avoidance technology • Training	Bio-economic study Management Plan Scientific reports Stock assessment programmes New database Marine mammals protection Improved compliance Number of trained personnel	SFA, Coast Guards	Technical Assistance. Human & financial resources

GOAL 3: PROMOTE SAFE MINERAL EXPLORATION IN SEYCHELLES WATERS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To implement the best environmental safeguards in exploration.		SNOC	Government support
Support Programme	**Oil and other Minerals Exploration and Extraction Management Programme**			
Results	Environmentally sensitive areas known Existing mechanisms updated Environment in exploration area safeguarded	Risk of accidents reduced Increased control New information	SNOC	Technical Assistance. Human & financial resources
Activities	• Sensitive areas mapping • Codes of Conduct and Guidelines • Model Petrol Agreement reviewed • Awareness and advocacy programme • Training	Sensitive Area Atlas Guidelines Agreement Number of trained staff	SNOC	Technical Assistance. Human & financial resources

Thematic Areas Action Plan
Thematic Area:Water, Sanitation and Waste
Water Management

Introduction

The population of Seychelles is supplied with water mostly derived from small streams. While rainfall is abundant, on average 2,200 millimetres annually, potable water is a scarce resource in Seychelles, due to the steep topography and low retention capacity of the soil. The flow of local streams is erratic, and falls to very low values during periods of drought. The maintenance of the water supply during such periods requires the provision of substantial storage reservoirs.

To date only one catchment, that of the Rochon river, has been exploited. Storage available in the existing La Gogue and Rochon reservoirs is inadequate to cater for the existing and future water demands. There are four main water treatment works on Mahe.

The 1993 constitution defines access to potable water as a basic right of all Seychellois. To date, about 20% of the population are still using untreated water, often from local streams. The average per capita consumption of water on Mahe is 140 litres a day which adds up to a total net demand of 14,500 kilolitres a day.

The deficit between water supply and demand amounts to 4,141kl a day and will rise to 16,175 kl a day based on today's supply figures.

The main institution involved in water resources management is the PUC, which is responsible for the provision of safe drinking water to the populace. Other relevant institutions are the Ministry of Environment and Transport, Ministry of Health and Ministry of Land Use and Habitat. Water tariffs are uniformly established for the whole country.

Review of EMPS 1990 – 2000 Period

The previous EMPS clearly stated a policy for water resources management, namely the provision of safe drinking water to 95% of the population by the year 1995. In order to achieve this goal the EMPS identified a number of large scale investments:

	Project Title	EMPS Project	EMPS Project Cost in SR	Total Project Cost in SR	Status
1	Set Standards for Air and Water quality	B.1	230,000	270,000	completed
2	Mahe Integrated Water Supply Project	E.1	331,000,000		partly discontinued[1]
3	Mahe Water Distribution	E.2	44,000,000		completed
4	Rehabilitation & upgrading of Le Niol Treatment Works	E.3	3,500,000	9,200,000	ongoing
5	La Digue Water Supply Project	E.4		6,900,000	completed
6	Praslin Water Supply - Phase II	E.5	850,000	1,222,000	completed
7	Assess Water Resources and prepare Water Management Plan	E.6	4,250,000		started but discontinued

[1] Modified version of the project is being implemented

Despite much progress, the above stated policy objective has not been achieved. This is due to the fact that the Mahe Integrated Water Supply project, which included amongst other investments the building of a dam and associated treatment works at Grand Anse river was not completed. After extensive studies, government decided not to implement the dam component of the project based on its immense environmental and financial implications. Other components, such as the south Mahe transmission network will be undertaken.

It is important to note that some 20 projects have been implemented outside the EMPS framework with a total cost of SR 275 million. They include large infrastructural investments as well as rehabilitation and improvements to existing facilities, e.g. installation of desalination plants, improvements to the existing transmission and reticulation systems, augmentation of treatment works.

Main strengths of EMPS 1990 – 2000

- Policy clearly defined.
- Large Investment Programmes clearly identified.
- Institutional and human resources aspects considered.

Main limitations of EMPS 1990 – 2000

- Despite much progress, main policy objective not achieved.
- Concentration of large investment programmes only.
- No mechanisms for revision of project activities and inclusion of new projects.
- No inclusion of small scale activities, such as demand reduction.

Issues and Management Priority Areas

Government has formulated a policy on water, which aims at providing 95% of the population with potable water by the year 2010.

Today, about 20% of the population still use untreated water. Development in the upper hills is polluting watercourses and catchments. It is furthermore obvious that there already exists a shortage of supply of water during drought periods. Water supply situation in the South and south-west of Mahé is even worse than that of North Mahé as there are no storage facilities available in the South.

Being aware of the situation, Government has studied the situation very carefully with the assistance of consultants, in particular Sir Alexander GIBB & Partners, over the last decade. Notable were studies for a dam at Grand Anse and the feasibility of converting an existing brackish water lagoon to a fresh water lagoon. Both concepts were not implemented due to financial and environmental considerations

Management priority areas

Based on previous studies and the current situation, the following priority areas have been agreed upon in the plan period to rectify the present and future problems of sustainability in the water sector:

- Measures to reduce water demand need to be promoted.
- Measures to improve water supply need to be promoted.
- An effective integrated water management needs to be established.

Goals and Objectives

Goals and objectives of the sector are the following:
Goal 1: Promote measures to reduce demand
Objective 1.1: Reduce water demand and subsequent consumption reduced

Goal 2: Promote sustainable measures to increase potable water supply to the population
Objective 2.1: Increase water supply through future sustainable source developments
Objective 2.2: Increase water supply through improvements of safe yield of existing water sources
Objective 2.3: Increase water supply through improvements to the transmission/reticulation systems
Objective 2.4: Increase water supply through improvements to water treatment works

Goal 3: Establish effective integrated water management system
Objective 3.1: Institutional capacity and human resources improved

Support Programmes

The following support programmes have been identified to achieve the above goals and objectives:

- Water Demand Management Programme
- Desalination Programme
- Improvements of Safe Yields of Existing Water Sources Programme
- Improvements to Transmission/Reticulation Systems Programme
- Improvements to Water Treatment Works Programme
- Water Management Institutional and Human Resources Capacity-building Programme
- Water Shed Management Programme *(see the Forestry Biodiversity Conservation Programme in the Thematic Area of Biodiversity, Agriculture and Forestry)*

Action Plan: Water Management

GOAL1: PROMOTE MEASURES TO REDUCE DEMAND ON WATER RESOURCES				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Reduce water demand and subsequent consumption	Domestic, commercial and industrial water demand increase less than about 4% annually	PUC, MET, private sector, civic society	Government support
Support Programme	**Water Demand Management Programme**			
Results	Reduction of un-accounted for water Non-increase in per-capita water consumption	Reduced from 27% to 20% by 2010 Non-increase of 140l/h/d by 2010	PUC, MET, private sector, civic society	Budget, Society willing to co-operate
Activities	• Reduction of un-accounted for water • Tariffs adjustments • Advisory services and consumer awareness • Rainwater harvesting and untreated water systems usage • Trade effluent charges • Re-use of wastewater	Reduced from 27% to 20% by 2010 Water per kl more expensive Increase installation of fine spray showers, water saving toilets, water storage tanks, pressure reducing valves Increase installation for rainwater harvesting and untreated water systems for watering gardens, car washes Trade effluent charges introduced Wastewater re-used	PUC, MET, private sector, civic society	Public and political support and co-operation

GOAL2: PROMOTE SUSTAINABLE MEASURES TO INCREASE POTABLE WATER SUPPLY TO THE POPULATION				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Increase water supply through future source developments	Water supply increased by at least 8000 kl/day	PUC, private sector	Government support, Budget
Support Programme	**Desalination Programme**			
Results	Increased water supply through installation of desalination plants	Water supply on Mahe increased by 10,00kl/day, on Praslin by 600kl/day and on La Digue by 300kl/day	PUC, private sector	Government support, Budget
Activities	• Install reverse-osmosis desalination plant at Providence • Install reverse-osmosis desalination plant at Anse Boileau • Install reverse-osmosis desalination plant on Praslin • Install reverse-osmosis desalination plant on La Digue	Water supply on Mahe increased by 5000kl/day Water supply on Praslin increased by 600kl/day Water supply on La Digue increased by 300kl/day	PUC, private sector	Government support, Budget

Note:

- IOT has installed two desalination plants with a supply of 350kl/day which will only be used if PUC cannot provide requested water demand (such as drought periods)
- Possible installation of desalination plants on outer islands by private sector, e.g. hotel development

GOAL2: PROMOTE SUSTAINABLE MEASURES TO INCREASE POTABLE WATER SUPPLY TO THE POPULATION				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Increase water supply through improvements of safe yield of existing water sources	Water supply increased by at least 1000 kl/day	PUC, private sector	Government support, Budget
Support Programme	**Improvements of safe yield of existing water sources Programme**			
Results	Increased water supply on Mahe	Water supply on Mahe increased by 1000kl/day	PUC, MET, private sector	Government support, Budget
Activities	• Augmentation of Anse Royale Water Supply Scheme • Bougainville Water Supply Scheme • Baie Lazare Water Supply Scheme • Augmentation of Grand Anse Water Supply Scheme • Small Scale Water Supply Schemes in South Mahe • Monitoring and protection of watersheds and River Reserves (*see Forestry sub-theme)*	Water supply on Mahe increased by 500kl/day Supplementation Source Water supply increased by 500kl/day	PUC, MLGS MET,	Government support, Budget

Note:
- NBSAP project Integrated Management of Water Catchments on Mahe, Praslin and La Digue
- Land Bank Schemes

GOAL2: PROMOTE SUSTAINABLE MEASURES TO INCREASE POTABLE WATER SUPPLY TO THE POPULATION				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Increase water supply through improvements to the transmission and reticulation system	New pipelines being put in place, old pipelines being replaced,	PUC, private sector	Government support, Budget
Support Programme	**Improvements to Transmission/Reticulation Systems Programme**			
Results	Increased and extended water supply	Water supply increased through the availability of new and more pipeline	PUC, private sector	Government support, Budget
Activities	• Transmission pipeline from Port Glaud to Anse Royale • Replacement of Beau Vallon/Glacis pipeline • Replacement of Union Vale/North East Point pipeline	Additional reliable yield	PUC	Government support, Budget

GOAL2: PROMOTE SUSTAINABLE MEASURES TO INCREASE POTABLE WATER SUPPLY TO THE POPULATION				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	To increase water supply through improvements to water treatment works	Water quality and quantity treated in existing treatment works improved	PUC	Government support, Budget
Support Programme	**Improvements to Water Treatment Works Programme**			
Results	Increased water quality and quantity	Water quality and quantity treated in existing treatment works improved	PUC, private sector	Government support, Budget
Activities	• Rehabilitation &Augmentation of Le Niol Treatment Works • Augmentation of Hermitage Treatment works • Upgrading of existing partial treatment plants to full treatment plants	Water quality and quantity treated improved	PUC	Government support, Budget

GOAL3: ESTABLISH EFFECTIVE INTEGRATED WATER MANAGEMENT SYSTEM				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Institutional capacity and human resources improved	Effective water management institutions set up Number of qualified human resources increased	PUC, MET, other GOS agencies, private sector, NGOs	Willingness to improve existing set-up Government support, Budget
Support Programme	**Water Management Institutional and Human Resources Capacity-Building Programme**			
Results	Integrated water management system is operating effectively	Water supply service to public improved based on safer environmental practices	PUC, MET, other GOS agencies, private sector, NGOs	Willingness to improve existing set-up, Government support, Budget
Activities	• Training • Strategy for employment of new staff • Purchase additional operational equipment • Set up water management board	More trained Seychellois specialists Monitoring services improved Water management improved based on safe environmental practices	PUC, MET, other GOS agencies, private sector, NGOs	Government support, Budget Willingness to set board up

Thematic Areas Action Plan
Thematic Area:Water, Sanitation and Waste
Sanitation

Introduction

Prior to 1973, there was no central sewerage system in Seychelles. Currently, the sanitation service level in Seychelles is high though it is mainly based on individual systems. There are currently six public water borne sanitation systems although others are planned. These include the greater Victoria and East Coast housing systems. Currently about 15% of the population are served by these systems. Some seven large hotels also have their own individual treatment plants.

According to the last census, 100% of houses were served by sanitation systems of which 78% have flush toilets emptying into septic tanks, and the rest are served with pit latrines. The common use of flush toilets compares well with the high number of water connections. However, many of the individual systems are not functioning properly and constitute a significant source of pollution.

In the past the provision of adequate sewerage systems, like water, electricity, health and education has been regarded as a basic right and the satisfaction of needs has been a guiding principle of the overall development strategy.

