PROJECT DOCUMENT

Republic of Seychelles

United Nations Development Programme
Global Environment Facility

Integrated Ecosystem Management Programme:
Mainstreaming Prevention and control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape

Short Title: Mainstreaming Biosecurity Project

PIMS: 3820 Proposal ID: 00045017

Brief Description: The Seychelles islands are a repository of globally significant biodiversity that has evolved in isolation to the biota of the Continental landmasses. The islands are part of a Global Conservation Hotspot: Madagascar and the Indian Ocean Islands. The ecological integrity of the islands is still generally better than those in many small island states. However, biodiversity is threatened by Invasive alien species (IAS) brought into the country through the trade, travel and transportation sectors. IAS comprise the single greatest threat to native species and habitats. Invasive plants out-compete and smother the native flora, while invasive animals similarly out-compete and prey on the fauna. The Seychelles currently has an inadequate internal framework for controlling the entry of IAS into, and their spread within, the archipelago. The country has taken impressive steps to eradicate invasive alien species from small islands and to restore small island ecosystems. It is taking a number of actions to eradicate invasive fauna and control weeds on larger islands, where technology permits. However, such investments make little sense as long as the door is left open to the arrival of new IAS and there is a risk of re-invasion.

The Government of Seychelles has established a comprehensive Environment Management Plan (EMPS) aimed at addressing a number of environmental challenges, including biodiversity conservation. With the assistance of UNDP-GEF it has initiated a Programme, known as the Integrated Ecosystem Management (IEM) Programme, to address threats to biodiversity stemming from production sector activities. The Biosecurity Project aims at addressing the threats posed to the Seychelles' biodiversity by the introduction of IAS through the movement of people and merchandise into and within the country. Working on the principle that 'prevention is better than the cure', the project will address three sets of barriers to addressing this threat, namely capacity deficits inherent in the policy and legislative framework, capacity weaknesses within institutions, and technical capabilities. Interventions are geared towards improving the effectiveness of institutions mandated with regulating trade and travel, and changing attitudes amongst production enterprises and the citizenry at large, regarding the risks posed by IAS to the environment and economy. Measures to halt the inter-island spread of IAS already established on some islands will be instituted together with a monitoring system to assess their efficacy and inform national management responses. Finally, the project will establish a knowledge management facility to ensure that control and eradication schemes for IAS are being undertaken with full access to information on the relative efficacy and the costs of different treatment options.

The project complements a second initiative under the IEM Programme, the UNDP-GEF Mainstreaming Biodiversity Management into Production Sector Activities Project, which addresses the direct threats to biodiversity associated with the two main production sectors, namely tourism and artisanal fisheries. However, it differs from that initiative by focusing on the entire production landscape of the country, and sectors across the economic spectrum.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABS	Access & benefit Sharing
AIS	Alien Invasive Species
AG	Attorney General
BD	Biological Diversity (Biodiversity)
BD 2	Mainstreaming Biodiversity Strategic priority
CBD	Convention on Biological Diversity
CCA	Common Country Assessment
CCF	Country Cooperation Framework (UNDP)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COI	Commission de l'Océan Indien
COMESA	Common Market for Eastern and Southern Africa
CPUE	Catch per Unit Effort
DA	District Administrator
DMC	Destination Management Centres
DOE	Department of Environment
DOF	Department of Finance
DONR	Department of Natural Resources
DOTT	Department of Tourism and Transport
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIC	Education, Information and Communication Section (DOE)
EIS	Environmental Information System
ENGO	Environmental Non-Governmental Organization
EMPS	Environment Management Plan of Seychelles 2000-2010
EOP	End of Project
EPA	Environmental Protection Act (1994)
EPA	Economic Partnership Agreements
EU	European Union
FAO	Food and Agriculture Organization
FBOA	Fishing Boat Owners Association
FFEM	Fond Francais de l'Environnement Mondial
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GISP	Global Invasive Species Programme
GCRMN	Global Coral Reef Monitoring Network
GMO	Genetically Modified Organism
GOS	Government of Seychelles
GVI	Global Volunteer Initiative
IAPC	Inter African Phytosanitary Council
IAS	Invasive Alien Species
IBRD	International Bank for Reconstruction and Development (World Bank)
ICS	Island Conservation Society
ICRAN	International Coral Reef Action Network
ICZM	Integrated Coastal Zone Management
IDC	Island Development Company
IEM	Integrated Ecosystem Management (programme in Seychelles)
IMO	International Maritime Organization
IMPASP	Integrated Marine Protected Area Systems Plan
IPGRI	International Plant Genetic Resources Institute
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IPPC	International Plant Protection Convention
ISO	International Standards Organisation
ISPM	International Standards for Phytosanitary Measures
ISSG	Invasive Species Specialist Group (IUCN)
IUCN	World Conservation Union
LIS	Land Information System
LME	Large Marine Ecosystem
LMO	Living Modified Organism
LUNGOS	Liaison Unit for NGO's
MASMA	Marine Science for Management
MCSS	Marine Conservation Society, Seychelles
MDG	Millennium Development Goal
MENR	Ministry of Environment and Natural Resources
MEPE	Ministry of Economic Planning and Employment
MEY	Ministry of Education and Youth
MNP	Marine National Park
MPA	Marine Protected Area / Marine Parks Authority
MFA	Ministry of Foreign Affairs
MISD	Management Information and Statistics Division
MLGCS	Ministry of Local Government, Culture and Sports
MLUH	Ministry of Land Use and Habitat
MNA	Member of the National Assembly
MOF	Ministry of Finance
MOU	Memorandum of Understanding
MSA	Maritime Safety Administration
MSP	Medium Sized Project
NBSAP	National Biodiversity Strategy and Action Plan
NBF	National Biosafety Framework
NC	Nature Conservation (Division of MENR)
NCSA	National Capacity Needs Self Assessment
NEAC	National Environment Advisory Council
NGO	Non-Governmental Organization
NPPO	National Plant Protection Organisation
NPTS	Nature Protection Trust Seychelles
NS	Nature Seychelles
NTZ	No Take Zone
OIE	Office International des Epizootes (World Animal Health Organisation)
PA	Protected Areas
PAT	Plan d'Aménagement du Territoire (Land Use Plan)
PCA	Plant Conservation Action Group
PCU	Programme Coordination Unit
PPS	Policy Planning & Services (Division of MENR)
PPS	Plant Protection Service (MENR)
PSC	Project Steering Committee
PUC	Public Utilities Corporation
SR	Seychelles Rupee
SADC	Southern Africa Development Community
SBC	Seychelles Broadcasting Corporation
SBS	Seychelles Bureau of Standards
SCCI	Seychelles Chamber of Commerce and Industries
SCMRT	Seychelles Center for Marine Research and Technology
SEYMEMP	Seychelles Marine Ecosystem Management Project
SFA	Seychelles Fishing Authority
SHTA	Seychelles Hospitality and Tourism Association
SIB	Seychelles Investment Bureau
SIDS	Small Island Developing States
SIF	Seychelles Island Foundation
SLM	Sustainable Land Management
SMB	Seychelles Marketing Board
SPC	Secretariat of the Pacific Community
SPS	Sanitary and Phytosanitary Agreement of the WTO
SPREP	South Pacific Regional Environment Programme
SWIOFP	South West Indian Ocean Fisheries Project (GEF-UNDP)
TCPA	Town and Country Planning Act
TPR	Tripartite Review (UNDP)
TRANSEC	Transport Security (under Police department, dealing with Port and Airport security)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WIOLab	Western Indian Ocean Land based activities (GEF-UNEP Project)
WIOMSA	Western Indian Ocean Marine Science Association
WTO	World Tourism Organization; also : World Trade Organisation
WWF	World Wide Fund for Nature

BACKGROUND

1. This project forms part of a Programme entitled Integrated Ecosystem Management (IEM) in the Seychelles. The Programme is designed to implement components of the Environmental Management Plan of Seychelles (EMPS) pertaining to the conservation of biodiversity, designed to better nest conservation into the development plans and practices of the economy's production sectors. The Programme consists of two complementary projects, developed in close parallel to each other. Both initiatives derive from a Concept for the IEM Programme approved in the GEF Pipeline in June 2003, with projected GEF funding needs amounting to US$ 6 million. The Programme is aligned against the GEF second Strategic Priority for the Biodiversity Focal Area: Mainstreaming Biodiversity into Production Sectors and Landscapes, and satisfies the eligibility requirements governing GEF funding. The projects are:

- Mainstreaming Biodiversity Management into Production Sector Activities: The project aims at mainstreaming biodiversity management objectives into the activities of the two principle production sectors in the Seychelles, namely tourism and artisanal fisheries. The project is designed to address threats deriving from, and conservation opportunities embedded in, these sectors, working vertically along the supply chain to improve production and marketing practices. The Project was submitted and approved under the GEF June 2006 Intersessional Work Programme for a sum of US$4 million, including US$0.3 million in preparatory assistance funds and co-finance totaling US$7.59 million.

- Mainstreaming Prevention and control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape: The Project is designed to address the specific threat to native species emerging from Invasive Alien Species, through a cross sectoral intervention aimed at reducing the risk of new IAS arrivals in the country through travel and trade, and their spread between islands within the archipelago. The Project also aims to improve the cost effectiveness of existing IAS control programmes. While also designed to mainstream biodiversity in production practices, the project focuses on the production landscape rather than specific sectors. The GEF budget is US$ 2 million, with confirmed cofinancing amounting to US$4.61 million.

2. The Programme has been segmented into two projects because the strategies and interventions needed to mainstream biodiversity management into specific production sectors on the one hand, and across the production landscape as a whole, are necessarily different. The two projects are designed to allow each strategy to be given better definition and focus with a view to optimizing impacts. However, the projects will be implemented in close association under the same steering mechanisms, thus ensuring strong synergies in effort and making best use of capacities.

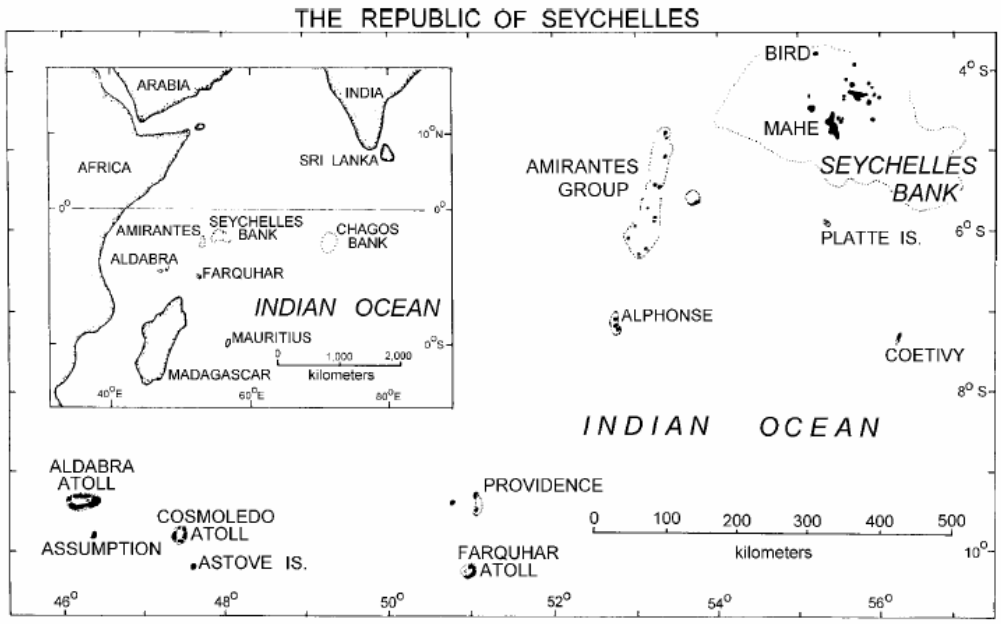
PART I-A: Situation Analysis

1A.1 Environmental Context

3. The Seychelles is an island archipelago in the Western Indian Ocean located between 3 and 10 degrees south of the equator and between longitude 46 and 57 degrees east. It has a total land mass of 455 square kilometers, and an Exclusive Economic Zone (EEZ) covering 1,374 million square kilometers. Seychelles consists of 155[1] islands, of which 42 are of granitic composition and the rest of coralline origin. The Map overleaf depicts the location of the archipelago.

