REPUBLIC OF MAURITIUS

NATIONAL FORESTRY POLICY

Forestry Service
Ministry of Agro-Industry and Fisheries
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1. INTRODUCTION

This new National Forestry Policy for the development of the forest sector in Mauritius is the outcome of discussions and consultations with key stakeholders in government, civil society and other interested parties, a detailed study and review of relevant documents, the forestry sector, related issues and the range of activities associated with the sector. It replaces the previous official forestry policy statement enunciated in 1963.

Work on the preparation of the new Policy began on 01 October, 2004, and was completed on 30 April, 2006. It was undertaken by the Forestry Service under the direction of the Ministry of Agro-Industry and Fisheries. International assistance for the formulation of the Policy was provided by the Food and Agriculture Organization of the United Nations under its Technical Cooperation Programme.

The Policy is a statement of the intentions of the Government for the development of the forest sector and is designed to protect and enhance the country's natural environment, biodiversity and national heritage, while at the same time promoting recreation and tourism. The Policy describes, in general terms, the directions that forestry activities should take in the coming decade to address identified issues and problems. It is also a guide for decision-making.

Forestry policy formulation is a dynamic process that must be reviewed periodically in the light of a changing environment, society and globalisation of forestry.

2. BRIEF DESCRIPTION OF THE FORESTRY SECTOR

The forestry sector includes all activities dependent on forests, trees and other woody vegetation, and all industries based on them. The sector has numerous interactions and linkages with other sectors, such as agriculture, water, environment, tourism and communications.

As a sector, forestry is subject to pressures coming from many directions to which it has to respond. Events outside the sector create new possibilities for improvement, but also bring dangers that must be avoided. Extra demands are continually being made due to people wishing to profit from forests in some way or to enjoy recreational experiences in a natural environment. On the one hand, they can be used to provide additional benefits of many kinds for the people, on the other, they need to be adequately protected and developed.

The two major government institutions responsible for the management of State forest lands, under the Ministry of Agro-Industry and Fisheries, are the Forestry Service and the National Parks and Conservation Service. The Forestry Service is headed by a Conservator of Forests, who is assisted by a Deputy Conservator of Forests and two Assistant Conservators of Forests, two Divisional Forest Assistants, eight Forest Rangers, 10 Deputy Forest Rangers, 38 Foresters and 97 Forest Guards. The Survey Unit of the Service has one Senior Surveyor, one Survey and Mapping Assistant, one Draughtsman, one Head Poler, two Polers and six Chainmen. The Biodiversity Unit, apart from biodiversity conservation, deals also with eco-tourism and landscaping.

Territorially, there are two forestry divisions, North and South, each in the charge of a Divisional Forest Assistant. Each Division has two Ranges and six Sections, making a total of four Forest Ranges and 24 Forest Sections. Forest Rangers are responsible for the four Ranges and Sections are in the charge of Foresters. Six forest nurseries, four the North and two in the South, produce

about 800 000 planting stock annually. The Forest Tree Seed Centre at Abercrombie Nursery propagates highly endangered native species for conservation purpose and decorative planting.

The National Parks and Conservation Service is headed by a Director. His staff establishment is composed of a Deputy Director, a Senior Research and Development Officer, four Research and Development Officers, two Agricultural Executive Assistants, four Technical Officers, two Senior Technical Assistants, one Senior Field Assistant, one Senior Park Ranger, four Park Rangers, three Assistant Park Rangers and other support staff at headquarters and in the field. The Service has a native plant propagation centre, a captive breeding centre, three field research stations and other field facilities.

Other institutions, organisations and individuals interact with forestry in the following areas:

Institutions/organisations/individuals	Areas of interaction
Ministry of Economic Planning and Development Ministry of Finance	National level projects planning strategies. Forestry budget.
Ministry of Housing and Lands Ministry of Local Government and Local Authorities	Land use planning issues, particularly in relation to allocation of state-owned forest lands for development projects District level land use planning matters
Ministry of Environment and National Development Unit	Responsible for Environmentally Sensitive Areas, environmental impact assessment, role of forests in rural development
Ministry of Agro-industry and Fisheries; Forestry Service, National Parks & Conservation Service; Remote Sensing Unit; Mauritius Wildlife Foundation; Private Forest Owners; Sugar Estates and others. Mauritius Sugar Industry Research Institute. Nature Reserves Board and Wildlife and National Parks Advisory Council.	National Forestry Policy implementation. Degraded agricultural lands and improvement of soil fertility. Deer ranching; fishing in rivers, lakes and mangroves. Mapping of natural resources and all land based mapping. Management of privately owned forests. Board and Council provide advice to the Minister.
Ministry of Tourism, Beach Authority	Eco-tourism projects Coastal Zone
Ministry of Public Utilities, Water Resources Unit, Central Water Authority, Wastewater Management Authority, Irrigation Authority	Construction of dams, roads, buildings and other infrastructures
Meteorological Services, Prime Minister's Office	Early Warning System and climate monitoring
University of Mauritius, Mauritius Sugar Industry Research Institute; Mauritius Research Council	Forest staff training and Research
Attorney-General's Office	Legislative matters, legal advice

Increasing the efficiency of these interactions will necessitate a series of institutional adjustments within the forestry administration and strengthening administrative capacity.

There are only two types of forest ownership in Mauritius: public and private. There are no communal forests and no communities living within or dependent on the forests. Because of the rising value of land in Mauritius, private forest owners are more inclined to convert their forestlands to more profitable land use such as ecotourism and housing development than to improve and manage them for timber production.
About 50,000 ha of the land surface (2 000 sq km) of the Republic of Mauritius is under forest cover. An area of about 20,000 ha is owned by the State and some 30,000 ha are in private hands, of which 6 540 ha are protected by law as mountain and river reserves. Plantations, including those in Pas Geometriques (a narrow coastal belt around the island theoretically 81.21 metres in width, but narrower or non-existent in some places), make up about 13 000 ha of the forest cover.