The main institution involved in wastewater management is the PUC as the entity responsible for provision of adequate sanitation to the populace. The MET is the parent Ministry of the PUC in these matters and is responsible for pollution monitoring and management. The Ministry of Health is also involved, as part of its mandate is to protect public health.

Review of EMPS 1990 – 2000 Period

The EMPS did not state a clear policy. However, it identified major areas of concern and recommended certain actions, which included a number of large scale investments:

Despite progress, no major centralised wastewater treatment work has been built in the last 10 years. However, the issue has been studied extensively and the greater Victoria Sewerage project is under implementation.

Several projects have been undertaken outside the EMPS framework, mainly studies for centralised wastewater treatment systems and responses to emergencies caused by the malfunctioning of the Victoria Sewage Treatment Plant.

	Project Title	EMPS Project	EMPS Project Cost in SR	Total Project Cost in SR	Status
1	Implementation of International Convention for the Prevention of Ship Pollution (MARPOL convention)	B.7	440,000	440,000	completed
1	Greater Victoria Sewerage Project Phase II	C.1	35,000,000	120,000,000	Ongoing (just started)
3	Study on improved sewage disposal for dispersed homes and villages	C.10	1,350,000	1,350,000	Ongoing
4	Greater Victoria Sewerage Project Phase III	C.2	59,250,000		not started
5	Beau Vallon Bay Sewerage Project	C.3	45,800,000	80,000,000	not started
6	Roche Caiman Sewerage Project	C.4	9,000,000		Completed
7	Anse Aux Pins/Anse Royale Sewerage Study	C.5	3,500,000		not started
8	Anse Volbert Sewerage Study	C.6	1,200,000	1,600,000	Almost completed
9	Anse Volbert Sewerage Project	C.6	16,000,000		not started

Main strengths of EMPS 1990 – 2000

- Large Investment Programmes clearly identified.
- Main problems of the sector clearly identified.
- Institutional and human resources aspects considered.

Main limitations of EMPS 1990 – 2000

- No main policy objective stated.
- Concentration of large investment programmes only.
- No mechanisms for revision of individual project activities.
- No inclusion of small scale activities, such as proper management of septic tanks.

Issues and Management Priority Areas

There is no explicit policy formulated for the sanitation sector as there is for water. As mentioned earlier, the 1994 census indicated that 100% of all dwellings were served by sanitation systems of which 78% have flush toilets. The vast majority of systems are individual systems, typically septic tanks and pit latrines.

A suggested policy statement could be as follows: The 1993 constitution of Seychelles defines the provision of adequate sanitation as a basic right of all Seychellois. The principal objective is to serve the entire population with sanitation systems by the year 2010: with water-borne sewerage systems 90% of the population of greater Victoria and 70% of the population of Beau Vallon area representing about 30% of Mahé's population. The remaining balance shall be served by individual sanitation systems, mainly septic tanks, representing about 60% of Mahé's population; the usage of pit latrines shall be reduced to 10% by the year 2010

The areas of greater Victoria, Anse Aux Pins, Beau Vallon and Anse Volbert, Praslin qualify for central sewerage systems. Based on PUC guidelines commercial and industrial developments will be required to have their own sewage pre-treatment plants, so as to ensure that effluent discharges from enterprises into public sewers conform to stipulated standards. This will facilitate the efficient operation of the system, which is primarily designed to handle domestic sewage.

Management Priority Areas
Based on previous studies and the current situation, the following priority areas have been agreed upon in the plan period to rectify the present and future problems of sustainability in the wastewater management sector.

- Continue implementation of centralised sewerage treatment systems
- Minimise environmental impact of wastewater in remote areas through the use of appropriate technology
- Increase knowledge and build capacity (human and institutional) with regard to wastewater treatment systems.

Goals and Objectives

Sectoral goals and objectives include the following:

Goal 1: Manage wastewater sustainably
Objective 1.1: To treat and dispose of wastewater sustainable in highly populated areas
Objective 1.2: To treat and dispose of wastewater sustainable in less densely populated areas
Objective 1.3: Institutional capacity and human resources improved

Support Programmes

The following support programmes have been identified to achieve the above goals and objectives:
- Centralised Sewerage System Programme
- Individual Wastewater Treatment Systems
- Wastewater Management Institutional and Human Resources Capacity-Building Programme

Action Plan: Sanitation

GOAL1: MANAGE WASTEWATER SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators (OVI)**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	To treat and dispose of wastewater sustainably in highly populated areas	Centralised treatment plants have been built	PUC, private companies	Government support, Budget
Support Programme	**Centralised Sewerage System Programme**			
Results	Wastewater disposed into the environment (ground, sea) will be of non-harmful quality	Sea water and ground water pollution reduced	PUC, private companies	Budget
Activities	Greater Victoria sewerage project phase II • Beau Vallon Bay sewerage project • Anse Aux Pins/Anse Royale sewerage project • Praslin integrated wastewater management project	Population equivalent of 65,000 of greater Victoria area connected Population equivalent of 30,000 of Beau Vallon area connected. Anse Aux Pins/Anse Royale Area connected. All densely populated areas connected.	PUC, private companies PUC, private companies	Budget

GOAL1: MANAGE WASTEWATER SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	To treat and dispose of wastewater sustainably in less densely populated areas	Sanitation provided with 100% coverage	PUC, MET, private sector, civic society	Public co-operation, financing mechanisms in place
Support Programme	**Individual Wastewater Treatment Systems Programme**			
Results	Wastewater disposed into the environment (ground, sea) will be of non-harmful quality	Sea water and ground water pollution reduced	PUC, MET, private sector, civic society	Public co-operation, financing
Activities	• Improved usage of septic tanks • Decreased usage of pit latrines • Provision of sanitary facilities where not available • Provision of collection facilities for wastewater generated by ships	60% of population use well functioning septic tanks. Usage of pit-latrines reduced to 10%. Sanitation coverage of 100% achieved. Wastewater collection facilities at Port Victoria provided.	PUC, MET, private sector, civic society MET	Public co-operation, financing Budget

GOAL1: MANAGE WASTEWATER SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Institutional capacity and human resources improved	Effective wastewater management institutions set up Number of qualified human resources increased	PUC, MET, other GOS agencies, private sector, NGOs	Willingness to improve existing set-up Government support, Budget
Support Programme	**Wastewater Management Institutional and Human Resources Capacity-building Programme**			
Results	Integrated wastewater management system is operating effectively	Wastewater disposal systems improved based on safer environmental practices	PUC, MET, other GOS agencies, private sector, NGOs	Willingness to improve existing set-up, Government support, Budget
Activities	• Training • Strategy for employment of new staff • Purchase additional operational equipment • Establish integrated wastewater management	More trained Seychellois specialists. More Seychellois employed. Monitoring services improved. Wastewater management improved.	PUC, MET, private sector	Government support, Budget

Note:
- Set standards for wastewater disbursed into environment with associated legislation (domestic, commercial, industrial)
- Wastewater standards/pollution monitoring

Thematic Areas Action Plan
Thematic Area:Water, Sanitation and Waste
Waste Management

Introduction

Waste is clearly defined in the Environment Protection Act (1994). Waste means garbage, refuse, sludge, construction debris and other discarded substances resulting from industrial and commercial operations or from domestic activities. The 1995 ITW report puts the component of the municipal waste generated at 40,000 tonnes per annum (110 tonnes/day). The biodegradable fraction has increased to around 33% with a volume of about 60 tonnes per day. Total generated waste in 1995 was 24,000 tonnes. It is estimated to rise to 34,800 tonnes a year by 2016. Per capita waste production is thought to be 0.34 tonnes per year.

For domestic waste the collection system currently functions in an adequate manner. In 1995 domestic waste was estimated to be 8,000 tonnes annually. Treatment is inadequately dealt with. Waste is not sorted, and dumped at a site located on the East Coast land reclamation. Sanitary landfills at Anse Royale and La Digue are presently under construction.

Industrial waste originates largely from the fishing industry. Some of this waste is processed as animal feed. The capacity of the animal meal plant is inadequate, but it is being augmented.

The main institutions involved in solid waste management are SWAC and MET. The private company STAR has been contracted to collect and treat waste. Tariffs are uniformly established. Education and awareness programmes have been implemented and are ongoing.

Review of EMPS 1990 – 2000 Period

The EMPS did not state a clear policy for this thematic area. However, it identified major areas of concern and recommended certain actions, which included a number of large-scale investments as outlined below:

	Project Title	EMPS Project	EMPS Project Cost in SR	Total Project Cost in SR	Status
1	Contingency Plan for Marine Pollution from Ships	B.6	1,935,000		Ongoing
2	Implementation of International Convention for the Prevention of Ship Pollution	B.7	440,000	440,000	Completed
5	Feasibility study for regional management of hazardous wastes	C.11	1,900,000		Not started
12	Treatment of Waste Oil	C.7	690,000		
13	Solid Waste Treatment Plant and Plan for Mahe	C.8	27,000,000	106,500,000	Ongoing
14	Disposal of Sludge from Victoria Power Station	C.9	60,000	60,000	Ongoing

Part of the large investment project has been implemented and has therefore improved solid waste management considerably. However, due to the fact that the sanitary landfill is still under construction, waste continues to be disposed of at a dumping site on the Mahe East Coast reclamation, and pollution occurs in marine waters.

Furthermore, Victoria harbour lacks adequate facilities for the collection and disposal of waste (only an engineering study was carried out under EMPS project B.6).

Several projects have been undertaken outside the EMPS framework, mainly the study and implementation of integrated solid waste management on La Digue Island.

Main strengths of EMPS 1990 – 2000

- Large Investment Programmes clearly identified.
- Institutional and human resources aspects considered.
- Large Investment Programme implemented and therefore reduction of environmental impact of solid waste minimised.

Main limitations of EMPS 1990 – 2000

- No clear policy formulated.
- No mechanisms for revision of individual projects.
- Many ad-hoc activities for litter collection and beautification were implemented with government budgetary funding outside the plan framework.
- Projects resulted in end-of-pipe treatment with little attention to minimising and recovery of waste.
- At least two of the major projects resulted only in plans.

Issues and Management Priority Areas

There is no explicit policy formulated for the solid waste sector. However, much progress has been achieved and previous EMPS strategies have been implemented successfully. The main environmental issues to be solved are pollution of ground water, rivers and marine waters, human health risks and aesthetic problems. Waste disposal at sea needs also to be dealt with on a regional basis.

The suggested waste management policy statement for the EMPS 2000 - 2010 is as follows: The 1993 constitution of Seychelles defines the provision of adequate sanitation as a basic right of all Seychellois. The principal objective of government's policy is therefore to collect, treat and dispose of all solid waste generated in a sustainable manner by the year 2010.

Management Priority Areas:

- Continue implementing integrated solid waste management programme.
- Support or implement regional programmes for the control of waste disposal at sea.
- Support or implement regional programmes for the disposal of hazardous wastes.
- Encourage waste minimisation strategies.
- Encourage composting schemes where appropriate.
- Make solid waste management financially sustainable.

Goals and Objectives

The main sectoral goal and objectives for the Plan period are as follows:

Goal 1: Manage waste sustainably
Objective 1.1: To manage and dispose of solid waste in an ecologically sustainable manner
Objective 1.2: To improve institutional capacity and human resources for solid waste management

Support Programmes

The following support programmes have been identified to achieve the above goal and objectives:

- Integrated Solid Waste Management Programme – Mahe, La Digue, and other islands (excluding Praslin).
- Integrated Solid Waste Management Programme – Praslin.
- Solid Waste Management Institutional and Human Resources Capacity-Building Programme.