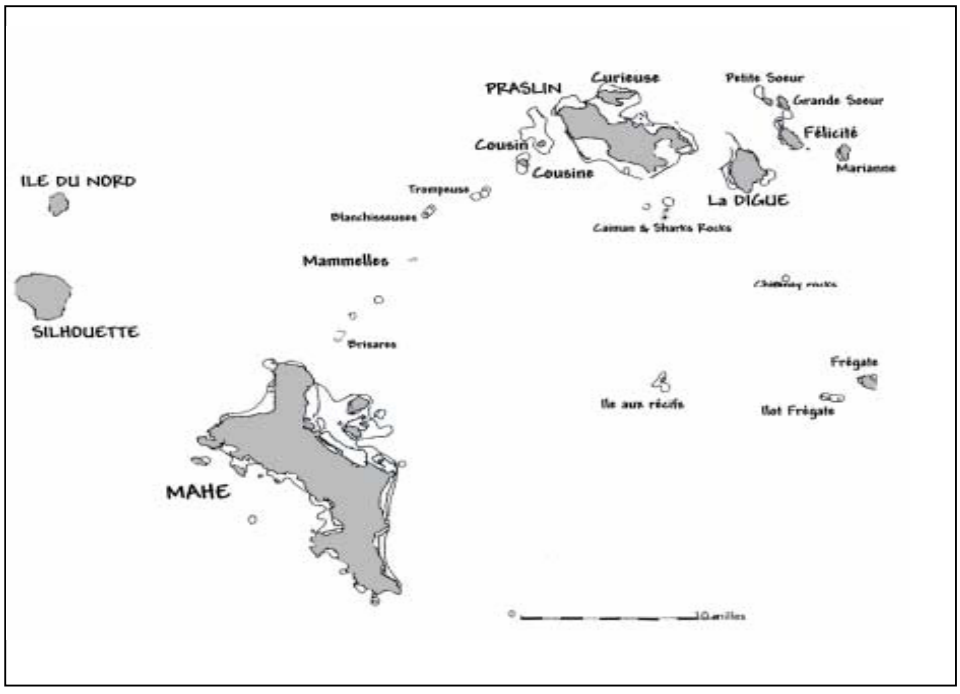
[1] A total of 155 islands and islets are named in the Seychelles Constitution (1993).

Map 1. Location of the Seychelles Archipelago



4. The main granitic islands, also known as the inner islands, are, in descending order of size: Mahé, Praslin, Silhouette and La Digue. The main outer islands are, running from the North to the South of the country, Bird, Denis, the Amirantes group, Alphonse, Coetivy, and the Aldabra, Cosmoledo and Farquhar groups (Map 1). Map 2 shows the location of the granitic islands.

Map 2. Inner Granitic Islands



5. The principle terrestrial habitats of the granitic islands are: a) beach and dune vegetation; b) lowland and coastal forests up to 200-300m; c) intermediate forests from 200 to 500m altitude; d) granite inselbergs or “glacis” outcroppings; and e) mountain mist forests over 400-500m. On the coralline islands, higher locales are characterised by mixed scrub vegetation. Where sea water

commonly penetrates the limestone, the Pemphis thicket type is commonly found. Coastal habitats include a variety of wetland types, rocky shores and sandy shores. The Marine environment includes 1,690 km^2 of coral reef habitats that may be broken down into three types: a) fringing reef; b) atolls; and c) platform reefs, as well as offshore submarine plateaux.

1A.2 Global Significance of Biodiversity

6. The Seychelles is part of a recognized Global Conservation Hotspot: Madagascar and the Indian Ocean Islands Region[2]. The archipelago was created as a result of continental drift more than 65 million years ago, when the super continent Gondwanaland separated into the continental landmasses of Africa and the Indian Sub Continent. The granitic islands are Gondwana remnants, presently located far from the nearest landmass[3]. The long geological isolation of the archipelago has allowed evolution to follow its own course from that in the larger Gondwana remnants, although there are similarities in the biota.

7. The granitic islands are characterized by a rugged central range of hills with many steep, smooth, bare rock inselbergs known as "glacis". The hills of the granitic islands are surrounded by a narrow, flat, sandy and often marshy coastal strip of land. These islands and islets are a storehouse of over 80 endemic species of flowering plants, 10 endemic species of ferns and 62 endemic species of bryophytes. The latter are found mostly in the intermediate and mist forests that cloak the interior mountains. The 111 outer islands are coralline islands that have developed from the slow accretion of coral living in shallow waters. The coralline islands are small, flat and geologically much younger than the granitic islands. While still diverse biologically, they do not harbour the same degree of species endemism as the granitic islands. The coral islands have 15 known floral endemic species. The island of Aldabra, the largest raised coral atoll in the world, is considerably older than the other coralline islands and accordingly has a higher degree of endemism.

8. The following summarises some of the key features of the terrestrial biodiversity[4]:

- Of the some 250 indigenous floral species in Seychelles, as many as 54 taxa or almost 21 percent of the flora are now considered threatened.
- Thirty endemic taxa of birds occur, including 8 that are classified as globally threatened. The endemic birds of the granitic islands, e.g. Magpie Robin (*Copsychus sechellarum*) and Seychelles White-eye (*Zosterops modesta*), have been studied extensively and are the focus of ongoing conservation programmes.
- The archipelago has the highest ratio of amphibian endemics of any island group in the world. Two species of snakes, about 22 endemic species and subspecies of geckos and skinks, and one chameleon are endemic to the islands.
- At least three endemic species of terrapins have been described from Seychelles.

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[2] A hotspot is a terrestrial area with at least 0.5%, or 1500 of the world's ca. 300,000 spp. of green plants *(Viridiplantae)*, and that has lost at least 70% of its primary vegetation *(Myers, et al., 2000)*. 34 hotspots have been identified globally. The Madagascar and Indian Ocean Islands Hotspot of which the Seychelles is part contains 11,600 species of endemic plants, of an estimated 13,000 occurring. 183 out of the 313 species of birds, 367 out of 381 species of reptiles and 226 out of 228 species of amphibians are also endemic (Myers et al 2004). The island of Madagascar—by virtue of its size, harbors the largest number of these species. However, the long geological history of isolation of the smaller islands has led to tremendous speciation, and each of the major groups of islands, the Seychelles Archipelago, the southern Mascarene islands of Mauritius, Rodrigues, and Reunion, and the islands of Comores, and Mayotte, also harbour important assemblages of biodiversity. The Seychelles – in common with the other islands – has a high degree of endemism, implying that significant components of its biodiversity are irreplaceable and cannot be protected through conservation action elsewhere in the Hotspot.

[3] The main granitic island of Mahé is located 1,000 kilometers to the North East of Madagascar, and 1,580 kilometres from the East African coast.

[4] Mainly reported by Keuffer & Vos, 2004 and Shah et al., 1997.

- Aldabra has the largest surviving wild population of giant tortoises in the world (around 140,000), and the last remaining wild populations of giant tortoises in the Indian Ocean.
- The river and wetland ecosystems of the granitic islands support a number of endemic aquatic species including the endemic crab genus *Seychellum*, certain species of mayflies and caddisflies, and the snail *Paludomus ajanensis.*
- Endemic fishes found in the freshwater habitats are *Pachypanchax playfairii* and *Parioglossus multiradiatus*, recently discovered in 2005.
- The terrestrial molluscs of Seychelles show high endemism on some granitic islands and on Aldabra.
- Endemism in scorpions, spiders and insects is very high. The biota includes the world's largest millipede. Many species are single island endemics.
- Some 7% of the invertebrate species can be considered threatened, and of these some 50% are critically endangered.

9. Although the marine fauna of Seychelles remains largely unexplored, and the inventory is incomplete, recent surveys have shown biological diversity to be high[5]. While the terrestrial fauna and flora of Seychelles are quite well studied and understood, the marine biodiversity is more poorly known. The coastal and marine environment contains a storehouse of many different species of mangroves, seagrasses, algae, phytoplankton, zooplankton, sponges, corals, crustacea, mollusks, echinoderms, reef and pelagic fish, sea turtles, sea birds and marine mammals. The following lists the key attributes of the country's coastal/ marine environments:

- Extensive mangrove habitats are found in the lagoons of Aldabra, Cosmoledo and Astove Island groups, where they provide important nesting, nursery and resting habitats for a variety of seabird species, as well as nursery grounds for fish.
- Extensive seagrass beds occur around the Outer Islands.
- An estimated 18% of sponges known to occur in the Seychelles are regional endemics.
- More than 300 species of Scleractinian corals have been recorded in Seychelles waters.
- Recent offshore sampling identified 55 bivalve species of molluscs, of which 26 were new to the Seychelles and 10 were new to science.
- Close to 1000 fish species have been recorded from Seychelles, some 400 of which are associated with reef ecosystems. Examples of endemics are the Seychelles clown fish (*Amphiprion fuscocaudatus*), the Seychelles bamboo shark (*Hemiscyllium ocellatum*), and two new species of sharks (*Squalus lalannei* and *Centrophorus seychellorum*) that have recently been described. The whale shark (*Rhincodon typus)* is common in Seychelles waters.
- An important feature of Seychelles is its vast numbers of breeding seabirds, both in the granitic and outer islands. Some colonies host more than one million birds and are among the largest in the Indian Ocean and the world (e.g. *Frigate* spp.). Seychelles is not situated along any important migratory route. However, many migratory species, especially waders, occur regularly.

10. A summary of the key characteristics of different habitats is provided in table 1 below[6].

Table 1: Key Characteristics of Habitats

Habitat	Key Characteristics
Beach and Dune Vegetation	• Severely modified by early settlers • Endemic spp. not dominant, except Pandanus • Some of the Outer Islands still retain some original beach vegetation

[5] The West Indian Ocean region is considered to be a distinct marine biogeographical province within the larger Indo-West Pacific region, harbouring a high diversity of marine life and exhibiting high levels of regional endemism. Some 11,000 marine fauna have been identified, but the data set is fragmented. Some observers posit that less than 50% of species have thus far been described (Griffiths, Indian J, Mar. Sci. In press).