Annual wood production is of the order of

- 5000 cubic metres of logs,
- 2000 cubic metres of poles, and
- 6000 cubic metres of fuelwood.

Timber from State forests is sold to wood merchants registered with the Forestry Service.
There is one large sawmill employing about 120 workers in felling, extraction, sawmilling and wood preservation. There are three other medium-sized sawmills and 30 small ones scattered over the island, employing about 170 workers. The Forestry Service has no control over the licensing of these sawmills.

For over three hundred years in the past, the forests suffered indiscriminate deforestation for agriculture, timber exploitation, sugar cane plantation, human settlement and other infrastructures. On Rodrigues, they were destroyed by overgrazing and unsustainable agriculture.

Only about two percent of the native forest which originally covered most of Mauritius now remains in a few inaccessible areas, and very little of it is left on Rodrigues. These areas have been converted to national parks and nature reserves or other protected areas. The degraded upland native forests have since been reforested with fast-growing exotics which form the bulk of the forest plantations. The upland plantations produce limited timber but play a vital role in soil and water conservation. This is of great importance as most of the island's sugar-cane plantations are situated at middle and low elevations.

3. THE IMPORTANCE OF THE FORESTRY SECTOR

Mauritius is a small island developing state and as such faces various physical constraints that are similar to other small islands. With a few exceptions, most small island states have very limited forest resources. The forests of Mauritius are small in area but perform vital functions, the most important of them being soil and water conservation. Where water is scarce, all major activities, be they agriculture, tourism or manufacturing, are seriously affected. The environmental function**s** of forest~~s~~ in small islands like Mauritius far outweigh their direct economic function**s**. In addition, it is generally recognised that forests in such islands have great ecological, social and cultural significance. When wisely managed, the forest resources of Mauritius can contribute to environmental rehabilitation, creation of job opportunities, supply of wood and non-wood products, food security, ecotourism, recreation and national wellbeing. Forests also play an important role in carbon sequestration and in the conservation of biodiversity and wildlife. Mauritius is rich in endemic species. Consequently, conservation, protection, development of such species through sustainable management of forests and the environment are priority objectives of the overall national policy of Mauritius. In fact, the forests of the island are now managed more for these functions rather than for the production of timber. About half of all catchment areas in the uplands has already been set aside for protective functions. In these areas only the removal of damaged and diseased trees is permitted.

The forest sector provides direct and indirect employment to some 5 000 people in forest resource and watershed management activities, biodiversity conservation, tree planting to provide soil cover in environmentally fragile areas, wood production, primary and secondary processing of wood, wildlife capture and export, deer-ranching and eco-tourism. The contribution of the sector to the Gross National Product is estimated to be about one percent.

Upland forests located in the major water catchment areas, are regulators of surface run-off, floods and ground water recharge. The native forests provide habitat for some very rare and endangered plants and birds as well as endemic reptiles and invertebrates.

Coastal forests act as buffers against strong winds and cyclones, and offer natural backdrops to beaches frequented by tourists. The main tourist resorts are located in this belt. Mangroves, where they exist, serve as nurseries and breeding grounds for numerous fish and shellfish, including shrimps. Coastal forests and mangroves also help contain soil erosion and sedimentation of coastal waters.

Due to its limited land resources and increasing population, Mauritius will always be a net importer of timber. Consequently, timber exploitation will be gradually phased out and restricted to salvage operations following cyclones and other natural disasters such as outbreaks of insect attacks, diseases and droughts. In future, emphasis in forest management will be on increasing the size of the forest estate, resource conservation, protection of watersheds, forest ecosystem and biodiversity conservation and replacement of harmful invasive exotic species by native species. The National Development Strategy provides for the protection and enhancement of planting schemes and tree cover in mountain and river reserves, private forest lands and degraded State forests. The Strategy also proposes acquisition of private forest lands when such acquisition is considered to be in the national interest.

Political, economic and social realities faced by Mauritius in the past three decades have had their impact on the forest sector. There is a continually increasing demand on forests for wood and non-wood (honey, fruits, medicinal plants, etc.) products and services, population pressure on forest land and for recreation and other non-forestry purposes. This situation, coupled with the need to strengthen institutional capacity, lack of an updated policy document and legislative framework for forest management, has created conditions unfavourable for managing the forests effectively.

Rapid industrialisation during the past twenty years has resulted in higher standards of living and new aspirations of the people of Mauritius. However, a modern lifestyle also brings with it stress and pressure on the working people. This increases demand for leisure and recreation in natural surroundings by both local people and the 700 000 tourists who visit Mauritius annually.

Ecotourism is on the rise. More and more people are visiting the forests for leisure activities such as shooting, fishing, rambling, jogging, camping, picnicking, collecting wild fruits, watching wildlife and, as a result, expecting better facilities and services from the forest sector. Annual revenue from ecotourism is estimated at five million US dollars. There is an urgent need to increase capacity, facilities and expertise in the country for the training of staff to prepare them for their new roles.

Recognising the importance of these developments and expectations, the Government has started revising and updating its forestry policy and legislation so as to promote sustainable forest management. Care is being taken to harmonise these instruments with other forest-related national policies and legislation and with forest-related international conventions and agreements which the Government has already ratified. The new forest legislation will provide for better transparency and accountability, responsible public access to forests and increased public and stakeholder role in forest use planning.

4. NATIONAL FORESTRY POLICY PRINCIPLES

In general, policy is based on a set of premises or guiding principles that are considered fundamental to the policy. Guiding principles are not alternatives to choose from. All are essential and discarding any of them will, sooner or later, produce undesirable consequences – economic, social, environmental or cultural. Guiding principles serve also as benchmarks against which to judge the success of policies.