Action Plan: Solid Waste Management

GOAL1: MANAGE SOLID WASTE SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	To treat and dispose of solid waste in an ecologically sustainable manner	All solid waste generated is being disposed of with sound environmental practices	SWAC, private sector, civic society	Government support, Budget Financing secured, public willing to support programme
Support Programme	**Integrated Solid Waste Management Programme for Mahe, La Digue and other islands (excluding Praslin)**			
Results	No environmental damage caused by solid waste	Health of environment will have improved	SWAC, private sector, civic society	Government support. Financing secured, public willing to support programme
Activities	• Integrated Solid Waste Management on main islands • Management of hazardous waste • Public sensitisation campaign	Solid waste is collected, treated and disposed of sustainably Hazardous waste is collected, pre-treated and exported (scrap metal, waste oil, PET) Solid waste is sorted at source; composting increased	SWAC, MET, Public	Budget Public understanding & co-operation

GOAL1: MANAGE SOLID WASTE SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	To treat and dispose of solid waste in an ecologically sustainable manner	All solid waste generated is being disposed of with sound environmental practices	SWAC, private sector, civic society	Government support. Financing secured, public willing to support programme
Support Programme	**Integrated Solid Waste Management Programme for Praslin**			
Results	No environmental damage caused by solid waste	Health of environment will have improved	SWAC, private sector, civic society	Government support. Financing secured, public willing to support programme
Activities	• Integrated Solid Waste Management • Management of hazardous waste • Public sensitisation campaign	Solid waste is collected, sorted and land-filled Hazardous waste is collected and sent to Mahe Waste sorted at source, composting increased	SWAC	Budget, public co-operation

GOAL1: MANAGE SOLID WASTE SUSTAINABLY				Latest Update: December 1999
	Description	**Objective Verifiable Indicators**	**Lead & Delegated Responsibilities**	**Assumptions**
Objective	Institutional capacity and human resources improved	Enhance capacity of waste management institutions Number of qualified human resources increased	SWAC, MET	Government support, Budget
Support Programme	**Institutional and Human Resources Capacity-Building Programme for Solid Waste Management**			
Results	Integrated solid waste management system is operating effectively	Wastewater disposal systems improved based on safer environmental practices	PUC, MET, other GOS agencies, private sector, NGOs	Willingness to improve existing set-up, Government support, Budget
Activities	• Training • Strategy for employment of new staff • Purchase additional operational equipment	More trained Seychellois specialists More trained Seychellois employed Monitoring services improved	SWAC	Government support, Budget

Thematic Areas Action Plan
Thematic Area: Tourism and Aesthetics

Introduction

Falling prices for copra, Seychelles' traditional economic mainstay, in the 1970's and the opening of the international airport in 1971 induced a growth in tourism that continued through the 1970's and 1980's. Tourism emerged in the 1980's as the most important sector in the Seychelles' economy and this sector is now the main pillar of the Seychelles' economy both in terms of foreign exchange earnings and in employment creation.

The tourist trade in Seychelles is facilitated by a pleasant climate, tropical vegetation, beautiful beaches, clear and warm seas, a low crime rate and a population free of racial tension. In 1971, the number of visitors was 3170 and by 1997 this had risen to 130 070. The number of visitors presently averages around 120 000 –135 000. Visitors come mainly from Europe, Africa and Asia.

At the initial stages of tourism industry development, the focus was mainly on sun, sand and sea. Over the years tourists have become more discerning and more environmentally conscious. The private sector, a substantial part of which is in local hands, has played an important part in the industry by promoting and investing in nature and adventure tourism.

There is, therefore, a growing awareness that the continued emphasis on quality in the tourism sector should be within the framework of making Seychelles an important destination for eco-tourism. Protected areas, notably, Ste. Anne Marine Park, the Vallee de Mai and Cousin Special Reserve, receive significant visitor numbers each year. Destinations such as Bird Island, that sell a particularly environmentally-centered product have bed occupancy rates far in excess of the national average. Environmental concerns are reflected in a specific chapter in the Seychelles Tourism Master Plan, a document that is still in draft form.

The main institution is the Ministry of Tourism and Civil Aviation. The Tourism Advisory Board and the Tourism Marketing Authority have been recently set up. The latter organisation has the remit for marketing the Seychelles which includes eco-tourism products.

Review of EMPS 1990 – 2000

There was no specific programme for tourism in the previous EMPS. This was a major shortcoming of the Plan, although several projects did have a relationship with the thematic area in general. The relevant projects include water, sanitation and sewerage projects, the Rehabilitation of Curieuse National Park project, Coastal Zone Management Plans.

Main strength of EMPS 1990 - 2000

- Basic infrastructure projects (sewerage, etc.) identified and some implemented.
- Biodiversity programmes implemented, thus indirectly supporting eco-tourism.

Main limitations of EMPS 1990 - 2000

- There was no clear policy formulated for tourism in general and eco-tourism specifically.
- No specific programme for tourism was identified.
- Direct linkages of tourism with other EMPS programmes were not explicitly identified.
- Tourism master plan drafting was initiated only in 1998, towards the end of the EMPS period.

Issues and Management Priority Areas

Government's policy for tourism has for the most part tried to incorporate an element of environment conservation. This can be seen in the policy to limit sizes of hotels and to develop harmonious architecture and style, as well as those which encourage cultural aspects e.g. the Kreol Festival, and those which expose natural assets in a benign way such as the SUBIOS underwater festival. More recently all new tourism establishments are subject to Environmental Impact Assessments and international certification is being explored.

However, despite good intentions and concrete progress, there have also been some shortcomings and negative impacts. These include inappropriate land use and zoning, destruction of natural habitats, malfunctioning of sewerage plants, continued sale of marine souvenirs and use of large amounts of natural resources such as water and fossil fuels. The negative impacts are spreading as tourists move to other islands.

Such problems have mainly occurred due to the lack of an overall detailed master plan for tourism and land use in Seychelles. As a result appropriate policies, practices and monitoring systems have not been developed, there is poor understanding by operators and tourism officers of environmental issues, and old facilities continue to operate. The draft Tourism Master Plan will be finalised and put in place by the year 2000. The following priority areas were identified in the master plan.

Management Priority Areas:

- Develop and implement national eco-tourism policies, codes of conduct and products.
- Limit and control the negative impact of tourism on the environment.
- Limit natural resource consumption and encourage cleaner production in tourism establishments.
- Develop and strengthen institutional capacity to assist in improving tourism environmental management.

Goals and Objectives

Goals and Objectives of the thematic area for the plan period are:

Goal 1: Develop and Market Seychelles as a World Eco-Tourism Destination
Objective 1.1: To facilitate the establishment of eco-tourism as a prime tourism product of Seychelles.

Goal 2: Promote Sustainable Tourism Development in Seychelles
Objective 2.1: To reduce environmental impacts of tourism on the environment.

Goal 3: Promote Sustainable Design and Resources Management in the Tourism Sector
Objective 3.1: To promote sustainable design and to manage resources more sustainably within the tourism sector.

Goal 4: Build Institutional Capacity to Deal with Environmental Management in the Tourism Sector.
Objective 4.1: To improve institutional capacity to deal with environmental sustainability issues.

Support Programmes

The following Support Programmes have been identified to achieve the above Goals and Objectives.

- Eco-Tourism Development and Marketing Programme
- Tourism Environmental Impact Assessment Programme
- Tourism Sustainable Design and Resources Management Programme
- Tourism Environmental Management Capacity-building Programme

Action Plan: Tourism & Aesthetics

GOAL 1: DEVELOP AND MARKET SEYCHELLES AS A WORLD ECO-TOURISM DESTINATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To facilitate the establishment of eco-tourism as a prime tourism product of Seychelles	Eco-tourism as prime tourism product established	Technical Assistance. Human & financial resources	All parties concerned are committed Demand for eco-tourism continues to grow globally
Support Programme	**Eco-Tourism Development and Marketing Programme**			
Results	Differentiation of Seychelles tourism products to include particularly eco-friendly sector Increase in "green" tourism nationally Increased awareness and good practice Established Policy, Codes of Conduct International internet website that markets the "eco" segment of Seychelles tourism destinations and establishments	Number & kind of eco-tourism products increased Number of sensitised establishments Policy and codes Web site established	MTCA, MET, AG's Chambers, SBC, SBS, NGOs, NAVC (ME)	Environmental products and activities are profitable Demand for eco-tourism continues to grow globally
Activities	• Establish eco-tourism Policy and Codes of Conduct, and awareness campaigns. • Capacity-building, monitoring and enforcement • Promote Eco-Labelling and Certification. • Integration of ecological and endemic cultural values into tourism products. • Remove marine souvenirs from the market. • Integrate tourism practices with biodiversity concerns • Establish eco-tourism marketing web-site.	Documents and audio-visual materials. Established codes of conduct. Increase in trained personnel. Eco-Labels and "Green" Certification adopted by industry. Cultural tourism introduced Improved public facilities. Marine souvenirs and other 'unfriendly' crafts phased out. Strategies for endemic and endangered species, habitats and protected areas integrated with those of tourism. Eco-tourism web-site.	Technical Assistance. Human & financial resources	Government commitment. Eco-Label requirements are realistic. Human and financial resources available.

GOAL 2: PROMOTE SUSTAINABLE TOURISM DEVELOPMENT IN SEYCHELLES				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	Reduce the negative impacts of tourism on the environment	Impacts reduced	The Tourism Trade	Commitment by Tourism Industry
Support Programme	**Tourism Impact Assessment Programme**			
Results	Reduction of unnecessary disturbance of the environment. Improved enforcement of EIA outcomes Improved community involvement in tourism EIAs and greater accountability from tourism establishments to local communities	EIAs rigorously implemented and monitored Carrying capacity & LAC Adopted Substantial increase in community involvement in EIA's	The Tourism Trade MTCA, MET, MAMR SBS NGOs	Operators realise value of the environment and understand the need for protection Capacity for public participation exists within communities
Activities	• Develop Good Practice Guidelines and Strategies for all tourism operators & contractors • Determine the tourism carrying capacity and limits of acceptable change (LAC) for the country and for specific sites/areas • Build capacity for community involvement in development debates through ongoing education programmes	"Good Practice" in use by tourism trade LAC concept in use Capacity built	MTCA, MLUH, MET, SBS, MOH, MAMR, NGO	Government commitment Human resources available

GOAL 3: PROMOTE SUSTAINABLE DESIGN AND RESOURCES MANAGEMENT IN THE TOURISM SECTOR				Latest Update December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To promote sustainable design and to manage resources more sustainably within the tourism sector	Tourism industry is environmentally friendly	Tourism Trade	All parties are committed
Support Programme	**Tourism Sustainable Design and Resources Management Programme**			
Results	Sustainable building design Sustainable energy use Reduction of traditional energy consumption Better use of water by the tourism industry Minimisation of waste by tourism industry Improved coastal protection Improved beach and dune management Improved integrated pest management of tourism establishments. Improved natural landscaping and development of indigenous species nurseries in larger tourism establishments Eliminate products containing phosphorous compounds	Increased use of sustainable design and construction principles Increase in number of hotels using cleaner energy alternatives Increase in number of hotels implementing water conservation measures Reduction in per capita waste production by tourism industry Increase in use of indigenous species in landscaping Reduction in beach erosion Reduction in mangrove destruction Reduction in use of inorganic pesticides and phasing out the use of products containing phosphorous compounds ODS's phased out	Tourism Trade MTCA, MLUH, SBS, MIIB	Government commitment Alternatives available, easy to use and affordable Acceptance from tourism industry
Activities	• Production of handbook outlining general principles of sustainable environmental management in the tourism industry. • Campaign to promote the use of bio-climatic and sustainable architecture. • Campaign to promote low-energy alternatives *(see Energy and Transport Thematic Area)*.. • Water conservation campaign. • Incentives to reduce waste and encourage use of products with low waste components and high degradability. • Phase out Ozone Depleting Substances (ODS) in tourism establishments. • Develop human capacity for above campaigns.	Handbook in use Local knowledge increased Alternative technology used Incentives being applied ODS phased out in tourism establishments	MIIB, MOE, MLUH, SBS,	Foreign Expertise is available Photovoltaic energy is viable

GOAL 4: BUILD INSTITUTIONAL CAPACITY TO DEAL WITH ENVIRONMENTAL MANAGEMENT IN THE TOURISM SECTOR.				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To improve institutional capacity to deal with environmental sustainability issues.	Capacity built	MTCA	Active participation by private sector
Support Programmes	**Tourism Environmental Management Capacity-building Programme**			
Results	Specific and appropriate institutional support to tourism industry with respect to sustainable environmental management of tourism establishments.	Forum which meets and discusses regularly and gives guidance to policy	MTCA	Active participation by private sector
Activities	• Environmental management training for senior government officials and for private sector representatives. • Identify institutional issues required for effective environment management. • Improve communication between government and tourism industry through establishment of environmental management forum. • Address long-term institutional needs of tourism industry with respect to environmental management.	Capacity built Forum work in progress Institutional set-up improved	MTCA	Active participation by all players. Cooperation between government and private sector Adequate qualified staff

Thematic Areas Action Plan
Thematic Area:Environmental Economics, Mainstreaming and Sustainable Financing

Introduction

The thematic area of Environmental Economics, Mainstreaming and Sustainable Financing is concerned with integrating environment and economics; it is about how to factor in environmental cost and benefit into economic analysis; how to put an economic value on an intangible thing like the benefit one gains from an unspoiled environment; how to bring environmental consideration into the decision-making process, both at the macro and sectoral level; how to generate the finance required for protecting the environment in a sustainable manner. Ultimately, it is about how to use economic tools to resolve environmental problems.

Seychelles has achieved remarkable economic development in the years since independence with a per capita income of USD7500 in 1999 which represents a 650% increase from some USD1000 in 1976. The economic structure of Seychelles is characterised by a relatively small primary (4% of GDP) and secondary (22% of GDP) sectors and a large tertiary sector (74% of GDP). Tourism continues to be the dominant sector and along with fisheries, they are the major foreign exchange earning activities.