[6] Adapted from National Biodiversity Strategy and Action Plan (Shah et al., 1997).

Habitat	Key Characteristics
Coastal and lowland forests (up to 300m)	• Important for bird habitats/turtle nesting • Moderate levels of endemism • Modified by settlers for coconut plantations • Fragmentation is high • Important bird habitats, including for migratory birds • Important feature of coral islands
Intermediate Forest (200 to 500m altitude)	• Rich in endemic species • High canopy forest, c. 30-40m • Relatively large fragments remain • Drier areas dominated by endemic palm trees
Mountain mist forests (over 500m altitude)	• Rich in endemics, although less rich than the intermediate forest • Support rare and endemic amphibians and other organisms
Glacis or Inselbergs	• Solitary monolithic granitic outcrop habitats of difficult access • High levels of endemism • Provide habitat for the extremely rare genus *Medusagynae* • Highly symbiotic relationships may exist in these habitats; • Important bird, endemic bat habitats • Habitats not directly modified by man
Rivers and streams	• Many indigenous and endemic invertebrates • Highest diversity found between 100 – 400m in the transition zone from upper to middle course
Wetlands	• Mangroves, marshes and freshwater wetlands • Support several endemic species, both plants and animals • Important bird habitats, fish nursery
Rocky shores	• Limited vegetation: coconut, Casuarina, and the endemic *Pandanus balfourii* • Molluscs, crabs, rockhoppers, barnacles, algae • Underwater: Foliose and encrusting corals
Fringing reef systems	• Occur around the granitic islands • Associated with a complex of communities including seagrasses and algae • Those reefs found on a granitic base have the highest rates of recovery from the 1998 bleaching event
Atoll reef systems	• Typical reef systems of the Outer Islands • Atolls may be very low islands or raised up well above sea level. They typically have a central lagoon connected to the sea. • Slow, linear rates of recovery from the 1998 bleaching event
Platform reefs	• Found around the Amirantes Group of islands • Migratory routes for pelagic fish
Open ocean	• Nutrient poor • Mainly highly migratory pelagic species such as tuna and tuna-like species

1A.3 Threats to Seychelles Biodiversity

11. Seychelles' globally important biodiversity is threatened by a range of economic activities. Invasive alien species (IAS) brought into the country through trade and travel comprise the single greatest threat to terrestrial biodiversity. Alien plants can out-compete and smother native flora, while alien invasive animals can similarly out-compete and prey upon fauna. Physical development and expansion of infrastructure also pose threats by fragmenting natural habitats. Marine biodiversity is threatened by localized overfishing, localised pollution and sedimentation. Global anthropogenic climate change poses an as yet unquantified threat to biodiversity.

12. Historical records indicate that the 'inner' islands were originally covered by dense forests, supporting large populations of birds and reptiles. Marked changes to the natural environment have taken place over the past 235 years. The main threats to biodiversity have historically been associated with production activities, and this continues to be true today. Until recently, terrestrial

habitats were the most severely affected, particularly through the extraction of timber and clearance of coastal land for the production of food crops and later for cash crops. Some of the earlier cash crops have become major invasive alien species (e.g. cinnamon). The physical development of the islands contributed to habitat loss and fragmentation, a process that continues.

13. Dramatic economic transformations have taken place within the past 35 years. Access to the Islands has improved dramatically in this period, following the construction of an airport on Mahé in 1971, able to handle long range aircraft and improvement of infrastructure at the main port in Victoria. The biodiversity of Seychelles is not as severely threatened as that of most other small islands. The GOS, ENGOs and the private sector have invested far more to counter threats to biodiversity than any other African country. However, threats associated with production sectors continue to grow and uncertainty exists as to their trajectory. There is, as a consequence, an urgent need to mainstream biodiversity management objectives into production sector activities and across the production landscape.

14. The current status of forest communities differs between islands. Despite variations between the islands, a number of general observations may be made. Coastal vegetation (up to 100 m above sea level) has been altered by human settlement activities and much of it was converted to coconut plantations in the 1800s and early 1900s (Kueffer and Vos, 2004). The lowland forests originally covered most of the granitic islands up to about 200 m asl, but have been almost completely cleared for timber, fuel and the production of cinnamon. The intermediate-altitude forests, ranging from 200 to 500m, were historically the richest in endemic taxa, but have now been extensively altered, with most secondary forests now heavily invaded by exotic species except for the glacis areas. The mountain mist forests originally covered the highest elevations (above 550m), and still remain rich in mosses, lichens, ferns and epiphytic orchids (Kueffer and Vos, 2004). Important native forest areas do still remain in parts of Mahé, Praslin and Silhouette islands. The vegetation of the raised limestone and coralline islands has also been disturbed by past human settlement activities such as guano extraction or coconut plantations.

15. The on-going fragmentation and alteration of habitats through human interference and, in particular, through the spread of invasive alien species, is exerting pressure on the Seychelles' fauna. A total of 8 species of native land birds are presently classified as globally threatened. Based on a recent re-assessment (June – August 2006), 54 plant species will be submitted as threatened to the IUCN for inclusion in the global red data list for plants.

16. The coral reefs of the Seychelles were heavily impacted by the 1998 coral bleaching event, which reduced coral cover by as much as 90% on some reefs (SEYMEMP, Final Report). The Outer Islands seem to have been less affected, although Cosmoledo atoll is an exception (Souter et al, 2005). Since the bleaching event, hard corals on granitic reefs (reefs with a granitic geological base) have shown a slow but accelerating geometric recovery, in spite of brief setbacks from less serious warming events observed in 2002 and 2003[7]. Carbonate reefs have been characterised by a much slower, arithmetic rate of recovery that stalled for the two years following the less severe warming events of 2002 and 2003 (Payet et al., 2005). It is alleged that these affected and damaged reefs now constitute relatively "empty" and thereby ideal ecosystems where invasive marine species could thrive. In a recent survey (2005), a total of 3 introduced marine species[8] were found in Victoria Port, which is the main pathway for potential marine invasives: they probably arrived attached to the hull of cargo ships or in ballast water released by ships.

[7] The granitic reefs in Seychelles have been identified as regionally significant reservoirs of biodiversity, because of their unique geological history. It is vital that these granitic reefs, with its associated reef fish and other biotic communities, are maintained.

[8] *Ericthonius braziliensi*s, *a*n amphipod that has been recorded in Hawaii Islands; *Stenothoe valida*, an ampiphod that has been recorded in the Pacific; *Mycale cf. cecilia*, a sponge.

1A.4 Socio-Economic Context

17. The Seychelles has been inhabited by humans since 1770. It was sequentially colonised by both the French and the British, and obtained independence from the United Kingdom in 1976. The population originates primarily from French settlers, African plantation workers, British sailors, and traders from India, China and the Middle East. When the last census was conducted in 2002, the population was 81,200 inhabitants. The bulk of the population, economic activities and other forms of development are concentrated on the narrow coastal plains of the three main granitic islands of Mahé, Praslin, and La Digue. Mahé in particular has about 90% of the total population, with some 40% located on the east coast in a belt of 7 km by 1 km to the south of the capital, Victoria. The country's population is projected to reach some 100,000 by the year 2016.

18. There have been significant changes in the development status of the country since Independence. The Seychelles has been transformed in this period from a quasi mono-crop agricultural economy (based on the production of coconut and cinnamon) to a dual economy heavily dependent on fishing and tourism, and vulnerable to external factors such as changes in the relative prices of resources. Generous foreign aid during the Cold War era allowed for heavy investments in social infrastructure. Since 1984, the Seychelles has progressively developed a more diversified economic base and pursued policies to facilitate export growth, import substitution, employment generation and greater self-reliance. In the early 1990s, the Seychelles adopted a more market-oriented approach, and the Government embarked on a privatization programme. A generous welfare system has allowed Seychelles to achieve impressive progress, as shown by the country's socio-economic indicators. The UNDP Human Development Report 2006 (data for 2004) classified the Seychelles among the list of countries having achieved medium human development with a global ranking of 47 (Human development Index of 0.842, the highest in Africa); a GDP per capita of US$8,411; life expectancy of 73 years; combined gross enrolment ratio in primary, secondary and tertiary education of 80%; and adult literacy rate of 92%. However, since the beginning of the 1990s, Official Development Assistance flows have fallen by over 90% and this has placed a financial burden on the Government's budget. Increasingly, the Government has had to borrow at commercial rates to finance development.

19. A shortage of foreign exchange has led to an economic slowdown in recent years, with the GDP contracting by 2.0% in 2004 and 2005. Underlying macroeconomic imbalances continued to see the external sector seriously affected by shortages in foreign currency. A parallel market exists for the currency, the Seychelles Rupee (SR). The balance of payments deficit (SR181m. in 2003) widened further by 2004 to R345m. The soaring cost of oil and the continued strength of the Euro continued to affect the price competitiveness of the tourist sector. While official statistics still paint a generally sound and impressive picture of the economy (inflation rate of 3.9%, GDP per capita US$ 8,000 and a registered unemployment level equivalent to only 3.8% of all sector employment), there is evidence that the unemployment rate and real inflation may be significantly higher and that the Rupee may be more overvalued than portrayed.

20. The Government has entered into discussions with the IMF regarding structural adjustment and there are potentially difficult economic transitions coming in the future. A program of controlled structural adjustment is now underway. GOS has recognised that the economy is very dependent on natural resources and that the natural resource base must not be undermined in the process of structural adjustments to improve the macroeconomic picture. Pressures on the natural resource base are not that high at the present, but they can be expected to grow in the future. This calls for precautionary measures to protect the natural resource base.

Table 2: Seychelles Economy: Miscellaneous Statistics

(The official exchange rate in June 2006 is 5.6 Seychelles Rupees (SR)/US$)

Year	*2000*	*2002*	*2004*
Gross Domestic Product SRm.	**3513.3**	**3825.5**	**3867.0**
Agriculture, forestry, fishing	99.4	110.3	100.7
Industries	995.7	1128.4	1055.5
Tourism	630.8	707.0	725.8
Government	433.0	458.0	492.5
Other services	1354.4	1421.8	1492.5
Employment (numbers)	**39381**	**41687**	**41169**
Private sector	19753	21715	20590
Parastatals	5550	5957	5905
Government	14078	14015	14674
Average monthly earnings R.	**3343**	**3465**	**3740**
Private sector	3208	3269	3507
Parastatals	3693	3865	4027
Government	3561	3593	3997
Inflation rate (retail prices) %	6.3	0.2	3.9
Exchange rates R.			
Euro	5.2650	5.1751	6.8378
US Dollar	5.7132	5.4883	5.5000
Fish landed (tonnes)			
Artisinal	4764	4914	4374
Semi-industrial (long-line)	290	247	122
Industrial			
- Caught	330340	379253	356352
- Transhipped	269673	332860	306274
Tourism			
Visitor nights (numbers)	1352	1331	1210
Hotel bed occupancy (%)	52	52	44
Agriculture			
Cropping (tonnes)		3698	4581
Livestock products (tonnes)		2047	2170

NOTE: 2004 Industrial fishing and Crop production are Central Bank estimates.