The following principles or premises provide the foundation for forestry policy in Mauritius.

- Assessing the forest estate (extent, forest type, etc.) and designating the forest estate into classification of functions – productive, protective, conservation, recreation and eco-tourism.

- Recognising the important contribution of the environmental functions of forests in water conservation, flood control, combating soil erosion, biodiversity conservation and support for tourism – an increasingly important sector in the island's economy.

- Elaborating a long term forest strategy for conservation of biodiversity and the environment, and implementation of a sustainable forest management system that will make a significant contribution to the socioeconomic development of the country.

- More specifically, managing forest resources and forest lands on a sustainable basis to meet the social, economic, ecological, cultural and spiritual needs of the present and future generations - taking appropriate measures to protect forests and forest ecosystems from pollution, fires, insect pests and diseases in order to maintain their diverse functions.

- Acknowledging the importance of all types of forest in the evolvement of ecological processes and in the maintenance of ecological balance at national, regional and global levels.

- Balancing the development of all types of forest use with income derived from them, preference being given to the least destructive practices that produce the best economic outcome and environmental conservation.

- Encouraging and adopting appropriate land-use practices and planting of tree species that will give the best return on investment in abandoned sugar-cane fields, and also enhance land fertility and productivity.

- Emphasising the role of forests in mitigating the effects of climate change and in carbon sequestration.

- Promoting forestry research in collaboration with research organisations
- Establishing networks of government and non-government institutions and ensuring complementarity of their responsibilities concerning forests.

- Ensuring the development, sustainable management and protection of environmentally sensitive areas, including watersheds, in order to control erosion and fire, and to sustain and increase freshwater supply and quality for all purposes.

- Promoting adoption of sound management measures to reduce damage caused by biotic and abiotic agents to forest, property and human lives.

- Increasing public awareness and providing timely, reliable and accurate information on forest, forest ecosystems and biodiversity conservation to ensure well-informed decision making; also designing an integrated geographical information system and extension services for this purpose.

- Increasing awareness of the problem of invasive species among decision makers and the public, including the potential for resolving conflicts of interest. Trade-offs may be necessary to resolve the conflicts between different stakeholders who may wish to maximise economic benefits on the one hand or minimise environmental damage on the other.

- Encouraging the adoption of improved land-use practices in private lands in order to protect, restore and maintain land fertility and productivity.

- Ensuring the participation of stakeholders (society, industries, nongovernmental organisations, communities residing near forest areas, and individuals, including youth organisations) in the development and implementation of the national forestry policy.

- In compliance with the Sex Discrimination Act of 2002, ensuring gender equity in employment opportunities, training and education in the forest sector and participation in decision-making regarding forest resource management.

- Using the national forestry policy and strategy to define the new, and reinforce the ongoing activities in the sector, including enhancement of the development of institutions and programmes aimed at the rational use of all types of forest, their conservation and sustainable development;

- Developing synergies with national, regional and international organisations and other sustainable cooperative arrangements for forest sector development.

- Carrying out a comprehensive assessment and ensuring integration of all environmental, social and economic aspects related to forests.

- Meeting, to the extent possible, the demand for wood and non-wood forest products through sustainable use of forest resources, afforestation and reforestation; and also carrying out a comprehensive evaluation of the prospects of revalorising degraded private forests through the introduction, where appropriate, of plantations of fast-growing tree species of economic importance.

- Promoting the development of a modern, competitive, efficient and well-regulated wood and non-wood (honey, fruits, medicinal plants, etc.) processing industry in the private sector.

- Supporting efficient use of forest resources by replacing inefficient technologies with modern machinery, equipment and production technologies, especially for local value added processing and branding of Mauritian forest products and by-products.

- Incorporating the results of assessments of economic and vital environmental values of forest goods and services and of the ecological cost-benefit analyses into the national forest policy and programmes to support decision-making on the rational use of forests, their conservation and sustainable development; supporting also the development and improvement of methodologies for such assessments.

- Creating favourable conditions for agroforestry by promoting the best tree and agricultural crop/animal husbandry combinations suited to local site conditions.

- Applying economically and environmentally sound and also socially acceptable measures to maintain and increase the productivity of vegetal cover and forests for rehabilitation of degraded areas.

- Promoting optimum management in forests dedicated to deer ranching.

- Promoting and developing sustainable inland ecotourism.

- Promoting the sustainable use of forests by the people of Mauritius for recreation, leisure and sports activities by providing controlled access and improving the awareness of the public to appreciate the role that forests play in their health and wellbeing.

- Carrying out environmental impact assessment of activities in forests, such as the building of dams, road construction and timber harvesting, in compliance with national legislation and international conventions and agreements.

- Developing criteria and indicators to help evaluate sustainable forest management.

- Giving due consideration to effects from outside the forest sector on all types of forest ecosystems and on the demand for forest resources and services in developing policies and in planning intersectoral cooperation for regulating these effects.

- Enhancing national efforts in carrying out applied research, forest inventory and various types of forest assessment as well as international exchange of information on forests and on the outcomes of scientific research on the rational use of forest resources, making full use of education and training institutions in the country.

- Recognising, protecting and conserving the rich diversity and endemism of the island's native species, including the creation and maintenance of buffer stocks or gene banks, and reserving forest areas rich in biodiversity for scientific and other special management purposes.

- Supporting forestry-related international conventions and agreements signed by the Government of Mauritius and respecting international legislation and practice applied to trade in forest products.

5. OVERALL GOAL OF THE NATIONAL FORESTRY POLICY

Based on these principles, the overall goal of the National Forestry Policy is to create public awareness of the productive and protective functions of the forests, the important role the forest sector plays in national development and human wellbeing and to ensure the conservation and sustainable management of forests and forest ecosystems of the country for the benefit of present and future generations.