Given the set-up of the Seychelles economy, with heavy dependence on tourism and fisheries, it is clear that the economy cannot afford to bear the costs associated with environmental degradation in the long-term. With an estimated direct value of SR 1.46 billion according to the Seychelles National Biodiversity Assessment 1997, there are strong justifications for continued protection even at an annual estimated cost of SR 198 million.

Review of EMPS 1990 – 2000

The EMPS 1990 - 2000 has had minimal impact where environmental economics and sustainable financing of projects is concerned. The only environmental economics related project in the EMPS was the Annual Sustainable Development Audit, which was discontinued. Outside of the EMPS, a few relevant projects were implemented but most were not successful. Environmental economic valuation was used as part of the Biodiversity Assessment in 1998. However, the Grand Anse Project was never completed.

Economic activities involving the production of eco-friendly products have been very limited. The main constraint has been a lack of economic incentives to encourage the private sector to undertake the production of eco-friendly products. In cases where attempts were made to undertake activities such as recycling, the projects have encountered financial problems and a lack of demand for such products. The most successful is the retreading of tyres where the company, MEC, retreads about 4000 to 5000 tyres annually, about 10 percent of the total stock of old tyres disposed every year; growth is limited due to cheap imports.

Main strengths of EMPS 1990 - 2000

- Identified a Sustainable Audit project.
- Provided a ten-year project-funding framework for the first time.

Main limitations of EMPS 1990 - 2000

- The Sustainable Audit project was discontinued.
- The thematic area was poorly developed.
- New issues and projects were not incorporated.

Issues and Management Priority Areas

Environmental economics is a relatively new field that is still in the process of development. Environmental consideration METs not always form an integral part within the economic decision making process. The tendency in analysing investment is to simply look at the costs and benefits that are internal to the investment. Hence, the external cost is ignored.

GDP as the basic measure for economic growth and performance METs not take into consideration the economic impact of environmental conservation and degradation. The need is to adjust the national accounting aggregate to take into account natural resource capital and environmental damage.

The major constraint with regard to waste management is the cost. Seychelles produces about 40,000 tonnes of waste per annum which costs around SR 31.7 million annually to manage, of which 98% is financed through Government budget. This is financially unsustainable. Alternative sources of financing are needed and it is necessary to minimise the amount of non-biodegradable waste generated.

The fundamental weakness within the EMPS is the lack of built-in sustainable financial mechanism. The current donors' international priority tends to place greater emphasis on eradication of poverty, which is seen as the underlying cause of environmental depletion. However, there are potentially enormous amount of funds available through international NGOs, foundations and similar organisations. NGO and private sector participation in environmental protection in Seychelles is very limited.

With 47% of Seychelles' landmass set up as protected areas there is a heavy financial burden on Seychelles to manage these areas. Currently, Seychelles spends SR 13 million on conservation and management of those areas. Only the Vallée de Mai and Cousin are self-financing. Protected areas must become financially self-sustainable.

Management Priority Areas

Management priority areas have been identified as follows:

- Build the capacity to undertake and use economic valuation of biodiversity.
- Build the capacity to provide decision-makers with information regarding economic impact of environmental conservation and degradation through Green Accounting.
- Use economic incentives and disincentives to encourage the different economic agents to minimise the amount of waste generated by switching to eco-friendly products and/or cleaner production processes.
- Move away from a waste management system that is heavily dependent on Government Budget to one that can finance itself.
- Tap into resources available internationally for biodiversity conservation. This will be done through NGOs, which can tap into funds not necessarily available to Government.
- Build capacity in the use of built-in financial mechanisms to ensure sustainability of programme/projects.

- Find alternatives to Governmental Management of Biodiversity Conservation.
- Ensure that policy/decision-makers are aware of the value and importance of biodiversity conservation.
- Set up a Biodiversity Conservation Fund for Sustainable Economic Development to show the link between biodiversity conservation and development.
- In order to build consensus amongst biodiversity experts and to involve stakeholder participation in sustainable biodiversity conservation, it is proposed that a National Biodiversity Conservation, Research and Development Committee is set up.
- Explore self-financing systems and mechanisms for the management of protected areas.

Goals and Objectives

Goals and Objectives of the thematic area for the plan period are:

Goal 1: Institutionalise the integration of economic and environmental concerns
Objective 1.1: To have the capacity to undertake and use economic valuation of biodiversity.
Objective 1.2: To have the capacity to provide decision-makers with information regarding economic impact of environmental conservation and degradation.
Objective 1.3: To introduce valuation into the Environment Protection Act.

Goal 2: Sustainable financing of waste management
Objective 2.1: To minimise non-biodegradable waste.
Objective 2.2: To create a self-sustaining system of waste management.

Goal 3: Sustainable financing of biodiversity conservation in Seychelles
Objective 3.1: To tap into resources available internationally for NGOs.
Objective 3.2: To build financial mechanisms into all biodiversity programmes/projects.
Objective 3.3: To plough revenue generated through biodiversity back into conservation.
Objective 3.4: To place biodiversity conservation among the top priorities in the decision-making process.
Objective 3.5: To make available adequate financial resources for the management of protected areas.

Support Programmes

The following Support Programmes have been identified to achieve the above Goals and Objectives:
- Environmental Economics Capacity-Building Programme
- Environmental Economics Information Programme
- Development of Economic Valuation in EIA Programme
- Waste Minimisation Incentives Programme
- Self-Financing Waste Management Programme
- Sustainable Financing of NGOs Programme
- Training Programme for Development of Financial Mechanisms
- Stakeholder Participation Programme
- Biodiversity Development and Research Funding Programme
- Coastal Zones and Protected Areas Development Funding Programme

Action Plan: Environmental Economics, Mainstreaming and Sustainable Financing

GOAL 1: INSTITUTIONALISE THE INTEGRATION OF ECONOMIC AND ENVIRONMENTAL CONCERNS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To have the capacity to undertake and use economic valuation of biodiversity	Institutions set up capable of undertaking economic valuation by 2010	MEP, MET, MFA & Private Sector	Government support
Support Programme	**Environmental Economics Capacity-building Programme**			
Results	Expertise in EE People conscious of the value of the environment	5 Seychellois experts in EE working in Seychelles by 2010 Media campaign, workshop, leaflets, etc.	MSAMD ME, MET	Interest in EE Budget
Activities	• Training • Strategy for job creation • EE included in education curriculum as part of environmental education • Economic Valuation of Cousin island and Grand Anse. • Effective mass sensitisation campaign	5% of returning graduates in EE by 2010 100% of EE graduates working within the field EE materials in schools Report Media campaign, workshop, leaflets, etc.	ME, MSAMD MSAMD, Private sector ME, MET BirdLife Seychelles	Budget Interest Government support

GOAL 1: INSTITUTIONALISE THE INTEGRATION OF ECONOMIC AND ENVIRONMENTAL CONCERNS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To have the capacity to provide decision-makers with information regarding economic impact of environmental conservation and degradation	Mandatory for EIA to contain required information	MET, AG, MF, MEC	Government support
Support Programme	**Environmental Economics Information Programme**			
Results	Design and promote mechanism to assess projects Build expertise in Green accounting	Mechanism set up by 2005 5 experts by 2010	MF, MEC, SIM	Government support
Activities	• Design tools to assess projects • Training in Green Accounting	Tools sin use by 2005 5 people trained and working in Seychelles by 2005	MOF, MEC MEC, SIM	Government support

GOAL 1: INSTITUTIONALISE THE INTEGRATION OF ECONOMIC AND ENVIRONMENTAL CONCERNS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	Introduce valuation into the Environment Protection Act	85% decrease in EPA violation by 2010	Police, MET, AG, Coast Guard	Public, and Government support
Support Programme	**Development of Economic Valuation in EIA Programme**			
Results	Environment conscious population EV of biodiversity part of EIA	Media campaign, workshop, leaflets, etc. By 2010, 100% of EIA includes an EV	ME, MET	People are prepared to change for the better Government support
Activities	• Sensitisation campaign • Amend EPA to include EV as part of EIA	Media campaign, workshop, leaflets, etc. EPA amended by 2005	MAE, MET, AG	Budget Political and public support

Note: Activity 2 will be incorporated under the Review Legislation programme in the Regulatory, Policy and Institutional Mechanism Thematic Area
The fourth objective, which is to encourage stakeholder participation within the decision-making process, will be achieved through the sensitisation programme.

GOAL 2: SUSTAINABLE FINANCING OF WASTE MANAGEMENT				Latest Update December 1999
	Description	**Objectively Verifiable Indicators**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	Minimise non-biodegradable waste generated	Decrease in waste (household and industries) going to landfills by 50% by 2010	MET, SWAC, STAR	Mentality can be changed
Support Programme	**Waste Minimisation Incentives Programme**			
Results	Decrease in import of non-biodegradable products Create demand for eco-friendly products	Decrease of 50% by 2010 50% increase by 2010	MOF, MET, SMB, Private sector	Government support
Activities	• Set standards for eco-friendly products • Economic incentives strategy for recycling/re-use/production/ imports of Eco-friendly products • Review current incentives with regards to their effect on the environment • Strategy for internalizing externalities in price calculation • Sensitization of public	Development of standards by 2003. 100% of eco-friendly products meet required standards by 2010. Incentives in place. Strategy by 2003, implementation by 2005 Workshops/trade fairs/media campaign	SBS, SLA, MF, MEP, SIM, SCCI/ Private sector	Government support Sensitisation tools are a good measure of success.

GOAL 2: SUSTAINABLE FINANCING OF WASTE MANAGEMENT				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	Create a self-sustaining system of waste management	By 2010, 100% of resources needed for waste management generated through services provided	MET, SWAC, STAR, PUC	Public, political and GOS support
Support Programme	**Self-Financing Waste Management Programme**			
Results	User-pay policy Environmentally conscious population with regards to waste	100% of the cost for waste management paid for by the consumers Workshops/media/etc.	MET, SWAC, STAR, PUC	Willingness of users to pay
Activities	• Revenue generating strategy for waste management • Sensitisation	Plan by 2003 and full implementation by 2005 Media campaign, workshop, leaflets, etc.	MET, SWAC, STAR, PUC	Government of Seychelles support

GOAL 3: SUSTAINABLE FINANCING OF BIODIVERSITY CONSERVATION IN SEYCHELLES				Latest Update December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective 1	Tap into resources available internationally for NGOs	85% of revenue needed for biodiversity conservation from NGO sources by 2010	MET, NGOs, Private Sector	Government of Seychelles support
Support Programme	**Sustainable Financing of NGO Programme**			
Results	Create an enabling environment for NGOs to flourish Source new pools of funds for the biodiversity sector	Increase in Environmental NGOs in Seychelles with capacity to implement project, by 2010 85% of revenue needed for biodiversity conservation from NGO by 2010	MET, NGOs, Private Sector	Government of Seychelles support
Activities	• Design a strategy to create an enabling environment for NGOs (economic incentives, etc.)	Strategy by 2001, implementation by 2005	MET, MF	Government of Seychelles support
Objective 2	Financial mechanisms built into all biodiversity programmes/projects	By 2010, all biodiversity programmes/projects contain built-in financial mechanism	MET, NGOs, Private Sector	Government of Seychelles support
Support Programme	**Training Programme for Development of Financial Mechanisms**			
Results	Build capacity in use of financial sustainability mechanism	10 people trained in use of financial mechanism by 2003	MET, NGOs, Private Sector	Government of Seychelles support
Activities	• Short-term training in design and use of financial mechanism	Project designs incorporate financial sustainability mechanism	MET, NGOs, Private Sector	Government of Seychelles support

-continued-

Objective 3	To plough revenue generated through biodiversity back into conservation	100% of revenue generated goes into conservation	MET, NGOs, Private Sector	Government of Seychelles support
Support Programme	**Stakeholder Participation Programme**			
Results	Increase number of non-governmental institutions involved in biodiversity conservation	80% of institutions non-governmental by 2010	MET, NGOs, Private Sector	Government of Seychelles support
Activities	▪ Privatisation Strategy for Biodiversity Conservation	Strategy by 2001, implementation by 2005	MET, NGOs, Private Sector	Government of Seychelles support
Objective 4	Biodiversity conservation amongst the top priorities in decision making process		MET, NGOs, Private Sector	Government of Seychelles support
Support Programme	**Biodiversity Development and Research Funding Programme**			
Results	Establish link between biodiversity conservation and sustainable development Sensitise population to the "real" value of biodiversity Focus on long-term benefit of biodiversity conservation Build consensus amongst biodiversity experts and other stakeholders	Fund for Sustainable Development set up Result covered under the Environmental Economic Capacity-building Programme Biodiversity Research Committee established and functioning	MET,ME, NGOs, Private Sector	Government of Seychelles support
Activities	• Set up the Biodiversity Conservation Fund for the Sustainable Development of Praslin • Set up a Biodiversity Conservation, Research and Development Committee	5 major developments on Praslin funded under the fund by 2010 Committee established and functioning	MET, NGOs, MF, Private Sector	Government of Seychelles support
Objective 5	Adequate financial resources available for the management of protected areas	By 2010, all protected areas identified in the privatisation strategy are self financing	MET,MPA,SIF, NGOs, MF	Government of Seychelles support Ability to sustain the market
Support Programme	**Coastal Zones and Protected Areas Development Funding Programme**			
Results	Protected areas generate adequate revenue Income generated by protected areas goes back into management	By 2010, all protected areas identified in the privatisation strategy are self financing By 2010, all protected areas identified in the privatisation strategy are set up as autonomous entities	MET, MPA, SIF, NGOs, MF	Sustainability of the market Government of Seychelles support Amendment of the Public Financial Act
Activities	• Revenue generating strategy for protected areas • Marketing plan • Training to implement above. • 2.1 Privatisation strategy for protected areas	Full implementation by 2010 All managers of protected areas receive training by 2010 50% increase in revenues by 2010 All areas identified privatised by 2010	MF, MET, ME, MFA, NGOs, Private Sector STMA, STAB,	Budget Government of Seychelles and private sector support

Thematic Areas Action Plan
Thematic Area: Regulatory, Policy and Institutional Mechanisms

Introduction

Seychelles is a country that has always been governed by the rule of law. Environmental legislation has a distinguished history in the country and can be traced back to the early days of settlement. Various pieces of legislation dating from the early twentieth century are still in existence in one form or another. These include The Breadfruit and Other Trees (Protection) Act) 1917.