1A.5 Production Sector Profiles

21. The following section summarizes the main production sectors operating in the economy.

Fisheries

22. The fisheries sector in Seychelles is critically important both for assuring food security and economic development; in terms of foreign exchange earnings it surpasses tourism, and accounts for 15% of total formal employment. The industrial marine capture fisheries have grown considerably over the last two decades. Seychelles now serves as the regional hub for industrial tuna fisheries and hosts the Indian Ocean Tuna Commission (IOTC). Semi-industrial fisheries have developed since 1995, with the construction of a small, locally-owned fleet of medium-sized longliners (12-22 meters) that target pelagic fish. Artisanal fisheries remain of great importance in terms of assuring food security to communities, and generating local employment.

Tourism

23. Prior to completion of the international airport in 1971, the only access to Seychelles was by boat. This impeded the flow of visitors. The tourism industry expanded greatly after the opening of the airport. Tourist arrivals increased steadily for the next 35 years, peaking at 130,955 in 1996. The sector has remained more or less stagnant since then, with 128,654 visitors recorded in 2005. This is expected to increase to around 140,000 visitors in 2006. The country has some 152 hotels with 5,000 beds; a significant increase in hotel beds is planned (2000 extra beds, or 40% increase), especially in the high end 5 star market segment. A total of 43% of all hotels and guesthouses are found on Mahé, 32% on Praslin, 17% on La Digue and 8% on other islands. The Seychellois

tourism sector contributed 19% of the country's GDP in 2004 and directly provided for 20% of national employment. The contribution of tourism to the national economy is much more significant, since these statistics do not take into account the economic multiplier effect that is spawned by the industry and the creation of added value in other production sectors.

Agriculture

24. Agricultural development in the Seychelles went through major changes from the 1800's through to 1960, moving away from food production and into a cash crop economy, with coconut as the main crop and cinnamon in a lesser position. With the growth of the tourism industry, there was a major exodus of labour from agriculture into construction, tourism and other related sectors. At present the sector is small, it employs around 3,800 persons and accounts for about 3.8% of GDP. About 500 registered farms are dispersed throughout the settled granitic islands of Mahé, Praslin and La Digue, both on the coastal plateaux and the steeper terrain. Current agricultural production meets about 4% of the local demand for beef, 50% for pork, 60%-70% for vegetables and fruits, 80% for poultry and 100% for eggs. Out of a potential agricultural area of 3,100 ha, 600 ha are under some form of agricultural production, and only about 200 hectares are under intensive cultivation. Farm landholdings are small, with an average size of 0.5 hectares and rarely exceeding 2 hectares. Farmers employ various levels of technology and management, some of it fairly sophisticated. Farm land is either leased from the State, or else is privately owned. There are virtually no agricultural exports, apart from minor cinnamon bark, tea and copra.

Forestry

25. The total forest cover of the Seychelles has been estimated at 40,600 ha, of which plantation forests comprise some 4,800 ha. Although the forestry sector is marginal in terms of recorded income and employment, it supports a wide range of other economic values (for which there is little data): watershed protection, erosion control, aesthetic value, and supply of medicinal plants. Apart from few forestry based souvenirs (coco de mer, spices), there are no forestry exports.

1A.6 Policy and Legislative Context for the Management of Invasive Alien Species

Policy

26. There is a strong policy framework for environmental management and for biodiversity conservation in the Seychelles. Environmental concerns are embedded in the Seychelles' constitution, where Article 38 states that, "*The State recognises the right of every person to live in and enjoy a clean, healthy and ecologically balanced environment and with a view to ensuring the effective realisation of this right the State undertakes… to ensure a sustainable socio-economic development of Seychelles by a judicious use and management of the resources of Seychelles*". Environmental management in Seychelles is guided by the second Environment Management Plan of Seychelles (EMPS) for the term 2000 – 2010. This was developed through a highly consultative process involving all major stakeholders and has the following Goal:

> *"The promotion, coordination and integration of sustainable development programmes that cut across all sectors of society in the Seychelles".*

27. EMPS 2000 – 2010 attempts to integrate environment management concerns into other development sectors while addressing the capacity of environment institutions to address core environmental management concerns. It is the country's leading sustainable development strategy document. The EMPS 2000-2010 covers ten thematic areas, which include the following:

- Society, population and health;
- Land use, coastal zones and urbanisation;

- Biodiversity, forestry and agriculture;
- Energy and transport;
- Fisheries and marine resources/processes;
- Water, sanitation and waste;
- Tourism and aesthetics;
- Environmental economics, mainstreaming and sustainable financing;
- Regulatory, policy and institutional mechanisms;
- Commerce, industry and production.

28. EMPS 2000-2010 also covers cross cutting themes such as: education, awareness and advocacy; partnerships, public consultation and civil society participation; training and capacity building; management; science, research and technology; monitoring and assessment; and vulnerability and global climate change. The EMPS is overseen by a national steering committee that includes civil society stakeholders. The EMPS was designed to be a "living" document which could adapt to changing circumstances through a built-in policy stakeholder review mechanism.

29. A specific Invasive Species Management Programme is called for under the *Biodiversity, forestry and agriculture* thematic area of the EMPS 2000-2010 (Goal 1: *in situ* conservation). The specific output is listed as: "*National control, mitigation and prevention established*". A number of other national policies/ development plans also pertain directly to the control of invasive alien species. The *National Biodiversity Strategy and Action Plan* (NBSAP, 1997) has established as a policy objective the need to: "Identify, prevent the introduction of, control, or eradicate those alien species which threaten, or could potentially threaten, native ecosystems, habitats and species".

30. In general, the management of invasive alien species is dealt with in sector-specific policy documents such as the *Seychelles Forest Management Plan* (INDUFOR, 1993); the *National Strategy for Plant Conservation* (2005); and the *National Wetland Conservation and Management Policy* (2006). The *National Agricultural Policy* lays the framework for national food security, including the control of the importation of pests and diseases and weeds (all now considered as IAS). The Tourism Policy and Vision (*Vision 21*) encourages protection of natural resources to underpin tourism development, and the Ecotourism Policy promotes increased emphasis on ecotourism development, but does not specifically make mention of the IAS entry risks. The *Action Plan for Environmental Capacity Development* (2005), produced through the GEF supported National Capacity Self-Assessment (NCSA) prioritizes steps to "Implement an IAS Strategy and Action Plan".

31. A *National Biosafety Framework* (NBF) has recently (2005) been developed with assistance of a UNEP-GEF Project[9]. The Framework spells out the policy surrounding the importation of Genetically Modified Organisms (GMOs) in Seychelles, the administrative system to address GMOs, risk assessment & risk management, public awareness, monitoring and enforcement. The accompanying *Seychelles Biosafety Action Plan 2005-2010* contains a set of guidelines in order for

[9] As stated in the NBF, the Government Goals for Biosafety and the use of Modern Biotechnology are:
- To ensure that human health and the environment are safeguarded, in particular through a rigorous, efficient and transparent system of regulation and administrative systems for use and application of Modern Biotechnology and its resulting products;
- To ensure adequate capacity building in the safe use and handling of modern biotechnology and its products;
- To ensure that the general public has access to information about modern biotechnology including, the potential risks and benefits of GMOs;
- To maintain the ethical standards through active public participation in decision making;
- To enhance economic benefit through the development of sustainable agriculture;
- To ensure that public is informed on what they consume and utilize and the right for them to make a choice.
- To ensure public confidence in the way risks are assessed and managed;

Seychelles to fully comply with the provision of the current framework and the Cartagena Protocol on Biosafety[10]. Both the NBF and Action Plan only look at intended importation of Living Modified Organisms (LMOs), not at the overall risk of (unintended) importation of alien species. Although the importation and handling of LMOs is practically non-existent in Seychelles (bar minor imports in health sector for pharmaceutical use –insuline, hepatitis-B vaccine), the National Biosafety Framework (NBF) "supports the creation an enabling environment for the environmentally sound application of biotechnology, making it possible to derive maximum benefit from the potential that biotechnology has to offer, while minimizing the possible risks to the Seychelles fragile environment and to the health of its population".

Legislation

32. The key pieces of national legislation which have a bearing on the control of IAS are the following:

- ***Plant Protection Act (1996):*** This Act provides for the control of the import of plants and plant products into Seychelles through points of entry, and also establishes powers to contain and eradicate outbreaks of plant pests and diseases. The powers of inspectors under this Act include: Inspection of goods and persons, detention, treatment and/or destruction or release of consignments. The regulations list pests that are not permitted through import, which include a number of IAS. The regulations also identify a number of commodities such as potatoes, onions, citrus, and carrots etc that are not subject to phytosanitary control. The legislation provides for the identification of offences under the Act and imposition of fines.

- ***Animals (Disease and Imports) Act (1981*)**: This Act provides for the control of the import of animals and animal products into Seychelles through points of entry, and powers to act upon and eradicate animal diseases in-country. The regulations, however, omit fish and crustaceans from import controls. Certain breeds of 'dangerous' dogs are permitted entry subject to sterilization, so technically can establish but cannot multiply and become invasive.

- ***Quarantine Act (1948*[11])**: The Act is concerned with the control of human diseases, establishing vaccination and immunization requirements for serious transmissible diseases. Because they are vectors of human disease, rats are listed as prohibited imports under this legislation. Procedures for ensuring compliance with requirements at points of entry are specified.

- ***Breadfruit and Other Trees (Protection) Act (1917*)**: This legislation prohibits the removal/felling of 30 specified tree species without approval, because at the time of its adoption these plants were commercially important. Of these 30 species, 5 are now considered to be invasive (Ikin and Dogley, 2005), and therefore their removal during habitat restoration activities is hindered by the need for permits to be obtained in each case.

- ***Wild Animals and Birds Protection Act (1961) and regulations*:** This legislation protects a number of keystone species in Seychelles, in particular all bird species, turtles and Giant Tortoises. However, the regulations specifically identify mynah birds, house sparrows, the African barn owl, and the cardinal bird as species that are exempted protection under this

[10] The *Seychelles Biosafety Action Plan 2005-2010* deals specifically with: a) Setting up of Biosafety structures; b) Establishment of a Public Awareness, Education and Awareness system for Biosafety; c) Building of local capacity to handle Biosafety; d) Strengthening existing local institutional to address Biosafety; e) Study the impacts of Modern Biotechnology on local agricultural (including livestock productions and aquaculture practices); f) Maintaining Food and Pharmaceutical use safety in Seychelles; g) Ensuring effective sets regulations and policies that are in line with constant changes.

[11] The Act has been revised in 1963 and 1976. A number of regulations have since been established under it.

Act—allowing their population numbers to be controlled/ eradicated.

- ***Fisheries Act (1986) and regulations*:** This legislation promotes the development of a sustainable and responsible fisheries sector. The legislation provides for restrictions on the harvesting of specific sensitive species that may influence inter-specific dynamics in a manner that creates opportunities for IAS invasion, and prohibits the blasting of coral reefs without sanction (such habitat destruction can create an environment that is ripe for IAS colonization).