6. ISSUES, GOALS, OBJECTIVES AND STRATEGIES OF THE NATIONAL FORESTRY POLICY

The following main issues hindering progress in the forestry sector were identified in detailed discussions with stakeholders. The goals, objectives and strategies proposed are designed to address the issues. Each strategy will have an awareness creation and public information component. Special attention will be paid to creating awareness among school children and local communities of the need to safeguard the forests. Youth clubs and urban populations will also be targeted.

Issue1: Conservation and protection of watersheds and other environmentally sensitive areas in Mauritius and Rodrigues.

Environmentally sensitive areas such as wetlands, steep slopes, watersheds and riparian zones are considered very important, and many of them are vulnerable. While these areas have not yet been clearly identified and demarcated, preliminary indications are that they include native forests, mountains, steep slopes in private forests with rich biodiversity, mangroves and wetlands.

Although Mauritius receives abundant rainfall occasionally, there are indications that the trend of the annual rainfall is decreasing over the years. The current water supply level is not meeting the water demand increase due to economic development, population growth, higher standards of living, low water charges and pollution. To meet future demand, the National Strategy for Sustainable Development proposes construction of dams to increase surface storage capacity, reduction of losses in water transmission systems, water demand management, amongst other measures, and to protect watersheds. However, dam construction, which is destructive of biodiversity, should be the last resort. In Rodrigues, a relatively drier island, water scarcity is the main obstacle to development, and increasing the supply of water on the island is identified as top priority.

Because of the short distances between the mountains and coastal areas in the country, forest ecosystems play a critical role as regulators of water resources in terms of quantity and quality. They also prevent soil erosion, siltation of dams and high sediment loads which, when deposited in the sea, choke coral reefs and other valuable ecological environments and habitats for marine life.

Goal

To ensure sustainable development, management and protection of environmentally sensitive areas such as watersheds and to increase and regulate freshwater resources for all purposes and at all times in Mauritius and Rodrigues.

Objectives

- To increase planting of preferably native trees and other plants suitable for watershed protection around all lakes and in river reserves.
- To increase planting of preferably native trees and other plants on steep slopes and coastal zones to reduce soil erosion.
- To promote more efficient use of land resources in water catchments for protection of recharge zones and water resources through legislation.
- To co-ordinate activities with all government departments, services and interested parties in areas concerning climate, soil, water and watersheds, with particular emphasis on coordination to provide useful, high quality information upon which to base management activities.
- As recommended by the National Biodiversity Strategic Action Plan (2006), to convert half of exotic forest plantations to native forest plantations.

Strategy for achieving the objectives

These policy objectives are to be achieved by the following means:

- Identifying and mapping environmentally sensitive areas and preparing and implementing special management plans.
- Surveying main catchment areas for legal protection.
- Replacing high water demanding alien species in watershed areas by native species, especially in Rodrigues.
- Arranging for public-private partnership or acquisition (with equitable compensation) of private forests in critical areas considered of national importance; identifying at the same time means to manage these forests on a sustainable basis.
- Implementing research projects to expand and update existing knowledge on suitable native species for watershed protection and management.
- Preparing a planting programme based on the results of such research.
- Adopting an integrated approach to watershed management.
- Taking measures for conservation of all surface and ground water resources and their protection from pollution and depletion.
- Implementing measures to minimise soil erosion and sedimentation, particularly for the benefit of aquatic species and ecosystems, freshwater and marine.
- Controlling infrastructural development and improving land management practices in the watersheds and environmentally sensitive areas.
- Identifying and recommending alternatives for activities detrimental to watersheds.
- Developing incentives for proper watershed management practices in private lands.
- Preparing and implementing a public awareness and extension programmes to sensitise people on the need for watershed protection.
- Preparing and implementing reforestation with native species in sensitive areas.
- Developing effective means for rainwater harvesting.
- Conducting research on the impact of climate change on forests.

- Developing forest rehabilitation models for biodiversity conservation purposes in areas where it is appropriate to manage forests to enhance landscape and improve water conservation.
- Establishing a liaison mechanism with all parties concerned to harmonise inputs for the management of watersheds.
- Preparing forestry legislation including protection of watersheds

Issue 2: Increasing tree cover to enhance the environment and the carbon sink capacity of the forests

The National Strategy for Sustainable Development for the period 2003 – 2020 is based on the assumption that, among other things, Mauritius will maintain soil productivity and that landscape and countryside opportunities will still be available. However, the country is known to have a fragile ecosystem and to have suffered high loss of biodiversity in the past. The natural environment of Mauritius is rich but susceptible to damage, in particular from the effects of economic development which generates waste and causes water pollution. The Development Strategy calls for specific policies to protect and improve the environment, manage development in such a way that threats are anticipated and avoided and ensure that the environment is treated as an integral part of general development. Increasing demand for more land for housing to accommodate a growing population, for road construction, for meeting the rising standard of living and annually increasing tourist numbers has resulted in the loss of forest areas and tree cover. In addition, it is estimated that more native forestland will be given over to deer ranching in private lands, leading to further loss of forest and more damage to the environment.

Goal

To prevent further denudation of forest areas and increase the area under native tree cover.

Objective

To promote enhancement of the sink capacity and the environment by increasing forest and tree cover.

Strategy for achieving the objective

A nine-point strategy is proposed, as follows:

- Giving preference to native species over alien species in establishing plantations.
- Launching a nationwide campaign through the media to encourage individuals and institutions to take part in tree planting and protection activities, and to emphasise the importance of forests and trees in improving the natural environment for healthy living.
- Providing owners of degraded forest lands and the general public with incentives to plant trees, such as free or subsidised seedlings, training on maintenance and management of new plantings, and extending tree planting programmes to privately owned forestland.
- Developing programmes to encourage stakeholders (government departments planting trees along roadsides, etc., schools, non-governmental organisations, other civil society organisations) in tree planting in rural and urban areas.