Laws of relevance include specific environment legislation as well as those dealing with other sectors but that specify certain environmental duties. Some one hundred pieces of legislation impinge on the management of the environment. More generally, the Constitution as well as the Penal Code contain specific references to environment protection. Legislation is still the primary official instrument used to implement environmental decisions in Seychelles.

Review of EMPS 1990 – 2000 Period

The EMPS recommended a number of legislative measures in order to improve the environmental regulatory mechanisms, primarily through project K1.

EMPS project *K1: Revision of Environmental Legislation* led to an overall environment legislative framework, the Environmental Protection Act enacted in 1994, and legislative backing for Environmental Impact Assessment (EIA). Legislation was established for strengthening control on the importation, use, handling and disposal of toxic and hazardous substances, the Pesticides Control Act, 1996, and a series of codes of practice established. This brought the country in line with relevant international conventions.

Existing legislation (such as The Wild Animals (Turtles) Protection Regulations, 1998, which prohibits trading in the shell of hawksbill turtles) were amended and new laws (such as The Plant Protection Act, 1996, Amendments to The Coco-de-mer Management Decree and to The Breadfruit and Other Trees (Protection) Act) were enacted to enhance the protection of endangered species. Legislation for strengthening existing institutional mechanisms and creation of the Marine Parks Authority and Solid Waste and Cleaning Agency has also been enacted.

Enforcement of environmental legislation has historically been weak, but there have been major improvements in the EMPS period. These include an increase in arrests and convictions for environment crimes and wider support within enforcement agencies for environment protection.

The Oil Spill contingency plan has been implemented under the EMPS and there is close co-operation with neighbouring states in this field, but comprehensive legislation is required in connection with the plan. Various other legislation, including those for biodiversity (under Project K1) and Town and Country Planning, have been reviewed but are still pending promulgation. Project *B6: Implementation of International Conventions for the Prevention of Pollution from Ships* led to the design of waste holding facilities but not to their construction; therefore the country is still not in compliance with this convention. Most international conventions have not been given legislative effect in Seychelles.

Main Strengths of EMPS 1990 - 2000

- Saw legislation as important instrument.
- Provided a project for revision of key legislation.
- Provided other projects which had legal implications.
- Provided projects focusing on international conventions.

Main Limitations of EMPS 1990 - 2000

- Project K1 was not comprehensive enough and only partly implemented.
- Projects to comply to international conventions only partly implemented.
- Did not address policy formulation as an important issue.
- Did not address mechanisms for civil society participation.
- The format was too rigid to incorporate new issues and new international conventions.

Issues and Management Priority Areas

The Constitution of the Seychelles addresses environmental and conservation in various respects. The relevant passage solemnly declares that the Seychelles is committed to preserving a safe, healthy and functioning environment for the present and future generations. Various other Articles in the Constitution elaborate on this declaration.

For national environment legislation to continually safeguard the declarations of the Constitution, it, first of all, must respond to priority issues existing in the country. Another set of requirements for environmental legislation derives from international commitments in the form of international conventions, sometimes known as multilateral environment agreements.

Management Priority Areas

From various legislative reviews undertaken previously and discussions during the current planning process the following areas have to be addressed:

- Comprehensive and integrated legislation as well as policy on biodiversity and forestry management.
- Regulations establishing standards in relation to noise and air pollution, quality of surface and ground water, quality of coastal marine water and effluent discharge from animal rearing farms, pesticide residues and sewerage and waste disposal.
- The existing review of the Town and Country Planning to be updated and replacement legislation put in place.
- The strengthening of the link between the decision making process of the Ministry of Environment and Transport and the Planning Authority.
- Legislation giving effective power to monitor, control, enforce and take remedial action against pollution from ships.
- Taking stock of the various international conventions and determine local obligations.
- More coordination among the various agencies and with stakeholders to ensure participation.

Goals and Objectives

The Goals and Objectives identified for this thematic area are as follows:

Goal 1: Review and enact legislation
Objective 1.1: To set down and enforces standards.
Objective 1.2: To enact comprehensive legislation in key areas.

Goal 2: Review and enforce international conventions
Objective 2.1: To provide legislative measures to implement key international conventions nationally.

Goal 3: Strengthen Policy and institutional mechanisms
Objective 3.1: To provide for well-defined environment policy.
Objective 3.2: To provide for partnership-building and joint decision-making

Support Programmes

The following support programmes have been identified to achieve the above goals and objectives:

- Environmental Legislation Review and Enactment Programme
- Implementation of International Conventions Programme
- Environmental Policy and Institutional Development Programme

Action Plan: Regulatory, Policy and Institutional Mechanisms

GOAL1: REVIEW AND ENACT LEGISLATION				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To legislate standards and to enact legislation in key areas	Number of amendments and standards	MET, MLUH Legal Affairs	Government of Seychelles support
Support Programme	**Environmental Legislation Review and Enactment Programme**			
Results	Revised Environment Protection Act, Environmental Health Legislation, Pesticides Control Act and Town and Country Planning Act and new legislation for biodiversity, forestry, and environmental health	Number of amendments and standards	MET, MLUH Legal Affairs	Government of Seychelles support
Activities	• Introduce Standards in legislation. • Strengthen legal powers to enforce and regulate pollution and environmental health including economic valuation. • Amend legislation dealing with environmental health, physical planning, coastal zones and land use. • Review existing drafting instructions for new biodiversity and forestry legislation; enact integrated biodiversity legislation.	Reduction in environmental nuisance and pollution Introduce economic instruments Greater compliance Better control of physical planning and land use Better conservation management	MET, MLUH Legal Affairs	Government of Seychelles support External assistance

GOAL 2: REVIEW AND ENFORCE INTERNATIONAL CONVENTIONS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To implement key international conventions nationally	Key international conventions implemented	Legal Affairs/MET	Government of Seychelles support available
Support Programme	**Implementation of International Conventions Programme**			
Results	Implementation of Montreal Protocol. Implementation of Oil Preparedness Response and Co-operation (OPRC 90). Implementation of Marpol & Annex 1 Implementation of Convention on Civil Liability for Oil Pollution Damage, and Establishment of an International Fund for Compensation for Oil Pollution Damage	Number of new legislation Handbook explaining implications of international conventions for Seychelles businesses and trading partners.	MET, SCG Legal Affairs	Government of Seychelles support. Budget

-continued-

Activities	• ODS Regulations • Legislation for oil discharge reporting system for ships and shipboard oil pollution emergency plan; improve systems for oil pollution and response; improve regional co-operation and preparedness. • Standards for discharge of substances, enforcement of ship-generated pollution; and legislation for handling and treatment of ship waste, • Review of Merchant Shipping (Oil Pollution) Seychelles Order, 1975	Reduce importation leading to complete phase out of CFCs Increased preparedness and response for oil spills; reduce danger of oil pollution Improved mechanisms for dealing with ship-generated waste. Extend scope of liability for pollution damage; increase indemnity		Government of Seychelles support Resources available Commitment of shipping companies

GOAL3: STRENGTHEN POLICY AND INSTITUTIONAL MECHANISMS				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objective	To provide for well-defined environment policy To provide for partnership-building and joint decision-making	Environmental policy in use Stakeholder Forum established	MET, Legal Affairs	Government of Seychelles support Public interest
Support Programme	**Environmental Policy and Institutional Capacity-Building Programme**			
Results	Established environment policy as public document Established biodiversity policy for genetic rights and bio-safety National Environment Advisory Council re-established	Documents available. NEAC Council re-established and functioning.	MET, SCG Legal Affairs	External Assistance
Activities	• Review , consolidate and draft comprehensive environmental policy paper • Draft policy for control of genetic rights and bio-safety • Provide legal amendments and extra-legal measures to make National Environment Council effective	Improvement in environment management Improvement in control of research, species collection and trade/import of species Greater compliance Increase in participation in conservation	MET, Legal Affairs	Government of Seychelles support External Assistance

Thematic Areas Action Plan
Thematic Area: Commerce, Industry and Production

Introduction

The industry and commerce sector in Seychelles comprises manufacturing, construction materials production, maintenance and repair services, and trading and professional services. The industry sector currently accounts for up to 25.1% of the GDP (1998), and provides employment to about 10% of the working population. The number of small businesses outplays the number of large enterprises in view of the small but captive market size of the country.

The overall economic performance of Seychelles has been modest in recent years, with a 4% GDP growth recorded in 1996 and 1997. Government has, in the past, placed emphasis on the trade protection of local industries, whether private or parastatal. With the trends towards privatisation and globalisation of industry, a more competitive industrial sector is slowly emerging.

With respect to environment protection and management, the Industry Policy specifies that only light-industries will be encouraged in Seychelles and efforts to 'green' industry through voluntary initiatives will continue, albeit backed by a legal framework.

Seychelles' structural shift towards industrialisation and its recent engagement into international trade and business has resulted in an increase in environment related issues. This has also been compounded by the delay in integrating environmental management within all sectors, and may result in accelerated environmental degradation.

Review of EMPS 1990 – 2000

The EMPS did not have a programme referring directly to this thematic area. However, certain projects were of relevance.

Project *A2: Prepare and apply Environmental Guidelines*, led to the publication of various environmental guidelines covering areas such as agriculture, land use, industry, construction and waste management. Very few of the guidelines were adopted by industry.

Project *A3: Environment Assessment Procedures*, a schedule on industry has been included in the legislation for controlling industrial development. The EIA regulations developed under the Environment Protection Act provided the initial basis for industrial development to be controlled. In a sense this project was successful. However, due to institutional weaknesses it is not as widely adopted as it was initially envisaged.

All elements under Programme *B: Project Monitoring and Control Program* that refer to pollution, e.g. *B1: Standards; B2: Monitoring; B4: Industrial and Hazardous Wastes; C7: Treatment of Waste Oil* were implemented and addressed at various levels. However, some project output, for example the hazardous waste management plan and tangible options to handle oil wastes, have not yet materialised.

Under *F1: Energy Conservation Programme*, various projects were funded. However, some gaps still exist and need further development and funding.

Under *J3: Marine Resources Management Plans*, few projects were funded under the project, and as identified in the analysis for the new EMPS some wide gaps at all levels exist and need further attention and funding.

Main strengths of EMPS 1990 - 2000

- EMPS focus on sustainable development benefited the thematic area.
- Specific projects as described above had positive benefits.

Main weaknesses of EMPS 1990 - 2000

- It did not have a dedicated programme for the thematic area.
- The linkages between industry and environment were not examined.

Issues and Management Priority Areas

The determination of management priority areas was undertaken on the basis of an analysis of the nature of the present and future relationship, gaps, and sectoral needs and issues. The relationships between industry and the following were identified and analysed: Forestry, Biodiversity, Land Use, Utilities, and Non-renewable resources.

Air quality is becoming a serious issue in various forms. These include strong odours from the IOT canning factory, open fires from charcoal manufacture, solvent and paint vapours from workshops, dust from quarries and dust from transport and construction.

With regard to waste-water discharge, although various standards and mechanisms for compliance are now in place as a result of the previous EMPS, industry is still far from meeting the prescribed effluent discharge limits.