- ***The Trades Tax Act 1992 (amended 1994) and the Trades Tax regulations 1997*:** This legislation imposes controls on all goods imported, whether by sea, air or by post. These controls provide a framework for the institution of taxes on imports, where applicable, and control over the movement of traded goods, including restricted and prohibited goods. Trade Tax Officials (Customs) are presently authorized to act as quarantine officials under the Plant Protection Act.

- ***Merchant Shipping Act 1975 (revised 1994):*** This Act regulates registration, safety and security of shipping. The *Merchant Shipping (Oil Pollution) Order 1975* deals mainly with liabilities of oil spills. The provisions under these Acts were previously undertaken by the Port Authority. The newly set-up Maritime Safety Administration (MSA, established in 2004) is now the lead authority on most these issues, and they have drafted a new act ('*Seychelles Shipping Act*') which will incoporate ballast water and anti-fouling requirements. This new Bill is currently with Cabinet and is expected to be tabled to the National Assembly before the end of 2006.

- ***Biosafety Act (proposed):*** This Act will look at the intended importation of Genetically Modified Organisms and how to regulate its associated risks as stipulated under the Cartagena Protocol on Biosafety. The Act has not yet been fully drafted.

International Conventions Pertaining to the Control of IAS

33. The applicable international agreement that relates to plant quarantine, the International Plant Protection Convention (IPPC), and standards agreed there under, now expands coverage to include control and management of alien invasive species. The Seychelles is a signatory to the IPPC, having ratified the Convention on 31 October 1996. The international standard-setting system under the IPPC is the International Standard for Phytosanitary Measures (ISPM) set by the Commission on Phytosanitary Measures. The key standards that the IPPC has developed to identify organisms as quarantine pests so that they can be legally regulated are:
ISPM Pub. No. 2: *Guidelines for pest risk analysis*, 1996. FAO, Rome[12].
ISPM No. 11 (2004): *Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*[13].

[12] This standard sets out the process for undertaking pest risk analyses for plant pests for the purpose of preparing phytosanitary regulations. The process is divided into three specific stages, which are:
- Pest Risk Initiation – where a list of potential pests/IAS is identified
- Pest Risk Assessment – where the specific biological data on the organism is evaluated to determine its capacity to enter, establish and spread in the affected area (usually the country of import). The Assessment also establishes whether the pest is likely to pose a serious risk to the environment. Set criteria determine whether the organism should be classified as a quarantine pest, or a regulated non-quarantine pest.
- Pest Risk Management – the level of risk is considered for each designated pest and appropriate management activities are identified which address this risk for the particular country and circumstances. The technical basis for the decisions is published and distributed to interested parties. Import conditions are based on the outcome of the process and are usually incorporated into legislation and operational instructions.

[13] This standard provides details, over and above those provided in ISPM #2, regarding the methods to be employed in undertaking risk analyses of the impact of plant pests on the environment, including those risks

These standards are mandated by the WTO Sanitary and Phytosanitary Agreement for application in international trade[14].

34. The Seychelles is expected to soon sign the International Convention for the Control and Management of Ships' Ballast Water and Sediments, adopted to prevent the spread of harmful aquatic invasive alien organisms carried by ships' ballast water. The Convention requires all ships to implement a Ballast Water and Sediments Management Plan, and to carry a Ballast Water Record Book. Ships are required to carry out ballast water management procedures to a given standard. The technologies and systems for control are reviewed against safety criteria, environmental acceptability, practicability, cost effectiveness and biological effectiveness. The main mitigation options include the transfer of ballast water at sea, and on board systems that involve treatment with chemicals, electrolysis to generate chlorine, or electrochemical oxidation.

35. Seychelles is not a signatory to the Office International des Epizootes (World Animal Health Organisation - OIE) and is therefore technically not governed by OIE standards which regulate imports of animals and animal products. However, because the trade in animals and animal products has been codified for over 50 years by OIE global activities, particularly in the training of veterinarians, the Seychelles, in common with several other countries that are not signatory to the OIE, accepts the OIE standards.

36. Seychelles ratified the Cartagena Protocol for Biosafety under the Convention of Biological Diversity (CBD) in 2004, which sets out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism (LMO) resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity. The protocol notably intends to regulate only the importation of Genetically Modified Organisms (GMOs), but not the larger and more threatening unintended importation of IAS, which is governed under the conventions named above.

1A.7 Institutional Context

Government

37. Within a year after independence in 1976, Seychelles' Government had come under the control of a one-party political system that developed a welfare state with interventionist social development policies, including wealth re-distribution. Seychelles became a multi-party democracy in 1992 and adopted a new Constitution in 1993. The Seychelles is now divided into 25 electoral districts, each directly electing a member to the National Assembly. The electoral cycle is of 5 years duration for both the National Assembly and the Presidency. Government has three separate branches – the executive, the legislative and the judiciary. Government currently has 8 ministries

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affecting uncultivated/unmanaged plant species, wild flora, habitats, and ecosystems contained in the area. In particular, the assessment provides for the following types of assessment:–

- significant effects on plant communities (e.g. biodiversity);
- significant effects on designated environmentally sensitive areas;
- significant change in ecological processes and the structure, stability or processes of an ecosystem (including further effects on plant species, erosion, water table changes, increased fire hazard, nutrient cycling, etc.);
- effects on human use (e.g. water quality, recreational uses, tourism, animal grazing, hunting, fishing); and
- costs of environmental restoration

[14] Under the Agreement, WTO members are required to harmonise any import restrictive measures, including by implementing IPCC ISPM guidelines. This is intended to prevent such controls from constituting a means of unfair discrimination or trade restriction.

and 12 departments. Departments are headed by principle secretaries (PS) that fall under either the direction of ministers or the direct purview of the President or Vice-President.

38. Responsibilities for the identification and management of IAS are distributed between a number of agencies. The Department of Environment (DOE), under the Ministry of Environment & Natural Resources (MENR), has prime responsibility for environmental management. DOE consists of 3 Divisions headed by Directors-General[15], of which the Nature Conservation Division (which includes the National Parks and Forestry; Botanical Gardens; and Conservation Sections) is directly involved with the threat of IAS on biodiversity. The Conservation Section houses an IAS management unit and the Director Conservation is chairperson of the IAS Committee. MENR also houses an Education, Information and Communication Section for public relations, which is responsible *inter alia* for raising public awareness of the hazards posed by the unchecked spread of invasive alien species.

39. The Department of Natural Resources (DONR) under MENR is responsible for Agriculture and Fisheries, and houses the Plant Protection and Veterinary Sections. These sections are responsible for agricultural quarantine, including for managing post-entry quarantine facilities for plants and animals. The Plant Protection Section is also responsible for providing horticultural extension advice to farmers, which includes information on IAS risks, and is responsible for the control and eradication of alien plant pests within the country. The Plant Protection Section also acts as the National Plant Protection Organization (NPPO) under the IPPC for the control over the entry, establishment, and spread of pests/IAS that affect agriculture and the natural environment.

40. The Plant Protection Section acts as an inspection agency at facilities within the arrival hall of the airport, within the Customs Bond store of the air cargo area, and at various locations at the port, including warehouses operated by commodity import companies[16]. The Section also inspects agricultural produce presented for export and issues International Phytosanitary Certificates to exporters in accordance with the import requirements of the receiving country. In theory, the risk of introduction of IAS is regulated by requiring permits for imports indicating they have been inspected and certified by the exporting country. Imports of animals and animal products follow guidelines issued by the OIE and is also monitored by Plant Protection Section, on behalf of the Veterinary Section.

41. The Maritime Safety Administration (MSA) was formed in 2004 with the mandate to maintain and enhance safety and security at sea for ships plying Seychelles' waters, and protect the marine environment through the development, maintenance and implementation of effective regulations. The MSA is the designated competent authority for the IMO Conventions on Prevention of Pollution from Ships (MARPOL) and Ballast Water Management, and is responsible for inspecting the Ballast Water Record Book of ships docking at Victoria port.

42. A number of agencies are responsible for regulating the movement of goods and people into and within the country: Immigration, Customs (Trade Tax Department), Transport Security Division of the Airport Authority, Coast Guard, National Maritime Safety Administration, the Police, and the Department of Health. The Trades Tax Import Division under the Department of Finance acts on behalf of the Department of Internal Affairs, Commissioner of Police, Ministry of Health, and Ministry of Environment and Natural Resources to ensure documents are in order[17].

[15] Divisions under MENR: Nature Conservation; Pollution Control & Impact Assessment; Policy, Planning & Services.

[16] The parastatal Seychelles Marketing Board (SMB), is involved in the import of commodities into Seychelles and is currently responsible for over 90% of trade in perishable and non-manufactured products (fresh fruit and vegetables, seed, grains and timber) sold in Seychelles.

[17] Such documentation would include –

- Airway bill or sea shipping manifest

43. The Islands Development Company (IDC) manages Silhouette island and a number of outer islands and is responsible for their economic and physical development, as well as regulating access. The IDC is accordingly a key player vis-a-vis controlling the inter-island spread of IAS.

44. Although foreseen in the NBF, there is no functioning Biosafety Administration and set-up yet.

Non Governmental Organisations

45. The Seychelles has a very vibrant environmental NGO (ENGO) community that is actively engaged in the pursuit of biodiversity conservation objectives. The ENGO community has strong capacities and has developed an exceptional range of working partnerships with tourism operators for the control of IAS on small islands. These organisations have been successful in mobilising funding, and drawing upon international networks of expertise in undertaking IAS control work. ENGO capacity continues to grow, although the challenge of securing adequate financing for full-time staff remains a constraining factor. The Liaison Unit for NGOs (LUNGOS) offers centralized co-ordination services to its members. A brief description of the roles and responsibilities and activities of the main ENGOs is presented in Table 3 below.

Table 3: Primary ENGOs involved in Biodiversity Conservation
(in alphabetical order)

NGOs	Roles & Responsibilities	Partners and Activities
Island Conservation Society (ICS)	Biodiversity conservation, public education and awareness.	ICS manages Aride Island Special Reserve and is leading IAS eradication and habitat rehabilitation work on North Island in partnership with North Island Resort (operated by Wilderness Safaris). ICS has a special interest in biodiversity conservation on the Outer Islands. ICS has also worked on the magpie robin recovery programme and has accumulated expertise in cat and rat eradication (both major alien predators).
Nature Protection Trust of Seychelles (NPTS)	Biodiversity research, awareness and management.	NPTS is based on Silhouette Island. They receive support from the Islands Development Corporation and have begun work with Universal Hotels, who are constructing a large hotel on the island, with a view to mitigating the environmental impacts. NPTS publishes an annual scientific journal and a quarterly magazine on nature issues, focusing primarily on birds. NPTS is also working on giant tortoise conservation.
Nature Seychelles	Supports biodiversity conservation and other environmental activities including research, public education and staff training.	Nature Seychelles is affiliated with Birdlife International. They have developed partnerships with tourism operators/island owners on Frégate Island, Denis, Cousin, Cousine and Bird Island where they have done pioneering work on IAS eradication and habitat restoration. Nature Seychelles directly manages Cousin Special Reserve. They led the magpie robin recovery programme and are active in monitoring programmes for birds and sea turtles.