- Identifying good seed trees and seed stands in geographical areas corresponding to plantation sites to avoid loss of biodiversity through mixing of populations, as well as improving seed technologies.
- Increasing the capacity of existing forest nurseries, or establishing new nurseries where needed, and developing seedling production technologies to meet the demand for increased planting.
- Consulting and involving all stakeholders in the process of planning and implementing planting programmes.
- Mobilising financial and other resources needed to increase tree cover and manage plantations.
- Conducting research on the impact of increased tree cover as carbon sink.

Issue 3: Degradation of native forests by invasive alien species.

Although Mauritius has a green mantle, much of the state and private forest lands is actually occupied by degraded scrub vegetation largely composed of invasive exotics. Wild animals, namely monkeys (*Macaca fascicularis*) and deer (*Cervus timorensis russa*), which were brought to the island in the 17th century with other numerous alien species, are another source of destruction of native biodiversity. A characteristic of invasive species is that they grow and spread, largely unchecked by their natural enemies, choking and replacing native species of flora and fauna in the area. At present, only about two percent of the original native forest remains in Mauritius and very little of it is left in Rodrigues.

High water-demanding alien species such as *Acacia nilotica* in watershed areas, especially in Rodrigues which receives less rainfall than Mauritius, must be replaced with native species which have lower water requirements.

Of the 700 species of higher plants indigenous to Mauritius, approximately 310 are endemics. And about 40 percent of the endemic species are threatened by invasive species. A large proportion of the threatened species survive as tiny populations exposed to imminent extinction. Mauritius is rated by the World Conservation Union as the third country in the world to have the most threatened plant species.

Goal

To reverse the process of degradation of biodiversity through habitat restoration using *in-situ* and, where necessary, *ex-situ* conservation techniques.

Objectives:

- To increase the quality of native forests in identified priority locations.
- To increase the number of endemic and indigenous species in priority locations.
- To improve income from useful exotics.
- To discourage the production, sale and use of known invasive alien species.
- To prohibit the importation of new invasive alien species.
- To keep invasive species under control.
- To improve plant and animal quarantine.

Strategy for achieving the objectives

The strategy for halting the process of degradation in unmanaged areas of native forests will rely on the following measures being taken:

- Surveying and identifying priority areas for conversion and conservation.
- Conducting research on the best methods of managing invasive alien species and selecting and restoring native species, taking into account economic, social and environmental factors.
- Fostering research and cooperation with academic institutions and non-governmental organisations.
- Establishing mechanisms to provide funding for research from government and donor sources.
- Controlling and, if possible, eradicating invasive species in high-value forests, based on research results.
- Enhancing human and institutional capacity for control of alien species and ecological restoration.
- Drafting legislation to regulate the conversion/restoration process and ensure protection of native species.
- Developing incentives for private land owners to put and maintain land under conservation use.
- Cooperating with other government departments in the production of a black list of invasive species which should not be allowed into Mauritius, Rodrigues and other islands.
- Setting up participatory mechanisms for planning and implementing measures to eradicate invasive species and conserve biodiversity.
- Ensuring closer cooperation between all stakeholders for concerted action against invasive alien species.
- Investigating the use and developing biological control of invasive alien species.
- Setting up and inter-island quarantine.
- Ensuring the judicious use of levies and green taxes.
- Fostering cooperation between the government, the private sector, academic institutions and civil society.
- Promoting the planting of multipurpose tree species and wise land husbandry practices for income generation.

Issue 4: Deer ranching

It is estimated that there are about 70 000 head of deer in the country (60 000 head on private lands and 10 000 on state forestland leased to deer ranchers) occupying 25 000 ha, with an average stocking of 2.6 deer/ha. Two systems of deer management are practised: ranching and intensive farming. Ranching is by far the most popular activity and comprises about 62 000 head of deer reared on 23 500 ha, of which 10 000 ha are state forestland. Intensive farming comprises a herd of 8 000 head of deer and occupies 1 500 ha, essentially of pasture lands. State-owned forestland leased for deer ranching is managed under the Shooting and Fishing Act of 1966. This Act stipulates that State forestland be leased for a maximum of 14 years, that cleared land should not exceed five percent of the land leased, and that stocking density should not be more than 2.5 deer/ha.

The present practice of deer ranching can be harmful to trees and young seedlings, if appropriate measures are not taken to protect the young trees until they reach a certain height. Production of venison currently amounts to 450 tonnes annually (370 tonnes from private forests and 80 tonnes from state lands). The objective is to increase production to 600 tonnes per year by 2010 to meet the growing market demand. This increase will be produced on additional area put under pasture, comprising mainly abandoned sugar cane lands.

Goals

- To contribute to the enhancement of the environment through increasing forest and tree cover.
- To ensure sustainable management of State-owned forestland leased for deer ranching.
- To encourage sustainable management of private forests opened up for deer ranching, taking into consideration legislation on property rights and environmentally sensitive areas.

Objectives

- To adjust the stocking rate of deer in state and private forests to match the carrying capacity of each ecological area.
- To increase pasture capacity with improved pasture species.
- To eliminate or reduce deer ranching in sensitive areas in State forests to avoid damage to forest ecosystems.

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Strategy for achieving the objectives

The strategy will involve:

- Excluding future deer ranching in environmentally sensitive areas in State forests.
- Determining optimum deer carrying capacity in different ecological zones.
- Limiting the harmful effects of deer on forests and pastures.
- Establishing effective regulatory practices and monitoring of deer ranching.
- Promoting good management of deer ranching on all forestlands.
- Designing and adopting a transparent method of leasing State forestlands for deer ranching.
- Requesting lessees to provide proof of managerial aptitude for the management of leased state forests.
- Amending existing legislation or drafting new legislation to regulate eco-tourism on leased forest lands by promoters of deer ranching.
- Establishing a steering committee, comprising stakeholders and experts, to work out the terms, conditions and parameters of these activities under legislation in force.