Degradation of the coastal waters from industrial effluents poses the largest threat to coastal habitats and coastal tourism activities. Effective support for monitoring and enforcement concerning industries polluting coastal areas need to be identified.

Noise pollution from various sources affect residential as well as biodiversity. Power generation, air-conditioning equipment, power tools, construction, heavy vehicular traffic, open-air pubs are the main areas of complaint.

Although there has not been a direct policy to address hazardous wastes, its generation has been substantially limited due to the light-industrial nature of the industry sector in Seychelles. There are also a few industries that generate hazardous waste, including those that produce paint, cosmetics and plastics.

Land degradation is an issue, especially critical within the construction industry where there is a lack of responsibility by contractors in preparing sites and the extraction of rocks and red earth. Guidelines were developed under the previous EMPS, but due to institutional gaps these were not taken seriously by the end-users.

Management Priority Areas
The following management priority areas have been identified:

- To minimise air pollution through adoption of appropriate technology
- To reduce environmental impact of industrial effluent and wastewater through technology transfer, cost-effective technology and local expertise
- To minimise land degradation caused by industries, namely construction industries
- To minimise coastal degradation caused by industries, namely industrial effluents and waste-water
- To limit noise pollution caused by industrial and commercial activities such as power generation, air-conditioning equipment, power tools and construction.
- To manage solid waste generated by industries sustainably.

Goals and Objectives

Goal 1: Strengthen existing networks and institutions for environment management in the industry
Objective 1.1: To ensure effective implementation of policies and industry management plans.
Objective 1.2: To develop an inter-institutional framework and an environment industry network.
Objective 1.3: To strengthen existing policy development approaches.
Objective 1.4 To implement a more effective environment approach for a greener industry.

Goal 2: Develop a framework for sustainable management of resources
Objective 2.1: To ensure sustainable management of our resources
Objective 2.2: To put in place a forum for discussion on resource policy and management issues.
Objective 2.3: To conduct periodic assessment of resource status
Objective 2.4: To prepare resource management plans

Goal 3: Improvement of environment management quality
Objective 3.1: To facilitate implementation of ISO 14000 in industry
Objective 3.2: To address the special needs of Small and Medium-sized Industries (SME's)
Objective 3.3: To further develop the legal framework for improving compliance
Objective 3.4: To assist industry in developing environmental initiatives.

Goal 4: Address industrial environment planning
Objective 4.1: To ensure sustainable development of land use plans with industry needs.
Objective 4.2: To develop guidelines and tools for assessment of industrial locations.
Objective 4.3: To integrate EIA, environmental management, landscaping of industrial estates.
Objective 4.4: To build capacity in industrial planning, ecological management and integrated environment planning.

Goal 5: Increased transfer of cleaner technology in industry
Objective 5.1: To improve access to information on cleaner technology.
Objective 5.2: To set up a national cleaner production centre.
Objective 5.3: To integrate adoption of clean technologies as per the EIA process.

Support Programmes

The following support programmes have been identified for this thematic area:

- Industrial Sector Environmental Management Capacity-Building Programme
- Sustainable Management of Resources Programme
- Environmental Management Quality Improvement Programme
- Industrial Environment Planning Programme
- Cleaner Technology Programme

Action Plan: Industry and Commerce

GOAL 1: TO STRENGTHEN EXISTING NETWORKS AND INSTITUTIONS FOR ENVIRONMENT MANAGEMENT IN THE INDUSTRY SECTOR.				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & Delegated Responsibility**	**Assumptions**
Objectives	To ensure effective implementation of policies and industry management plans To develop an inter- institutional framework and an environment industry network To strengthen existing policy development approaches To implement more effective environment management approaches for a greener industry	Policy review meetings and audit of management plans Forum which meets and discusses regularly with action and guidance to policy Feedback from industry through assessments	MET & MIIB	Cooperation between ministries Active participation by private sector
Support Programmes	**Industrial Sector Environmental Management Capacity-building Programme**			
Results	Specific and appropriate institutional support to industry Industry and Environment National Stakeholders Consultation forum Policy and legal framework sensitive to the needs of industry Integrated planning & harmonisation of decisions.	Support mechanisms in place Forum work in progress Appropriate legislation enacted	MIIB, SCC	Active participation by all institutions. Collaboration between government and private sector Adequate qualified staff Co-operation of the Attorney General Chambers Availability of trainers
Activities	• Identify institutional issues required for effective environment management • Improve communication between industry and policy-making institutions. • Public policy development to include environment and resource issues • Review current enforcement mechanism • Address long-term institutional needs of industry • Industry-Environment awareness raising for managers.	Sustainable industrial growth Forum work in progress Policy in use Legislation applied Public awareness increased	MET MIIB MET & MIIB MET MIIB MET	Active participation by all institutions. Collaboration between government and private sector Adequate qualified staff Co-operation of the Attorney General Chambers Availability of trainers

GOAL 2: TO DEVELOP A FRAMEWORK FOR SUSTAINABLE MANAGEMENT OF RESOURCES				Latest Update: December 1999
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & delegated responsibility**	**Assumptions**
Objectives	To ensure sustainable management of our resources To put in place a forum for discussion on resource policy and management issues. To conduct periodic assessment of resource status To prepare resource management plans	Improved management of resources, less environmental problems A forum where resource management issues are discussed and implemented Assessment of resources undertaken as specified Periodic review of resource management plans	MIIB, MET, SBS	Funds are available to implement the activities. Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Support Programme	**Sustainable Management of Resources Programme**			
Results	Resource management plans Transfer of expertise and assessment tools to the sector A management framework involving all stakeholders Resource management policies Resource management clearing house	Management Plan Increased local knowledge Increased stakeholders involvement Policy being implemented	MIIB, MET, MLUH, SFA MET, MLUH, SBS	Funds are available to implement the activities. Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Activities	• Develop resource management plans • Identify key information and research gaps on current and future resources • Build capacity for resource management • Develop a resource clearing house function for industry	Management Plans in use Increased knoweldge applied Capacity built	MIIB, MET, MLUH, SFA MET, MLUH, SBS	Funds are available to implement the activities. Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector

GOAL 3 : IMPROVEMENT OF ENVIRONMENT QUALITY				Latest Update: December 99
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & delegated responsibility**	**Assumptions**
Objectives	To facilitate implementation of ISO 14000 in industry To address the special needs of Small Industries (SME's) To further develop the legal framework for improving compliance To assist industry in developing environmental initiatives, such as green labelling.	Implementation of ISO 14000 in both large industries and SME's Policy implementation Regulations developed with environment quality objectives in place Implementation of green labelling, recycling, etc. Industry-wide, and case studies	MIIB, MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Support programmes	**Environmental Management Quality Improvement Programme**			
Results	Adoption of ISO 14000 cost-effectively in Industry Improvement of environment quality Implementable regulations and standards targeting specific areas of Industry	ISO 14000 adopted	MIIB, SBS, MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Activities	• Promotion of industry participation in voluntary agreements and mechanisms. • Facilitate introduction of ISO 14000 principles • Review of current pollution charges as incentive to adopt treatment technologies • Explore opportunities for industry to adopt a wide range of environmental initiatives such as green labels, waste & energy audits, etc.	Relevant industries and commercial establishments are certified with ISO 14000	MIIB, SBS, MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by private sector

GOAL 4: TO ADDRESS INDUSTRIAL ENVIRONMENT PLANNING				Latest Update: December 99
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & delegated responsibility**	**Assumptions**
Objectives	To ensure sustainable development of land use plans incorporating needs of industry To develop guidelines and tools for assessment of industrial locations To integrate EIA, environmental management, landscaping of industrial estates To build capacity in industrial planning, ecological management and integrated environment planning	Land is developed within the framework of a land use plan, prepared from a multi-stakeholder perspective Implementation of guidelines for locating industry A framework whereby EIA forms an integral part of the industrial estates. Better trained and equipped technical staff	MET, MLUH, MIIB	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Support Programmes	**Industrial Environment Planning Programme**			
Results	Industrial Land/Coastal Use Plans Policies for Industry land/coastal allocation and planning Tools for industry location impact assessment Training sessions in various areas of land use planning and integrated environment planning	Land Use Plans Policy adopted Knowledge in sector increased	MET, MLUH, MIIB	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Activities	• Identify approaches to improve land planning for industry • Develop environment criteria for allocation of land and sea (aquaculture, offshore mineral exploration) • Prepare land use and management plans for industrial areas • Develop training materials in industrial property management, incl. Landscaping, solid waste, and local pollution	Land Use Plans in use Capacity built Use of environmental criteria for land allocation	MLUH, MIIB, MET SFA, SIDEC	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector

GOAL 5: INCREASED TRANSFER OF CLEAN TECHNOLOGY IN INDUSTRY				Latest Update: December 99
	Description	**Objectively Verifiable Indicators (OVI)**	**Lead & delegated responsibility**	**Assumptions**
Objectives	To improve access to information on clean technology To set up a national cleaner production centre To introduce technology-based audits within industry to meet specific needs To integrate adoption of clean technologies as per the EIA process	Information network is set up and user-statistics Physical presence of the centre and user-statistics Examples of audits undertaken, and resulting benefits documented Modification of the EIA process to include assessment of clean technology options	MIIB, MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Support Programme	**Cleaner Technology Programme**			
Results	A clean technology clearing house mechanism A national cleaner production centre Auditing and assessment tools and templates to determine extent of transfer of clean technology Technology transfer component to the EIA process for Industry	Clearing house mechanism established National cleaner production centre established Assessment tools in use Technology transferred	MIIB, MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by the private sector
Activities	• Put in place a national cleaner- production centre • Promote sustainable financing of clean technologies • Develop technology transfer guides for industry focussing on environmental aspects • Audit for clean production in Industry • To integrate cleaner production into EIA procedures.	Clearing house mechanism establish National cleaner production centre established Assessment tools in use Technology transferred	MIIB, SBS MET	Funds are available to implement the activities Qualified persons are available to undertake the assessment Co-operation between ministries Active participation by private sector

EMPS 2000 – 2010 Preliminary Budget

The budget 2000 – 2010 has been drafted based on individual support programmes as presented by each working group. Its presentation hereunder is in preliminary format.

The 2000 – 2010 budget estimates project an overall cost of USD 173 million with funds required amounting to some USD 99 million or 57% of the total EMPS cost. Institutional contributions, which include government's and other stakeholder's contributions to programme implementation account for 43% of the overall budget cost.

The summary table, hereunder, shows individual support programmes for each thematic area. For some thematic areas, discussions and finalisation of individual support programmes are still ongoing.

		(in USD '000)		
		Total Cost	**Institutional Contribution**	**Funds required**
A	Society, Population and Health	2,016	873	1,143
B	Land Use, Coastal Zones and Urbanization	3,977	449	3,528
C	Biodiversity, Forestry and Agriculture	15,050	2,176	12,874
D	Energy and Transport	25,085	7,098	17,987
E	Fisheries and Marine Resource/Processes	690	138	552
F	Water, Sanitation and Waste	117,230	61,321	55,909
G	Tourism and Aesthetics	2,150	530	1,620
H	Environmental Economics & Mainstreaming and Sustainable Financing	3,600	750	2,850
I	Regulatory, Policy and Institutional Mechanisms	130	42	88
J	Commerce, Industry and Production	2,450	460	1,990
K	Secretarial support programme	160	32	128
	Total	**172,538**	**73,869**	**98,669**

The preliminary 2000 – 2010 budget will be updated on an annual basis. It is part of the responsibility of the Co-ordination Unit to adjust budget estimates as and when programmes are being prepared for implementation and, therefore, their cost estimates finalised. This process will be undertaken on a yearly basis to coincide with the discussions and approval of the government's annual budget.

The budget 2000 – 2010 revision will be based on each programme, taking into consideration if it is being implemented or if it is to be dropped or if new activities have to be included in order to react to emergencies and other issues.