- Import license - Trade Tax – where required
- Import permit – Plants and animals – importer's copy
- International Sanitary or Phytosanitary Certificate – plant and animals
- International treatment or vaccination certificate – plant and animals
- Banking/financial document – Bank letter of credit.

The Plant Protection Section currently only reviews the Import permit, the International Certificates and the treatment certificates.

NGOs	Roles & Responsibilities	Partners and Activities
Plant Conservation Action Group (PCA)	Focuses on conservation of (endemic) plants and landscapes (forests).	PCA's partners include North Island Resort, the Botanical Gardens Section & Nature Conservation Division of MENR, the Geobotanical Institute of Zurich, and SIF. PCA published the National Plant Conservation Strategy in collaboration with MENR and have developed the database for the Red Data List of Seychelles plants. They have printed a guide on palms and screw pines and are working together with MENR to establish the legal framework for plant conservation. PCA is linked to the Eden Project and the Royal Botanic Gardens, Kew, England.
Seychelles Island Foundation (SIF)	Management of two UNESCO World Heritage Sites in Seychelles, research and public awareness	SIF was created to manage the Aldabra Atoll World Heritage Site. Later, the Foundation was also given responsibility for the management of the Vallée de Mai WHS on the Granitic Island of Praslin. SIF is presently establishing an international Trust Fund for the conservation of Aldabra.
Marine Conservation Society, Seychelles (MCSS)	Research, conservation and management of Seychelles' marine ecosystems.	MCSS' partners include hotel operators and other groups on Denis, Cousine, Bird, North, D'Arros and Aride islands to protect the coastal and marine environment. The group is active on sea turtle conservation. They also maintain a strong cetacean and whale shark monitoring program.
Wildlife Clubs of Seychelles	Environmental education for young people along with broader public education and awareness.	The main partners of Wildlife Clubs are Nature Seychelles and the Ministry of Education and Youth. The national curriculum recognises a formal role for the Wildlife Clubs in environmental education and other school activities. They conduct annual competitions amongst schools and other awareness programmes for youths.

Private Sector

46. The **Seychelles Chamber of Commerce and Industries (SCCI)** represents the interests of the private business community including tourism and related businesses. Nearly all private businesses in the Seychelles are members, and the SCCI is often consulted in matters concerning policy development and legislation. The SCCI will be a key player in galvanising private sector support for measures to control the entry into and spread of invasive alien species within the country.

47. A number of small private companies, such as ship's chandlers, wholesalers, resort development companies and resort owners are established as traders, and import a wide range of fresh commodities for direct private sale and use, as well as a range of building materials such as timber and timber products for the construction of tourism resorts and private dwellings. Under the Law, enterprises involved in trade, transport and travel are required to prepare and produce various documentation need to comply with trade and immigration regulations. These enterprises are currently not directly involved in biodiversity conservation activities, meaning that IAS controls are reliant largely on command and control systems rather than voluntary industry measures.

Cross-sectoral Planning and Coordination

48. Policy and programme coordination is achieved through numerous inter-sectoral bodies, involving Ministries and departments, the private sector, NGOs and civil society. These include:

- The National Inter-ministerial Committee (NIC: Chaired by the Vice-President, composed of 23 members that are nearly all principal secretaries) and the Cabinet of Ministers are the

decision-making bodies, where national intersectoral planning and coordination are addressed.

- The 30 member EMPS Steering Committee with participation from mainly Government and some NGO and private sector representatives oversees the implementation of the EMPS.
- The Planning Authority (PA) is set up under the Town and Country Planning Act, chaired by the Principal Secretary of the MLUH, with membership including all relevant ministries, parastatals and some non government stakeholders, is mandated with the preparation of land use plans. The PA is legally required to request an environment authorization from the Department of Environment (DoE) in advance of deciding a planning application.
- A National Climate Change Committee has been set up in 1992 to coordinate the development and implementation of the national climate programme, as well as acting as the interface between the national climate programme, government and the private sector.
- A multi-stakeholder[18] Invasive Alien Species Committee meets irregularly to discuss matters concerning the prevention and control of Invasive Alien Species.

PART 1-B: Baseline Course of Action

IB 1 Threat from IAS to Seychelles' biodiversity and its root causes

49. The threats to biodiversity posed by Invasive Alien Species are described in Annex I. Seychelles is typical of remote islands in the ecological susceptibility of its terrestrial biodiversity to IAS. IAS out-compete and replace indigenous fauna and flora through predation, elimination of natural regeneration, introduction of diseases and smothering by creepers. Animal IAS, like rats, feral cats and other predators, can be devastating to the avifauna and small fauna, reducing levels of recruitment. IAS also pose a threat of unquantified magnitude to Seychelles' marine biodiversity.

Table 4: Main Invasive Alien Species (IAS) in Seychelles

(Adapted from Dunlop et al., 2005; Ikin & Dogley, 2005; Kueffer & Vos, 2004)

IAS	Impact	Where
Invasive plant species		
Cinnamomum verum (Cinnamon)	Outcompetes indigenous forest trees; possible allelochemical effects	All habitats
Paraserianthes falcataria (Albizia)	Competes with native plants for water, light, nutrients	Intermediate forest
Psidium catteianum (Chinese guava)	Invades natural habitats and becomes dominant	Intermediate forest
Chrysobalanus icaco (Coco plum, prune de frans)	Invades natural habitats and becomes dominant	Coastal and intermediate forests
Clidemia hirta (faux vatouk)	Woody creeper, smothers natural vegetation, alters habitats	Intermediate forest
Merremia peltata	Herbaceous creeper, smothers natural vegetation, alters habitats	Coastal and intermediate forests
Philodendron spp	Herbaceous Creeper, smothers native trees	Coastal and intermediate forests
Invasive animal species		
Rattus sp. (black rat; Norway rat)	Predates on birds, vector of diseases	All habitats
Felix cattus (feral cat)	Predates on birds, terrestrial species.	Lower altitudes
Acridotheres tristis (Common mynah bird)	Competes for nesting space, destroys chicks and eggs of indigenous species. Disperser of	Coastal and lower altitudes

[18] Membership includes representatives from, MENR (Policy and Planning, Conservation, Plant Protection, National Parks and Forestry), Seychelles Fisheries Authority, Disaster Planning, TRANSEC, Trades Tax (Customs), Tourism Planning, Veterinary Services, Environmental Health, Marine Park Authority, Ministry of Education, and the Farmers' Association.

IAS	Impact	Where
	plant IAS.	
Anoplolepis gracilipes (Yellow crazy ant)	Through scavenging behaviour alters ecosystems and is a pest in dwellings and households.	Coastal Areas
Tyto alba (*barn owl*)	Predates on lizards, insects and birds	All forest areas

50. Most of the terrestrial ecosystems of Seychelles have been heavily affected by certain invasive alien species. The introduction of IAS into Seychelles has long been associated with trade, agriculture, and the movement of people. Rats probably arrived with the first people. Some of the most common forest IAS were brought in as tree plantation crops; for example cinnamon is now the dominant tree species on the island of Mahé. Coconuts were widely cultivated in the past and have self-perpetuated themselves, especially on the outer islands. IAS now dominate the forests of most islands.The nature of the IAS threats has changed dramatically as a result of the increased trade and movement of people associated with development of tourism and industrial off-shore fisheries. This has increased the number of pathways for IAS introductions.

Trade & IAS

51. In recent years, trade of commodities in Seychelles has been partially liberalized. The parastatal Seychelles Marketing Board (SMB) previously had the monopoly for most imports, mainly food and construction materials, as well as for export of some commodities (tea, prawns). Private entrepreneurs are now allowed to import and export certain goods (bar some "essential/staple" food items), provided they have the necessary permits. This has resulted in a significant increase in different types of commodities imported, as well as the diversification of their sources of origin. The total imports in 2005 were valued at 3,716 million rupees (US$ 663 million), a 36% increase compared to the previous year (see also Table 5 for import/ export data).

Table 5: Value of Trade in Seychelles (2000 – 2004).

Value (million rupees) (5.6 rupees/US$)	YEAR					
	2000	2001	2002	2003	2004	2005
Total Exports (f.o.b. value, including re-exports)	1,108	1,263	1,249	1,473	1,604	1,869
Total Imports (c.i.f. value)	1,949	2,776	2,294	2,230	2,732	3,716

Sources: National Statistics Bureau (NSB)

52. In the period from 2001 to early 2005 over 160 separate fresh fruit and vegetable commodities were imported into Seychelles from 62 countries (Ikin and Dogley, 2005). The sources of the regular imports of staple foods that account for over 90% of current imports are given in ANNEX V, Table V.3. Imports are handled through the seaport at Victoria on the island of Mahé as either bulk cargo or in refrigerated or non-refrigerated cargo containers, or through the international airport on Mahé in air containers. The key factors influencing the volume of trade are the price and the domestic availability of specific commodities. This has resulted in increasing purchases of commodities from a variety of regular and unusual sources, as indicated in Tables V.1 and V.2, ANNEX V. Data on shipping frequencies are given in Table V.6.

53. Control over the commercial importation of agricultural commodities is undertaken by the Plant Protection Section of the DONR in MENR. At the seaport, visual inspections of goods are currently undertaken in the open or within the warehouse, where local produce is also stored, without any safeguards against the escape of IAS. At the airport, the clearance is undertaken within the bond store, which lacks the facilities to examine produce for infestations. There are no treatment facilities other than an incinerator, which has been recently installed. An indication of the weakness of border control is indicated by the range of IAS that have been introduced into the

country within the last few years and that affect the country's biodiversity, including endemics:

Table 6 – List of recent introductions and possible pathways

IAS	Impact	Pathway?
Takamaka disease	Death of endemic takamaka trees that are an important part of the natural coastal landscape	Import of plants with soil from Mauritius where the disease was first recorded
Melon fruit fly	Infestation of cucurbit crops that are commercially important food crops	Importation of melons, cucumber fruit from overseas
White fly	Heavy infestation of local plants, shrubs and trees, including endemics	Importation of plants for planting
3 marine IAS in Victoria port	Impact yet to be evaluated	Import through ship hull fouling, in the harbour
Caulerpa	Impact yet to be evaluated	Ballast water exchange or hull cleaning at an island
Crested tree lizard	Impact not evaluated. Under eradication	Imported with construction materials from Mauritius
Red eared slider turtle	Impact on other turtle habitats	Imported/smuggled as pet??
Baboon spider	Ecological impact on specific habitat of other spiders and insects	Imported in container cargo

54. Officials do not currently assess risk profiles for potential new IAS. Table V.3 (ANNEX V) lists the potential pests that might be imported through the fresh food and vegetables commodities currently traded. As a policy, none of the imports of grains and seed, whether for consumption, milling (for flour and stockfeed) or for planting, are inspected, despite the risks that the importation of grain poses to Seychelles' biodiversity.