Issue 5: Development of inland recreation and eco-tourism business

In recent years, tourist arrivals have been increasing by more than eight percent a year and have now reached 700 000. The tourism industry has thus become one of the most dynamic sectors of

the national economy, accounting for 19 percent of the gross foreign exchange earnings and providing direct and indirect employment for about 75 000 people. However, the rising number of visitors relative to the area of the densely populated island and the fixed length of the coastal zone with its sensitive ecology sets limits on the future development of traditional tourism which is essentially beach tourism. It is proposed in the National Tourism Development Plan for Mauritius and Rodrigues that average spending by visitors can be increased through, among other measures, the development of eco-tourism of inland attractions.

Development of the sector is constrained by the lack of cooperation between institutions in the planning and implementation of projects and activities, lack of finance to create ecotourism facilities and infrastructure inland, and by the acute shortage of staff trained for ecotourism service and maintenance of tourist sites in both the private and public sectors.

Goal

To promote inland ecotourism in order to diversify tourist services and encourage restoration of natural forests and biodiversity through effective participation of all the sectors concerned.

Objective

- To promote and increase eco-tourism sites and activities on state and private forest lands

Strategy for achieving the objective

The strategy for developing inland ecotourism will rely on the following measures:

- Determining the best sites and activities for ecotourism and describing their special features in State forest lands.
- Adopting integrated policies and plans to ensure sustainable development of inland tourism in State forests, and ensuring that tourism development and forest management are mutually supportive.
- Estimating the costs of appropriate infrastructure development in State forests.
- Establishing visitor facilities such as rest houses, restaurants, interpretation centres, and nature trails in State forest lands.
- Developing guidelines for the design and construction of such infrastructures, taking into account water consumption, the generation and disposal of waste and land degradation.
- Carrying out an assessment of the carrying capacity of the areas set aside for tourism and possible impact of tourism-related infrastructures and activities on sites in State forest lands.
- Regulating and ensuring equitable leasing of State-owned ecotourism sites to tour operators.
- Training public and private sector personnel in ecotourism management.
- Establishing rules and regulations to prevent damage to the environment - in particular, to protect rare plant species in tourist sites.
- Providing for special management and protection of rare species of wild flora for aesthetic, commercial or scientific reasons.

- Preparing and implementing management plans for ecotourism sites in State forests in cooperation with the Ministry of Tourism and the National Parks and Conservation Service.
- Charging fees for the use of ecotourism sites by tour operators and individual tourists to offset the costs of managing the sites.
- Conducting public awareness campaigns emphasising the importance of protecting biodiversity and ecology on ecotourism sites.

Issue 6: Forest destruction by recurrent cyclones, fire, insect pests and diseases.

Mauritius and Rodrigues are exposed to recurrent cyclones and other natural occurrences causing considerable damage to plantation forests and property. It is estimated that during the period 1998 – 2004 some 256 ha of forest was damaged by cyclones.

Since 1999, attacks by the accidentally introduced aphid *Cinara cupressivora* on *Juniperus bermudiana* have been the main cause of tree mortality.

Forest fires occur mostly in grasslands and sugarcane fields from where they spread into adjacent forests. The average area of forest destroyed by fire annually during the period 1998 – 2002 was 100 ha.

Goal

To mitigate the effects of damage caused to forests by biotic and abiotic agents.

Objectives

- To increase commercial forest areas by planting cyclone resistant (native) tree species on State forest lands and by promoting similar activities on private lands.

- To strengthen cooperation with appropriate institutions and be prepared for emergencies created by natural disasters and fire.

Strategy for achieving the objectives

The implementation of this strategy will require:

- Recording and analysing the frequency and extent of damage caused by recurring natural disasters.
- Assessing susceptibility of forest types and species to specific causative agents.
- Cooperating with appropriate authorities to strengthen disaster preparedness in order to mitigate, prepare for and respond to frequently occurring natural disasters, and promoting early warning systems and facilities for the rapid dissemination of information and warnings.
- Conducting research on and monitoring pathogens and insects responsible for large-scale damage to forests and establishing a database to be used for prediction and prevention of large-scale outbreaks.

- Establishing a monitoring system to detect early-stage infestations of both native and introduced pests and woody invasive species as a preventative strategy.
- Salvaging plantation trees damaged by cyclones and fires to prevent secondary outbreaks of insect attacks and diseases.
- Establishing and maintaining firebreaks in high-risk areas, especially on mountain slopes.
- Creating a fire-fighting infrastructure and training forestry staff in fire prevention, and fire fighting.
- Investigating which tree species would be best for commercial forest plantations.

Issue 7: Conversion to forest of abandoned sugar-cane land in environmentally sensitive areas

In 2004, 72 000 ha of land was under sugar cane cultivation. It is expected that, in the wake of the 36 % reduction in the price of sugarcane under the sugar protocol, land under sugarcane would be reduced to 65, 000 ha by 2015. This area will include 5, 000 ha of land classified as difficult and sensitive and will be maintained mainly for environmental purposes.
The 7, 000ha of abandoned marginal sugarcane lands would thus be available for forestry and other related activities.

Goal

To encourage planting of abandoned environmentally sensitive areas of sugarcane lands that could remain unutilized with the appropriate tree species.

Objective

- To encourage planting abandoned sugar-cane lands in environmentally sensitive areas with multi-purpose tree species in combination with agricultural/horticultural crops for agroforestry, deer ranching and eco-tourism.