Summary Table of Budget by Thematic Area

Population, Society, Gender and Health				
		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Population – Environment Research and Information Programme	65	19	46
2	Environmental Assessment and Advocacy Programme	338	59	279
3	Gender Empowerment Programme	15	2	13
4	Environmental Health Sanitation Programme	930	630	300
5	Environmental Health (Hygiene) Education/Sensitisation Programme	350	125	225
6	Sustainable Resources for Environmental Health (Human, Material and Financial Resources	318	38	280D
	Total	**2,016**	**873**	**1,143**

Land Use, Coastal Zones and Urbanization				
		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Land use and Coastal Zone Policy and Legislation Programme	0	0	0
2	Land use and Coastal Zone Management Tools Development Programme	100	50	50
3	Land Use and Coastal Zone Management Institutional Capacity and Community Involvement Building Programme	3,827	389	3,438
4	Land Use and Coastal Zone Sustainable Financial Mechanisms Programme	0	0	0
5	Regional and International Land Use and Coastal Zone Management Co-operation Programme	50	10	40
	Total	**3,977**	**449**	**3,528**

Biodiversity, Forestry and Agriculture				
		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Agriculture Capacity-building and Training Programme	1,080	0	1,080
2	Sustainable Agriculture Programme	810	230	580
3	Invasive Species Control Programme	810	150	660
4	Developed Islands Biodiversity Conservation Programme	755	175	580
5	Outer Islands Biodiversity Programme	750	0	750
6	Biodiversity Assessment and Taxonomical Survey Programme	870	0	870
7	Inland Water Ecosystem Biodiversity Conservation Programme	585	0	585
8	Biodiversity Reporting and Information Programme	120	60	60
9	Ex-situ Biodiversity Conservation Programme	260	0	260
10	Biodiversity Research Promotion and Facilitation Programme	240	0	240
11	Biodiversity Capacity-Building and Networking Programme	465	0	465
12	Biodiversity Community Partnership Programme	300	0	300
13	National Biodiversity Policy Development Programme	50	0	50
14	Integrated Forest Protection Programme	1350	270	1080
15	Forest Conservation Programme	1920	384	1536
16	Integrated Forest Research Programme	1235	247	988
17	Protected Areas Programme	3300	660	2640
18	Institutional Forestry Support Programme	150	0	150
	Total	**15,050**	**2,176**	**12,874**

Energy and Transport

		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Energy Conservation and Renewable Energy Programme	250	83	167
2	Sustainable Energy Extension and Education Programme	100	65	35
3	Energy Sector Pollution Monitoring Programme	125	60	65
4	Environmentally Sound Road Design and Construction Programme	5,520	2,870	2,650
5	Victoria Traffic Management Programme	3,020	605	2,415
6	Public Transport Improvement and Promotion Programme	15,560	3,155	12,405
7	Upgrading Of Enforcement and Surveillance Programme	250	100	150
8	Integrated Land-Use and Transport Planning Programme	260	160	100
	Total	**25,085**	**7,098**	**17,987**

Fisheries and Marine Resources/Processes

		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Inshore Fishery Management Programme	85	17	68
2	Tuna and Billfish Management Programme	120	24	96
3	Marine Coastal Assessment and Research Programme	250	50	200
4	Marine Protected Areas Programme	185	37	148
5	Oil and Other Minerals Exploration and Extraction Management Programme	50	10	40
	Total	**690**	**138**	**552**

Water, Sanitation and Waste

		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Water Demand Management Programme	3,100	3,050	50
2	Desalination Programme	n/a		
3	Improvement to Transmission/Reticulation Systems Programme	n/a		
4	Improvement to Safe Yield of Existing Water Sources Programme	6,230	1,556	4,674
5	Improvements to Water Treatment Works Programme	n/a		
6	Water management institutional and human resources capacity-building	900	205	695
7	Water Shed Management Programme	0	0	0
8	Centralised Sewerage Treatment Systems Programme	41,000	20,750	20,250
9	Individual Wastewater Treatment Systems Programme	1,200	200	1,200
10	Wastewater management institutional and human resources capacity-building	900	205	695
11	Integrated solid waste management for Mahe, La Digue and other islands	46,000	31,750	14,250
12	Integrated solid waste management for Praslin	17,000	3,400	13,600
13	Waste management institutional and human resources capacity-building	900	205	695
	Total	**117,230**	**61,321**	**55,909**

Tourism and Aesthetics				
		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Eco-tourism Development and Marketing Programme	1,000	500	500
2	Tourism Environmental Impact Assessment Programme	150	30	120
3	Tourism Sustainable Design and Resources Management Programme	500	0	500
4	Tourism Environmental Management Capacity-Building Programme	500	0	500
	Total	**2,150**	**530**	**1,620**

Environmental Economics and Mainstreaming, and Sustainable Financing				
			(in USD '000)	
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Environmental Economics Capacity-Building	725	145	580
2	Environmental Economics Information Provision	525	105	420
3	Development of Economic Valuation in EIA Programme	200	40	160
4	Waste Minimisation Incentives Programme	825	165	660
5	Self-financing Waste Management Programme	325	65	260
6	Sustainable Financing of NGO Programme	125	25	100
7	Training Programme for Development of Financial Mechanisms	200	50	150
8	Stakeholder Participation Programme	125	25	100
9	Biodiversity Development and Research Funding Programme	25	25	0
10	Coastal Zones and Protected Areas Development Funding Programme	525	105	420
	Total	**3,600**	**750**	**2,850**

Regulatory, Policy and Institutional Mechanisms				
		(in USD '000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Environmental Legislation Review and Enactment Programme	80	16	64
2	Implementation of International Convention Programme	20	20	0
3	Environmental Policy and Institutional Development Programme	30	6	24
	Total	**130**	**42**	**88**

Commerce, Industry and Production				
		(in USD 000)		
	Support Programmes	**Total Cost**	**Institutional Contribution**	**Funds required**
1	Industrial Sector Environmental Management Capacity-Building Programme	400	80	360
2	Sustainable Management of Resources Programme	750	150	600
3	Environmental Management Quality Improvement Programme	400	60	340
4	Industrial Environmental Planning Programme	300	70	230
5	Cleaner Technology Programme	600	100	500
	Total	**2,450**	**460**	**1,990**

Acknowledgements

The production of the EMPS 2000 - 2010 was financed by the World Bank. Further assistance was provided by the French Government.

The following organisations sponsored the EMPS' art competition: Government of Seychelles, Air Seychelles, Island Trading Co. Ltd., Indian Ocean Tuna Ltd., Affiliate of H. J. Heinz Company, Environment Trust Fund and the Dutch Trust Fund.

1. STEERING COMMITTEE

-	Mr. Maurice Loustau-Lalanne	Ministry of Environment & Transport	Chairman
-	Mr. Georges Troian	Ministry of Environment & Transport	Co-Chairman
-	Ms. Vivianne Fock-Tave	Ministry of Foreign Affairs	Secretary
-	Mr. Antoine Moustache	Ministry of Agriculture and Marine Resources	Member
-	Mr. Jean Ragain	Ministry of Social Affairs & Manpower Development	Member
-	Mr. Hans Aglaé	Ministry of Finance	Member
-	Lt. Col. Andre Ciseau	Seychelles Coast Guard	Member
-	Mr. Radley Weber	HEINZ/IOT	Member
-	Mrs. Helen Maiche	LUNGOS	Member
-	Mr. Joe Chung-Faye	Seychelles Chamber of Commerce and Industry	Member
-	Mr. Danny Poiret	Ministry of Health	Member
-	Mr. Selby Dora	Ministry of Education	Member
-	Mr. Andrew Jean-Louis	Ministry of Industries & International Business	Member
-	Captain David Savy	Seychelles Tourism Advisory Board	Member
-	Mr. Gerard Domingue	Seychelles Fishing Authority	Member
-	Mr. Terry Biscornet	Ministry of Land Use and Habitat	Member
-	Ms. Zoritsa Nibourette	Ministry of Tourism & Civil Aviation	Member
-	Mr. Ronny Ah-Tive	Ministry of Foreign Affairs	Member
-	Mr. Rolph Payet	Ministry of Environment & Transport	Member
-	Mr. Wilfrid Fousse	Ministry of Environment & Transport	Member

Previous Members of the Steering Committee

Mr. Peter Sinon	Ministry of Foreign Affairs
Mr. Frank Hoareau	Ministry of Finance
Ms. Belinda Micock	Ministry of Land Use and Habitat
Mr. Rondolph Payet	Seychelles Fishing Authority

2. CONSULTANTS

Lead Local Consultant: *Dr. Nirmal Jivan Shah*
International Consultant: *Mr. Lynton Burger, University of Cape Town, South Africa*

3. SECTORAL WORKING GROUPS

SECTOR	MEMBERS
1. Society, population and health **Team Leader**: *Ms. Janick Brû, Director, Seychelles Institute of Management*	(a) Mrs. Nidza Monthy (SIM) (b) Mr. Joachim Didon (MOH) (c) Mr. Antoine D. R. Poiret (MOH)
2. Land use, coastal zones and urbanization **Team Leader**: *Ms Belinda Micock, Director General Ministry of Land Use & Habitat* *Mr. Terry Biscornet, Director, Ministry of Land Use & Habitat*	(a) Mr. Terry Biscornet (MLUH) (b) Mr. Waldemar Tilly (MET) (c) Mr. Egbert Monthy (MLGS)
3. Biodiversity, forestry and agriculture **Team Leader**: *Mr. Antoine Moustache* *Director General, Crop Development & Promotion* *Ministry of Agriculture & Marine Resources*	(a) Mr. John Neville (MET) (b) Mr. Didier Dogley (MET) (c) Mr. Michel Vielle (MET)
4. Energy and transport **Team Leader**: *Mr. Terence Coopoosamy* *Manager, Centre for Science & Technology* *Seychelles Bureau of Standards*	(a) Mr. Mamy Razanajotovo (SBS) (b) Mr. Jude Florentine (MET) (c) Mr. Patrick André (MET)
5. Fisheries and marine resources/ processes **Team Leader**: *Mr. Rondolph Payet* *Resource Manager, Seychelles Fishing Authority*	(a) Mr. Joel Nageon de Lestang (SFA) (b) Mr. John Collie (MPA) (c) Mr. Selby Remie (MET)
6. Water, sanitation and waste **Team Leader**: *Mrs. Kerstin Henri* *Project Coordinator, Birdlife Seychelles*	(a) Mr. Ian Charlette (PUC) (b) Mrs. Mary Stravens (SWAC)
7. Tourism and aesthetics **Team Leader**: *Mr. Michel Nalletamby* *Director of Planning,, Ministry of Tourism & Civil Aviation*	(a) Mrs Zoritsa Nibourette (MTCA) (b) Mrs Lena Desaubin (MET) (c) Mr. Raymond Brioche (MET)
8. Environmental economics and mainstreaming and sustainable financing **Team Leader**: *Mr. Ronny Ah-Tive, Senior Economist , Ministry of Foreign Affairs* *Miss Vivianne Fock-Tave, Senior Economist, Ministry of Foreign Affairs*	(a) Miss Beryl Samson, (MFA) (b) Mr. Denis Matatiken (MET) (c) Mr. Marc Benstrong (MOF) (d) Mr. Brian Commettant (MEP)
9. Regulatory, policy and institutional mechanisms **Team Leader**: *Mr. Francis Chang-Sam, Private Lawyer*	(a) Mr. Frank Ally (private lawyer) (b) Mrs. Iris Carolus (MET) (c) Ms. Daphne Loizeau (MET)
10. Commerce, industry and production **Team Leader**: *Mr. Rolph Payet* *Director General* *Policy, Planning & Services Division, Ministry of Environment & Transport*	(a) Mr. David Bianchi (MIIB) (b) Mr. Flavien Joubert (MET)

4. Participants in the Public Workshop, 19th November, 1999, Reef Hotel & Golf Club

Mr. Frank **ALLY**
Attorney at Law
Kingsgate House, Room 16
Tel: 32 29 12

Atelye **P**ou **A**prann **N**ouvo l' **A**rtizan (APANA)
Mrs. Lucy **HICKERSON-LUC**
Director
Baie Lazare Studio
Tel: 36 11 07 / 57 05 89

Attorney General's Office
Ms. Caroline **HOUREAU**
State Counsel
Attorney General's Office
National House
Tel: 38 30 00
Fax: 22 50 63

Birdlife Seychelles
Mrs. Kerstin **HENRI**
Project Coordinator
Birdlife Seychelles
P O Box 1310

Mr. Stephen **PARR**
Science Coordinator
Birdlife Seychelles
Tel: 22 50 97
Fax: 22 51 21

Island Development Corporation
Mr. Justin **MOUSTACHE**
Operations Manager
Island Development Corporation
P O Box 638
Tel: 22 46 40
Fax: 22 44 67

ENVIRO
Mr. Kantilal **JIVAN SHAH**
P O Box 699
Tel: 32 23 10
Fax: 32 41 37

MEC Retreading (PTY) LTD
Mrs. Audrey **SAVY**
Financial Controller
MEC Retreading (PTY) LTD
Le Rocher

Mr. Robert John **SAVY**
Managing Director
MEC Retreading (PTY) LTD
Le Rocher
Tel: 34 49 12
Fax: 34 45 53

Ministry of Agriculture and Marine Resources
Mr. Antoine **MOUSTACHE**
Director General for Crop Development & Promotion
Ministry of Agriculture and Marine Resources
Independence House
Tel: 22 40 30

Ministry of Environment & Transport
Mr. Rolph **PAYET**
Director General for Policy, Planning and Services
Ministry of Environment & Transport
Tel: 22 46 44