55. The threat of IAS entry through the importation of pine timber is currently considered to be low risk because the majority of produce is treated with copper/chrome/arsenate (or equivalent) and would not present a pathway for IAS unless contaminated with soil etc. Exotic timbers for resort developments are imported from many (unrecorded) sources subject only to inspection. The current treatment of imported timber with phosphine gas is ineffective against wood borers, which could pose a serious threat to native forests. Timber used in packaging and in pallets is not routinely inspected, posing a risk of IAS introduction from this source.

56. The importation of animals and animal products in general currently presents a low risk for IAS introduction. The movement of animals is restricted to the importation of pets (generally cats and dogs, but some birds) with accompanied vaccination certificates for major animal diseases. The import of fish and crustaceans is currently not covered under the Animals (Diseases and Import) Act and as a consequence no inspection action is taken by the animal quarantine authorities on these commodities. The IAS introduction risks are presently uncontrolled.

57. Rising living standards have led the Seychellois to pay more attention to homestead beautification, resulting in increased planting of ornamental plants around homes and other buildings. The risks posed by the introduction of new ornamentals have not been properly assessed. The complete smothering of secondary forests by either indigenous creepers that become invasive through habitat changes (clearing, construction), or ornamental creepers (eg *Thunbergia grandiflora* and *Merremia peltata)* that have escaped from contiguous residential areas in the capital, is one of the most visually dramatic impacts of IAS, especially on Mahé.

Marine IAS

58. Marine IAS have not been identified as a major problem to this date, but there is reason for concern. A recent quick port survey undertaken by SCMRT and IUCN, funded by the Total Oil Company, found 3 non-indigenous introduced marine species in the port of Victoria[19]. The marine IAS algae *Caulerpa* spp has been reported around the outer island of Astove, but its ecological status and impact have not been assessed. The main pathways for introduction of marine IAS are normally the exchange of ballast water and hull fouling from ships. The newly introduced species in Seychelles are likely introduced through hull fouling or ships' sea chests, as ballast water exchange is not a major issue in Seychelles since most ships arriving in port import goods to Seychelles, and hence take in rather than discharge ballast water (SCMRT-MPA & IUCN, 2006). The tuna cargo ships usually offload salt for the tuna cannery in exchange for tuna, and therefore also do not tend to exchange ballast water. Marine IAS could also well be introduced through the numerous cruise ships and yachts visiting Seychelles waters. Such ship movements are not fully monitored or controlled and private yachts sometimes ply unregistered through the Seychelles EEZ and may land without notification, especially in the outer islands. Poachers (for fish, birds, turtles etc) from neighbouring countries operating in Seychelles waters may pose another pathway for IAS introductions

59. For most marine IAS, eradication by physical removal or chemical treatment has not been cost-effective (Bax et al. 2001, Seccord 2005, quoted in: SCMRT-MPA & IUCN, 2006). In the absence of quantitative information on the species' distribution and local impacts, management should be directed toward preventing the introduction and spread to locations where they do not presently occur. Such management will require better understanding of the frequency of movements by vessels of different types to and from Port Victoria and improved procedures for hull maintenance and domestic ballast transfer by vessels leaving this port (SCMRT-MPA & IUCN, 2006).

60. Since 2004, vessels visiting Port Victoria must discharge ballast water before entering coastal environments (mid-ocean exchange) or dump ballast water at a deep-water location outside the Port, unless exempted on safety grounds (SCMRT-MPA & IUCN, 2006). Globally, shipping nations are moving toward implementing the International Convention for the Control and Management of Ships Ballast Water & Sediments that was recently adopted by the International Maritime Organization (IMO). By 2016, all merchant vessels will be required to meet discharge standards for ballast water that are stipulated within the agreement.

61. The introduction of organisms via hull contamination cannot be adequately addressed through inspection and cleaning, except for smaller vessels that can be lifted on to dry land. Seychelles is planning to establish dry-docking facilities to support the visiting tuna fleet. The risk of external contamination of larger commercial ships has to be accepted. The only control option is regular detection surveys of the ports, and the development of action plans in response to early IAS detections. The IAS introduction pathway created by the unmonitored visiting of remote islands by cruising yachts and vessels can only be addressed through an awareness campaign directed towards those who are involved, and this may be difficult to develop and deliver.

Passenger Movements

62. Passenger movements, whether of citizens or tourists, is a recognised pathway for the introduction of IAS. The Seychelles is actively promoting itself as a tourist destination on a worldwide basis, and the potential exists for the importation of a wide range of IAS. The risk profile for IAS introduction depends on the origin of passengers and their intended activities in Seychelles.

[19] Three newly found marine spp. in survey: *Ericthonius braziliensis, Stenothoe valida, Mycale cf. Cecilia*. An earlier introduced freshwater spp. (for consumption) is *Oreochromis mossambicus* (Mozambican Tilapia), which is now regarded as invasive and can already be found in brackish waters around the port.

Table 7. Risk profiles of passengers entering Seychelles.

Type of passenger	Risk items likely to be carried	Risk level
Seychellois returning from overseas visits to relatives/friends	Gifts from family to family. Plants and other goods that are of decorative appeal, fruits etc not found in Seychelles.	High risk to very high depending on whether coming from temperate or tropical country.
Guest worker on long-term contract	Local traditional foodstuffs such as grains, spices and dried meat and fish.	High risk, particularly if from a tropical region or an area close to Seychelles and contract is long
Tourist - budget	Small amounts of perishable foodstuffs, sufficient for self catering holiday	Medium, as quantities are likely to be small and consumed within a few days
Short term contractor	Gift items, not normally food, maybe flowers.	Low, would be unlikely to carry food for self consumption, but might have gifts of food
Tourist – high end	Not likely to need to carry anything other than personal effects	Very Low risk
Cruise Ship passengers	Stays are generally less than 12 hours at the port and they are usually given meals on board. The main risk is the discharge of ship's garbage within close proximity to islands.	Low, would be unlikely to carry food, and any that was carried is likely to be consumed or returned to the vessel.
Cruise yacht	Yachts visit isolated islands at will, as there is no capability to monitor their movements, and they are always carrying food from overseas countries, may have pets and plants on board and may dispose of any items at any stage of a voyage.	Medium–high risk as movement and activities such as landing of persons and their food/garbage, carriage of pets and maintenance activities are not able to be monitored or controlled at remote and vulnerable locations

63. The inter-island spread of invasives is also a growing problem, as the ease of movement between islands improves for citizens and visitors. The development of new hotels on small islands creates significantly enhanced risks for the island-to-island spread of invasive alien species as these facilities open these areas to visitation, and the hotels need to import food produce and other materials (e.g. construction).

Infrastructure Development

64. Infrastructure and physical development also favour the spread of IAS. The expansion and regeneration of many IAS plant species are facilitated by the disturbances that accompany the construction phase of infrastructure development. Infrastructure development is often accompanied by very high rates of erosion during and after construction: This causes high rates of sediment deposition, which may impact marine habitats. This again may favour the introduction and spread of certain marine invasive species that are adapted to habitats with high sediment loads.

Climate Change

65. Changing weather patterns may exacerbate the threat of IAS, both terrestrial and marine—including the risk that exotic species in Seychelles that are not currently invasive may become so in future. There is, however, a lot of uncertainty regarding the nature of the impacts. Rising temperatures and the increased incidence of extreme weather events may cause stresses to natural ecosystems making them more vulnerable to IAS infestations. Increased drought may lead to an increased frequency of forest fires that could, in turn, favor IAS invasion. Such invasions are already evident at sites disturbed by development activities, where invasive creepers are becoming dominant. Seed dispersal and germination may be affected by increased aridity, which may create conditions that favour dry-tolerant invasive weeds. In terms of deliberately introduced species, it is

likely that if there is a significant decrease in rainfall, local gardeners may begin to replace the current native ornamentals with more drought tolerant alien species. Given the propensity for these plants to escape into the wild, this presents a new suite of IAS invasion risks. Gardener responses to climate change also may contribute to synergistic adverse impacts on biodiversity; for example, if outbreaks of pests that prefer drier conditions (eg mites) are countered with increased pesticide use, nontarget endemic species might have to endure both climate- and contaminant-linked stressors. The conjunction effect could lead to their extirpation.

66. With regard to coastal environments, fluorescent corals more readily survive bleaching than other corals, so the effect of bleaching from sea surface warming events is not uniform on coral reefs and areas of stress may be formed. These may create ecological gaps into which more adaptive IAS may establish themselves. This factor, combined with increased sea temperatures, may generate a synergistic effect to increase opportunities for colonisation by IAS in coastal ecosystems. Rises in sea levels will inundate freshwater/brackish wetlands on the granitic islands. Wetland plants in these areas could be replaced by IAS plants and shrubs that are more salt tolerant.

IB 2 Baseline Course of Action

67. The Baseline is the "business-as-usual" scenario that would take place during the next 5 years in the absence of the interventions planned under the project. Baseline activities are described in the text below and summarised in Table 8, which follows. In a business-as-usual situation, a range of activities pertaining to the management of the threats posed by IAS would be undertaken that would have positive impacts on native ecosystems and their flora and fauna. However, most efforts would continue to be focused on IAS eradication and habitat restoration on small islands, building on the successful management models that have been developed. Baseline activities would address threats to biodiversity from IAS in a fragmented fashion, leaving many critical gaps. In particular, the lack of a systematic and documented approach to the inspection and clearance of goods and passengers at points of entry, through lack of facilities, equipment and trained staff, will almost certainly ensure the continuing importation of IAS. Most importantly, the Baseline does not systematically address the principal threats that emanate from production activities and trade. Also, marine invasive species are not yet recognized as a major threat to biodiversity.

68. Seychelles has made, and continues to make, significant investments in biodiversity conservation. The first Environmental Management Programme of Seychelles (1990-2000) successfully guided investment programs in the arena of biodiversity conservation. However, recent economic growth has been stagnant and GOS budgetary resources are tight. This, combined with the withdrawal of many donors, has made it much more difficult for the GOS to mobilise the financial resources needed for the full implementation of the EMPS in 2000-2010.

69. Seychelles has been a pioneer of IAS control efforts, particularly efforts to eradicate IAS on small islands and rehabilitate small island habitats, with ENGOs taking a strong lead in this endeavour.

70. The EMPS Invasive Species Control Programme has as an objective the eradication of exotic predators from smaller islands. These programmes have included the eradication of dogs, cats and rats and have had varying degrees of success. They have been largely implemented by NGOs, sometimes in cooperation with private island (resort) owners. The feasibility and benefits of IAS eradication on small islands has been demonstrated, though the costs have been high (although substantially lower than eradication and control efforts undertaken on the main islands[20]). Attempts

[20] Henri et al. (2004) cite costs of restoration and bird translocation on small islands of US$ 414 to US$2,678 per ha., while in Kueffer & Vos (2004). F. Dogley cites a cost of US$ 50,000 per ha for habitat restoration in Morne Seychellois National Park on Mahé.

have been made to control goats on some outer islands, e.g. Aldabra, which until now have not been successful. There are well-established IAS eradication and control programs on Aride, Cousin, Cousine and Frégate Islands. New programs are being developed for North, D'Arros and Cosmoledo Islands[21]. MENR is also working with several ENGOs to relocate rare and endangered native birds to protected locations on small islands, an initiative that also involves the eradication of IAS and restoration of vegetation.