Strategy for achieving the objective

The strategy to achieve the stated policy will consist of the following measures:

- Assessing the extent of land that may become available for conversion.
- Carrying out an environmental impact assessment of conversion to forest of such land.
- Conducting market-oriented field research on the use of most appropriate multi-purpose tree species in combination with agricultural/horticultural crops in agroforestry.
- Ensuring cooperation and support of agricultural services.
- Providing forestry extension services in concert with agricultural extension services for agroforestry practices.
- Planting native or exotic non-invasive timber or non-timber trees of commercial and environmental value.
- Providing free seedlings and free technical assistance to private owners of mountain and river reserves.
- Promoting partnerships in reforestation between wood-using industries and sugar estates.

- In cooperation with the Sugar Authority, investigating the possibility of the sugar estates retrieving and reforesting their now abandoned lands leased to metayers in environmentally sensitive areas.
- Investigating the possibility of retrieving and reforesting state-owned agricultural lands leased for cultivation of sugar cane and food crops in the former tea-belt area.
- Promoting the establishment of urban and peri-urban forests.

Issue 8: Land degradation in Rodrigues

Land degradation in Rodrigues is due to conversion of forests to subsistence agriculture and grassland currently under intensive domestic livestock rearing. Limited alternative land-use opportunities on steep slopes have led to the development of largely subsistence agriculture and destruction of most of the natural forests by the early 1970s. Intensive use of grasslands for pasture, topography, harsh climate and frequently occurring drought, have resulted in substantial land resource degradation. Impacts of land degradation are manifested in loss of fertile topsoil, decrease in pasture quality and productivity, increased run-off and sedimentation of dams and lagoons.

Possession of livestock is an important part of the culture of the people of Rodrigues, where owning large numbers of cattle is considered a sign of wealth. A reduction in the number of livestock is bound to occur as land degradation continues relentlessly and continuously. Urgent action needs to be taken to reverse the process and avoid a negative impact on local culture.

Goals

- To improve the management of lands in order to restore soil fertility, improve soil productivity for agricultural production, animal husbandry and forestry and plant suitable native tree species and non-invasive exotics in combination with agricultural crops and high-yielding pasture species.
- In particular, to improve soil and water conservation practices, environmental conditions and livelihoods in Rodrigues.

Objective

- To increase the productivity of pastures by increasing fodder tree species by one percent annually to ensure sustainable livestock management.
- To promote agro-forestry practices for sustainable soil and water conservation.
- To carry out afforestation with suitable native species.

Strategy for achieving the objective

The strategy will involve:

- Introducing comprehensive awareness programmes on the hazards of livestock overstocking and land degradation.
- Identifying and regulating common pastureland use.
- Increasing the availability of fodder for livestock farming, including the planting of leguminous fodder trees and cover crops together with grass.

- Establishing inter-sectoral, multidisciplinary institutional structures such as coordinating committees to provide the enabling conditions to encourage more diverse land-use practices and use participatory approaches in the planning and management of land use.
- Encouraging rotational agri-silvi-pastoral systems, using drought resistant species, through establishment of demonstration farms and cost-benefit-sharing schemes.
- Establishing community forests with well-defined management and regulatory systems in areas that are subject to grazing and are situated relatively near residential areas.
- Ensuring that women are fully involved in and receive equitable benefits from forestry activities.
- Establishing an effective system of protection and control of pasture areas by community members.
- Establishing water harvesting structures in suitable areas.
- Ensuring efficient management and use of water in agriculture as well as protection and conservation of watersheds.
- Recycling of organic waste for replenishment of soil fertility.
- Rehabilitating and maintaining all terraces.

Issue 9: Development of small forest-based businesses for income generation in Rodrigues and Mauritius

One of the strategic goals of the Government is to encourage productive activities that can generate additional income for the low income groups. In Rodrigues, the Rodrigues Regional Assembly has indicated that there is a need to develop non-wood and hand-crafted wood products to help people.

Currently, handicrafts made from *Pandanus*, bambousa, *Ravenella*, honeysuckle and other species are important products that sustain community businesses with an estimated annual revenue of US$ 71 000. About 75 tons of green fodder is removed annually from the forests, while bee-keepers produce about 75 tons of honey in the forests. Although these values seem modest, the potential exists for generating more income if production techniques and product quality are improved. In Mauritius, there are many people who earn their living by selling forest produce such as Chinese guava, jamblong, etc. These could be processed, packed and marketed for value addition.

Local communities are allowed restricted access to forest resources so as to prevent forest destruction. In Rodrigues, the current legislation does not provide incentives for people to invest in tree planting.

Goal

To contribute to poverty alleviation in Rodriguan and Mauritian communities through developing small-scale forest-based businesses.

Objective

To improve the incomes of the poorer segments of Rodriguan and Mauritian communities through small-scale business development. By establishing community forests in Rodrigues forests could be managed on a participatory basis and thereby contribute to poverty alleviation.

Strategy for achieving the objective

The strategy for developing small forest-based business enterprises will require:

- Preparing and launching a programme to train forest officials in participatory forest management and extension techniques.
- Preparing and launching a programme to train community members, including women, in participatory forest management/social fencing principles.
- Preparing and implementing a management plan for establishing community forests or designating some existing forests as community forests for small business production that is jointly managed on a cost-and-benefit-sharing basis between the Forestry Service and Rodrigues community.
- Introducing in community forests fodder trees, fruit trees, flowering plants and trees that produce other products to support handicraft and honey production activities.
- Creating plantations of species suitable for handicrafts to support income generating activities for women.
- Establishing, in collaboration with non-governmental organisations and fund-raising bodies, a system of credit management to help communities or individuals, especially women, start their own businesses.
- Ensuring participation and consolidation of the efforts of major players in planning and implementing activities.
- Developing a suitable marketing strategy for forest-based products.
- Training stakeholders in value addition of products.