Mrs. Begum Nageon **DE LESTANG**
Project Manager
Ministry of Environment & Transport
Tel: 22 46 44

Ministry of Land Use & Habitat
Mrs. Patricia **BAQUERO DELAHOCHE**
Planning Officer
Ministry of Land Use & Habitat
P O Box 199
Independence House

Mr. Terry **BISCORNET**
Director of Land Use Planning
Ministry of Land Use & Habitat
Independence House
Tel: 22 40 30
Fax: 22 57 89

Ministry of Foreign Affairs
Ms. Vivianne **FOCK-TAVE**
Senior Economist
Ministry of Foreign Affairs
Mont Fleuri
Tel: 22 46 88
Fax: 22 48 45

Ms. Ronny **AH-TIVE**
Senior Economist
Ministry of Foreign Affairs
Mont Fleuri
Tel: 22 46 88
Fax: 22 48 45

Ministry of Social Affairs & Manpower Development
Mr. Mahmoud **ALI**
Director (Research & Information)
Ministry of Social Affairs & Manpower Development
P O Box 190
Unity House
Tel: 32 23 21
Fax: 22 48 45

Ministry of Tourism & Civil Aviation
Mr. Michel Leo **NALLETAMBY**
Director of Tourism Planning
Ministry of Tourism & Civil Aviation
P O Box 52
Tel: 22 53 13 / 22 40 30
Fax: 22 40 35

Ministry of Youth & Culture
Mr. Jean-Claude **MAHOUNE**
Principal Research Officer
Ministry of Youth & Culture
C/o National Heritage
La Bastille
Tel: 32 13 33
Fax: 32 21 13

Ombudsman
Mr. Bernadin **RENAUD**
Ombudsman
Aarti Chambers 306
Mont Fleuri
Tel: 22 51 47
Fax: 22 57 37

Penlac
Mr. Nixon **ALBERT**
Administrative Officer (co)
Penlac Co LTD
P O Box 368
Victoria
Tel: 34 46 06
Fax: 34 43 73

Public Utilities Corporation (Water & Sewerage)
Mr. Ian **CHARLETTE**
Senior Biochemist
Water & Sewerage (PUC)
P O Box 34
Tel: 71 15 99
Fax: 32 21 27

Seychelles Bankers' Association
Mr. Paul **WITKOWSKI**
Chairman
Seychelles Bankers' Association
C/o Barclays Bank PLC
Tel: 38 38 02

Seychelles Bureau of Standards
Mr. Terence **COOPOOSAMY**
Manager, Centre for Science and Technology
Seychelles Bureau of Standards
Point Larue
Tel: 37 53 33
Fax: 37 51 51

Seychelles Chamber of Commerce and Industry
Mr. Jamshed **PADIWALLA**
Adviser (Past Chairman)
Seychelles Chamber of Commerce
P O Box 235
Tel: 22 42 28
Fax: 22 42 26

Seychelles Democratic Alliance
Mr. Guy **MOREL**
Seychelles Democratic Alliance
St Claire Building
Tel: 321 990

Seychelles Democratic Party
Mr. Ayub Suleman **ADAM**
Executive Member
Seychelles Democratic Party
C/o Adam Moosa & Co. Pty. Ltd.
P O Box 21
Tel: 22 43 39
Fax: 22 52 19

Seychelles Federation for Workers Union
Mr. Bernard Selwyn **ADONIS**
General Secretary
Seychelles Federation for Workers Union
Maison du Peuple
Tel: 32 19 29
Fax: 22 53 51

Mr. Olivier **CHARLES**
President
Seychelles Federation for Workers Union
P O Box 154
Maison du Peuple
Tel: 22 44 55
Fax: 29 19 39

Seychelles Fire Brigade
Mr. Pascal **PAYET**
Chief Fire Officer, Fire Brigade
P O Box 46
Tel: 34 45 77
Fax: 34 45 77

Seychelles Hotels Association
Mrs. Maryse Eichler **DE ST JORRE**
Representative
Seychelles Hotels Association
Premier Building Rm. 310

Seychelles Industrial Development Corporation
Mr. Maxwell **JULIE**
Managing Director
Seychelles Industrial Development Corporation
Camion Hall
Tel: 32 31 51
Fax: 32 41 21

Seychelles Institute of Management
Mrs. Janick **BRU**
Director
Seychelles Institute of Management
Ma Joie
Tel: 24 10 67
Fax: 24 17 25

Seychelles Island Foundation
Mr. Lindsay André **CHONG-SENG**
Executive Chairman
Seychelles Island Foundations
P O Box 853
Rm. 305
Premier Building
Tel: 32 48 83
Fax: 32 48 84

Seychelles National Party
Mr. Bernard **GEORGES**
Lawyer / Spokesman on Environment
Seychelles National Party /International Council of Environment
Arpent Vert
Tel: 22 42 80
Fax: 22 40 43

Seychelles People's Progressive Front
Ms. Sharon Danielle **GAPPY**
Youth Relations Officer
SPPF Secretariat
P O Box 91
Tel: 22 44 55
Fax: 22 53 51

Seychelles Police
Mr. Tite **MORIN**
Asst. Commissioner
Seychelles Police
P O Box 46
Tel: 28 83 00
Fax: 32 20 05

Seychelles Fishing Authority
Mr. Gerard **DOMINGUE**
Biologist
Seychelles Fishing Authority
P O Box 449
Tel: 22 45 97
Fax: 22 45 08

Seychelles Polytechnic
Ms. Claudia **ABEL**
Student (Humanities & Science)

Ms. Susan **DORA**
Student (Humanities & Science)

Ms. Debra **MICHAUD-PAYET**
Student (Humanities & Science)

Solid Waste Agency Cleaning
Mrs. Mary **STRAVENS**
Managing Director

4. Participants in the Donors Technical Workshop, 29th November, 1999, Seychelles International Conference Centre

Birdlife International

Mr. Allistair **GAMMEL**
Director
Birdlife International
The Lodge, Sandy, Beds SG19 2DL, U.K
Tel: 44 1767 68055
Fax: 44 1767 683211
e-mail: allistair.Gammell @rspb.org.uk

British High Commission

H.E. Mr. John **YAPP**
High Commissioner
United Kingdom of Great Britain & Northern Ireland
British High Commission
P O Box 161, 3rd Floor, Oliajee Trade Centre,
Victoria, Mahé, Seychelles.
Tel: 22 52 25
Fax: 22 51 27

Embassy of the People's Republic of China

Mr. Li **LONG**
Second Secretary
Embassy of the People's Republic of China
P O Box 680
St Louis
Mahe, Seychelles
Tel: 26 68 08
Fax: 26 68 66

Embassy of the Republic of Cuba

Mr. Orlando Pino Lobaina **FOURNIER**
Chargé d'Affaires
Embassy of the Republic of Cuba
P O box 730
Belle Eau, Mahe, Seychelles
Tel: 22 40 94
Fax: 22 43 76

European Commission (EU)

Mr. Paul M.A. **SCHILDKAMP**
Rural Dev. Advisor
European Commission
Delegation of the European Commission
P O Box 1148
Port Louis
Mauritius
Tel: +230 211 6295
Fax: +230 211 6624
e-mail: europe@intnet.mu or paulsch@intnet.mu

Food Agricultural Organisation (FAO)

Mr. Jean-Claude **LEVASSEUR**
FAO Representative
FAO Madagascar / Seychelles
TANA
Madagascaar
Tel: 261 22 621 51
Fax: 261 22 34 388
e-mail: levasseu@dts.mg

Indian High Commission

Mr. Bharat Kumar **TAYAL**
Attaché
High Commission of India
Le Chantier
P O Box 488
Victoria
Tel: 22 44 89
Fax: 22 48 10
e-mail: licomind@seychelles.net

L'Ambassade de France

Mr. Alain **LE RAVALLEC**
Chef du Service Coopération Française
France
Victoria House
Tel: 38 25 25
Fax: 38 25 30

Royal Society for Protection of Birds (RSPB)

Mr. James Andrew **STEVENSON**
International Officer for Conservation
RSPB (UK) The Lodge
Sandy Beds SG19 2DL
Tel: 44 1767 680551
E-mail: jimstevenson@rspb.org.uk

United Nations Development Programme (UNDP)

Dr. Magda **GUNESSEE-VERDICKT**
Assistant Representative UNDP
Anglo-Mauritius House 6th Floor
P O Box 253
Port Louis Mauritius

Tel: 230 212 37 26
Fax: 230 208 48 71
E-mail: magda.verdickt@undp.org

Mr. Roland **ALCINDOR**
Economist
UNDP
Anglo-Mauritius House 6th Floor
P O Box 253
Port Louis Mauritius

Tel: 230 212 37 26
Fax: 230 208 48 71

Dr. Mitrasen **BHIKAJEE**
UNDP Consultant
Mauritius
UNDP Anglo-Mauritius House
P O Box 253
Port Louis Mauritius
Tel: 230 454 1041
Fax: 230 465 6928
E-mail: mitra@uom.ac.mu

UNESCO

Mr. Trevor **SANKEY**
UNESCO Nairobi Office
P O Box 30592
Nairobi Kenya
Tel: +254 2 622364 (direct)
Fax: +254 2 215991
e-mail: trevor.sankey@unesco.unon.org

World Bank

Mr. Michel **SIMEON**
Task Manager
The World Bank
1818 H Street NW
Washington DC – USA
Tel: (1) 202 473 5513
Fax: (1) 202 473 8185
e-mail: msimeon@worldbank.org

World Health Organisation (WHO)

Dr. Stella **ANYANGWE**
Liaison Officer
WHO
Ministry of Health (Blue Roof Building)
Mont Fleuri
Tel: 224 795 / 324 806
Fax: 225 794
e-mail: who@seychelles.net or
anyangwe@seychelles.net

World Wildlife Fund (WWF)

Mr. Jean-Paul **PADDACK**
Representative
WWF Madagascar & West Indian Ocean States
BP 738 Tana 101
Madagascar
Tel: 261 20 22 348 85
Fax: 261 20 22 348 88
e-mail: jppaddack@wwfnet.org

Abbreviations and Acronyms

ADB	African Development Bank
BOT	Build Operate and Transfer
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COI	Commission de L'Ocean Indien
EDF	European Development Fund
EEC	European Economic Community
EMPS	Environment Management Plan of the Seychelles
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GEF	Global Environment Facility
GDP	Gross Domestic Product
GHG	Green House Gases
GNP	Gross National Product
GOS	Government of Seychelles
GTZ	German Technical Cooperation Program
GVSP	Greater Victoria Sewerage Project
IBRD	International Bank For Reconstruction and Development
IDC	Island Development Company Limited
IMF	International Monetary Fund
IMO	International Maritime Organisation
IOC	Intergovernmental Oceanographic Commission
IOT	Indian Ocean Tuna
IUCN	World Conservation Union
JICA	Japanese International Cooperation Agency
LAC	Limit of Acceptable Change
LLC	Lead Local Consultant
IC	International Consultant
MAMR	Ministry of Agriculture and Marine Resources
MA	Ministry of Administration
MEP	Ministry of Economic Planning
ME	Ministry of Education
MET	Ministry of Environment and Transport
MF	Ministry of Finance
MFA	Ministry of Foreign Affairs
MH	Ministry of Health
MIIB	Ministry of Industries and International Business
MITC	Ministry of Information Technology & Communication
MLGYS	Ministry of Local Government, Youth and Sports
MLUH	Ministry of Land Use and Habitat
MSAMD	Ministry of Social Affairs and Manpower Development
MTCA	Ministry of Tourism and Civil Aviation
MYC	Ministry of Youth and Culture
MPA	Marine Park Authority
NDP	National Development Plan
NGO	Non-Government Organisation
ODS	Ozone Depleting Substances

PSIP	Public Sector Investment Program
PUC	Public Utilities Corporation
RSPB	Royal Society for Protection of Birds
RSNC	Royal Society for Nature Conservation
SBS	Seychelles Bureau of Standards
SCCI	Seychelles Chamber of Commerce and Industry
SEPEC	Seychelles Petroleum Company
SFA	Seychelles Fishing Authority
SIBA	Seychelles International Business Authority
SIDA	Swedish International Development Agency
SIDEC	Seychelles Industrial Development Corporation
SIF	Seychelles Island Foundation
SIM	Seychelles Institute of Management
SMB	Seychelles Marketing Board
SNOC	Seychelles National Oil Company
SPTC	Seychelles Public Transport Corporation
SWAC	Solid Waste and Cleaning Agency
TOE	Ton of Oil equivalent
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIDO	United Nations Industrial Development Organisation
USD	US Dollars
WCMC	World Conservation Monitoring Centre
WHO	World Health Organisation
WMO	World Meteorological Organisation
WWF	World WildLife Fund