Issue 10: Improvement of the Forestry Service in Mauritius and Rodrigues

It has been emphasised in various national and sectoral strategies that the role of the public service has to be redefined as promoting and regulating institutions rather than production institutions. This means that production activities should be gradually transferred to other organisations with competence to manage forest production activities efficiently and effectively.

In line with the above, the Forestry Service in Mauritius and Rodrigues will review its role to meet the above requirement.

Goal

To establish a highly technical, efficient and effective public forestry administration in Mauritius and Rodrigues which is capable of promoting the sustainable management of forest resources to meet societal demands for products, forest resource conservation, recreation and environmental services.

Objective

To consolidate the Forestry Service by providing adequate and well trained staff and logistics to carry out policy and planning functions as well as regulatory and monitoring responsibilities related to sustainable forest resource management and conservation in Mauritius and Rodrigues.

Strategy for achieving the objective

The strategy for developing and effective public forestry administration relies on:

- Carrying out a thorough review of the functions, structure, organisation and employment and promotion regulations of the Forestry Service.
- Analysing job descriptions of all categories of Forestry Service staff to ascertain their relevance to the new tasks that they will have to perform while implementing the new National Forestry Policy.
- Preparing new job descriptions, management manuals and rules of procedure, including measures to promote career development.
- Assessing human resource needs of the Forestry Service in the light of its changed mandate under the new Forestry Policy.
- Training all categories of staff for their new roles.
- Restructuring and reorganising the forestry administration for its new role as a policy developing, planning, monitoring and regulatory body.
- Preparing a plan for transferring operational and production functions to competent organisations.
- Drafting a code of ethical conduct in cooperation with staff to ensure good governance.
- Establishing a mechanism to facilitate stakeholder participation.
- Setting up a regular information and communication system within the administration, with other government institutions and civil society.
- Providing adequate resources for Policy implementation and law enforcement.

7. ENABLING FRAMEWORK FOR IMPLEMENTING THE NATIONAL FORESTRY POLICY

The main elements of an enabling framework for implementing the Forestry Policy are:

i. Sectoral planning
ii. Investment in the sector
iii. Intersectoral coordination
iv. Institutional reform
v. Forestry legislation
vi. International cooperation
vii. Sector monitoring and evaluation

i. Sectoral planning

A National Forestry Action Programme will be prepared to provide a strategic framework for the development of the forest sector. The Action Programme will indicate in some detail how the Forestry Policy will be translated into action over a given period of time. Issues will be prioritised. Organisational and institutional roles and responsibilities will be revised in the light of Policy orientations and the changes will be reflected in revised legislation.

ii. Investment in the sector

The implementation of the Forestry Policy will require significant financial and human resources. Within the framework of the National Forestry Action Programme, the government will develop an investment programme for the sector. In the initial stages, partnerships will be sought and funding from international sources will be pursued, particularly in the areas of forest

conservation, restoration of native forests, biodiversity conservation and development of inland ecotourism.

iii. Intersectoral coordination

A coordinating committee will be established to guide the planning and coordination of activities in the sector. Government ministries and other stakeholders will be represented on the committee. In addition, a consultative forum on forests will be set up to allow the public, international agencies, donors and other interested parties to contribute to a regular debate on the development of the forestry sector.

iv. Institutional reform

The institutional framework of the Forestry Service will be restructured and reorganised, as proposed under **Issue 10** above, to implement the Forestry Policy.

v. Forestry legislation

The Government is in the process of reviewing and revising the existing Forests and Reserves Act of 1983 and the Shooting and Fishing Leases Act. The revised legislation on forests and reserves will provide an enabling legal framework for the implementation of the new National Forestry Policy and the National Forestry Action Programme.

vi. International cooperation

Mauritius is signatory to a number of international instruments that influence the forest sector and is party to other non-legally binding instruments. The government will mainstream the main convention objectives through national legislation and action programmes.

The main conventions that concern the forest sector are:

- United Nations Convention to Combat Desertification
- Convention on Biological Diversity
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention on Wetlands of International Importance , especially as waterfowl habitat (the Ramsar Convention)
- United Nations Framework Convention on Climate Change,1992
- Kyoto Protocol, 1999.
- Convention on the Protection of the Ozone Layer, Vienna, 1985
- Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987, with amendments.

The Government of Mauritius participates actively in sessions of the United Nations Forum on Forests (UNFF) and reports regularly to the UNFF Secretariat on progress made on the implementation of the proposals for action of the Inter-governmental Panel on Forests (IPF) and the Inter-governmental Forum on Forests (IFF).

vii. Sector monitoring and evaluation

The government will monitor the implementation of the new Forestry Policy and evaluate the impact of the institutional reforms and strategies developed under the National Forestry Action Programme. Impacts will be measured against the following policy performance indicators:

- sustainable use of the forest resources,
- restoration of native forests,
- maintenance of vital ecological services, and
- development of ecotourism.

A forestry information system will be developed. All forestry sector projects and investment programmes will set out plans for monitoring and evaluation, and identify specific indicators to show progress and impact. The results of this sector monitoring and evaluation will be published annually.

Other conditions necessary for the successful implementation of the Policy are:

- Adoption of the Policy by the Government.
- Commitment of the Government and all other stakeholders to the effective implementation of the Policy.
- Appropriate financing from
  - Government,
  - Other sources (international non-governmental organisations, donors agencies),
  - revenue generation (e.g. user fees).
- Adequate capacity within all relevant institutions.
- Participation of all stakeholders in all aspects of implementation.
- Use of effective, workable and practical approaches and instruments, compatible with other policies related to forests.
- Transparency and accountability, with an adequate flow of information among all concerned parties, and with mechanisms for feedback.
- Clear definition of stakeholder roles and responsibilities in the implementation of the Policy.
- Integration, institutional linkages and cooperative arrangements among relevant government agencies, as well as between government and civil society.
- Observance of internationally accepted norms and practices relevant to forestry.