71. In order to maintain the rat-free status of the restored islands, some hotels and private landowners, working with technical assistance provided by ENGOs, have developed their own movement protocols governing people and produce. These circumscribe the permissible means of transport to the islands and generally involve the construction of rat-proof unloading and storage areas.

72. Moreover, a number of control and eradication activities are underway in the Granitic Islands, where technologically feasible. These include measures to eradicate the African Barn Owl, introduced into the Seychelles to control rodents (MENR currently pays a bounty of SR Rp50 per bird killed), an eradication campaign against the house sparrow in the Victoria port area and measures to control the Indian house crow and the ring neck parakeet. A bounty system is also being used to control the recently introduced crested tree lizard on St Anne. Campaigns to eradicate rats from the larger islands have not been successful and are not being conducted at the moment.

73. Research and trial work have been done by the National Parks and Forestry Section in MENR on the control of woody alien invasive species on Mahé, in collaboration with the Geobotanical Institute in Zurich. This has yielded some published research work, two PhD. theses, and a regional conference was held in Seychelles in 2002, but no models for controlling woody invasive species have been developed. Even less work has been done on invasive alien creepers that are especially prominent and smother large tracts of vegetation around urbanized areas. Similar work on controlling woody invasive species has been attempted on the small private islands (Cousin, Cousine, Aride, Fregate, North), but without the use of standard protocols.

74. MENR is involved in the re-planting of areas where the Takamaka disease, probably imported on plants from Mauritius, has killed local trees. MENR is also assessing the impact of four IAS freshwater fish that have been introduced into local streams after their initial import as aquarium fish. Surveys are being actively undertaken in the wetland districts of Mahé and their distribution and populations are monitored with the purpose of planning control and eradication.

75. The afore-mentioned investments make little sense as long as the door is left open to the new arrival of IAS. The Plant Protection Section inspects items and arriving passengers at the port and airport that are considered to pose risks for the importation of IAS, and also undertakes the inspections to clear imports of animal and animal products on behalf of the Veterinary Section. Very few interceptions of IAS have occurred at ports of entry in recent years, which is a concern given the volume of trade. No prosecutions for illegal importations have been pursued. When interceptions of illegal material have been achieved, its destruction has generally been considered to be sufficient to address the risk and no further action has been taken. The destruction of commodities (mainly dumping at landfills) has generally been undertaken because of the poor quality of produce.

76. The Plant Protection Section provides advice to growers and the public on effective management procedures in terms of IAS that are present locally, as well as performs limited identification and diagnostic services. The Plant Protection Section also maintains databases on pests/IAS on a national basis, as required by the IPPC.

[21] Native birds, mostly seabirds, occur in high densities on the rehabilitated islands. These birds are an important tourist attraction, although their economic importance as such has not been quantified.

77. The recently (2004) established Maritime Safety Administration (MSA) has taken over functions from the earlier Coast Guard and Port Authority that have to do with security, safety and pollution issues concerning shipping. MSA was instrumental in the revision of the *Merchant Shipping Act* (1975) which will be submitted to government for adoption before the end of 2006, and which will cater for the ballast water and anti-fouling provisions as stipulated under the IMO conventions. Ballast water exchange now needs full monitoring and specific off-shore areas have been established where ballast water exchange may take place. Furthermore, the government is planning to develop dry-docking facilities, especially geared towards the foreign tuna fleet visiting Victoria port.

78. A recent IUCN and Total Oil supported project has identified non indigenous marine species around the port during a short survey. The project has undertaken an awareness campaign during August 2006, and is in the process of establishing a strategy and plan of action to control marine invasive species in conjunction with all pertinent stakeholders. This will specifically include attempts to control introductions through ballast water, hull fouling, and ships' sea chests, as well as periodic monitoring of the port areas.

79. MENR has produced posters to assist with the recognition of IAS and prompt reporting by the citizenry. The ENGO: "Wildlife Clubs of Seychelles" has been active in raising public awareness on IAS, especially amongst schoolchildren. Other ENGOs, namely Nature Seychelles, NPTS, ICS and PCA are also actively involved in awareness and advocacy campaigns. Publications relating to native species and the threat of IAS have been produced as part of the curricula for school children, as well as for the general public. These books and publications aim to stimulate an interest in local plants and an appreciation of their importance.

Table 8: Baseline Course of Action

Baseline	Organisation	Gaps
• Regulatory services for inspections and quarantine to minimise the entry/re-entry of IAS at the borders exist but are weakly capacitated; Plant Protection Section acts on behalf of the Veterinary Section for control of animals and animal products pathways. • Phytosanitary Control Manual produced in 1998, but very basic. • Actions at points of entry sometimes dependant on referrals from other border control agencies such as Customs. • Protection of animals and plants under the legislation.	MENR	• No island-by-island inventory of existing IAS; Black lists of species prohibited import outdated and incomplete; • Limited capacity to undertake IAS risk assessments; Little capacity for diagnostics and identification; No contingency plans for the eradication of IAS; • No use of operational manuals for inspection and quarantine; No overall review of lessons learned and best practices for eradication and rehabilitation; • Limited inspection facilities at the airport and the port; • Lack of inter island control of IAS that are established; • Protection of some species under legislation (*Breadfruit and Other Trees (Protection) Act*) that are now considered as IAS (coconut, cinnamon).
• Screening of baggage for security reasons in accordance with IATA safety requirements.	Transport Security Division of the Airport Authority	• Screening by X-Ray for commodities hidden in baggage that could be pathway for IAS not undertaken.
• Control of ships' ballast water and hull cleaning.	MSA	• Not all of the IMO Guidelines on Ballast water management yet implemented.
• Surveys of pests, diseases and weeds.	MENR	• Limited local expertise for diagnostics.
• National Invasive Alien Species Committee in place, including most stakeholders.	GOS ministries, parastatals, NGOs	• Committee does not meet regularly; • No overall framework or action plan in place.
• Continued awareness programmes and support for measures to prevent the introduction and spread of IAS; • Recent invasions poster produced for public information to assist with reporting of sightings of IAS.	MENR & NGOs	• There is little public awareness and political support for prevention and quarantine measures at ports of entry; • Awareness of risks of IAS introduction and spread through trade is quite low; • Native plants are not prized for landscaping.
• Eradication programmes by ENGOs (Nature Seychelles, ICS, Wildlife Clubs, NPTS and PCA), some supported by donor funding and private land owners.	NGOs, Private Islands, Private individuals	• No agreed models and procedures, no monitoring and dissemination of results, "lessons learned" or "best practices" for involving stakeholders in IAS control; • Lack of transparency in collection and dissemination of primary data at all levels within Government and NGOs inhibits the capacity to make technically valid decisions on the management and prevention of IAS introduction and spread. • Results of some of the findings that have been made by foreign institutions have not been published and so cannot be adopted in Seychelles.

Baseline	Organisation	Gaps
• Eradication program of the melon fly; • Two incinerators for waste disposal acquired; • "Amnesty bin" for passenger arrival hall.	EU/ MENR	• Even if successful, the melon fly could be reintroduced at any time after its eradication because there are no effective prevention/ quarantine systems in place at points of entry; • Incinerators still to be installed at airport and port; • Amnesty bin for the airport still to be installed (depends on the willingness of Airport Authority to allow it to be installed).
• Surveys on Marine IAS; • Awareness programme on marine IAS undertaken.	MPA-SCMRT, IUCN, TOTAL	• Small marine surveys in port done, needs to be extended and periodically repeated; Marine IAS strategy is being developed, this might remain an isolated strategy if not integrated in overall IAS strategy.
• Survey of endemic species of smaller islands.	Nature Seychelles; NPTS, ICS	• Surveys required for all the islands, undertaken to same agreed standard.
• Guidelines for transport to and from rat free/restored islands.	Some private islands in collaboration with some ENGOs	• Guidelines not yet recognised by other agencies or adopted on a national scale.
• Replanting of areas affected by Takamaka disease with resistant native trees.	MENR	• Information on survival and vigour of the replants needs to be assessed as guideline for application elsewhere.
• Relocation of rare and endangered birds to protected locations and their return after eradication/restoration.	MENR and ENGOs	• Needs to be adopted as a methodology at national level in light of experiences.
• Surveys and eradication of fresh water invasives being undertaken in wetlands and rivers of Mahé.	Conservation Section of MENR	• Four invasive aquatic fish species and two turtle species found possibly as pet discards.
• Long term survey and control of invasive creepers on Mahé and a public awareness campaign to encourage removal of creepers.	MENR and ETH	• Evaluation of results suggest that the strategies are questionable.
• Production of a number of educational and general awareness publications for the schools curriculum and the general public, eg Field guides, textbooks and workbooks.	NGO's, Ministry of Education	• Need to extend this coverage to include non-formal education and other voluntary audiences, and including the tourist industry.
• Television and radio programmes developed and broadcast on IAS and environmental biodiversity themes.	MENR, SBC	• Programmes are generally only developed for specific themes or times of interest such as National parks Day and Wetlands Day, and requires to be regular and ongoing with a sustainable theme, eg IAS control etc.

Normative Solutions needed to Address Threats

80. Under the Baseline scenario, new IAS, many of which are potentially serious threats to biodiversity (see ANNEX V Tables V.3 and V.7), would continue to enter the country and spread between islands with potentially catastrophic consequences for native flora and fauna. Under the Normative Solution, the Seychelles will be applying the principle that 'prevention is better than cure'. The country will have developed strong institutional capacities to prevent the entry of new IAS into the country that pose a risk to biodiversity, and thus will have improved the level of security for native species threatened by potential new IAS. In particular, strengthened capacities will be in place for a) assessing the relative risks posed by the different pathways for entry; and b) instituting effective inspection programmes to minimise entry of IAS by the identified pathways. Production activities the trade, travel and transport sectors will have been adapted, to improve controls. This will be driven both by regulatory enforcement, and voluntary action by businesses. There will have been an attitudinal shift amongst the citizenry concerning the importance of IAS controls, which are presently seen as needlessly punitive. Measures to halt the inter-island spread of IAS already established on some islands will be formalized and put in place, and monitoring systems will be assessing their efficacy, and inform management actions. Finally, control and eradication schemes for IAS will be undertaken with full access to knowledge on the efficacy and costs of different treatment options, and with access to a community of practice constituted by local experts—but with ready access to international expertise through established networks.

IB 3 Barriers to the Conservation of Biodiversity

81. A number of barriers that are impeding the attainment of the afore-mentioned normative solutions have been identified through an iterative, participatory process involving a wide range of stakeholders. The problem analysis was undertaken by preparing a literature review, and through stakeholder interviews, inputs from experts, and a national stakeholder workshop held in late 2005. Three sets of barriers are currently impeding efforts to remediate the threats posed by invasive alien species and to realize the normative solutions required to protect biodiversity. These are: Capacity deficits at the systemic level; Limited capacities at the institutional level; and Technical capability.

Capacity Deficits at the Systemic Level

82. Although the policy framework for biodiversity conservation is generally sound, there are a number of gaps with respect to the decision making support process. The absence of a comprehensive information system on IAS, coupled with economic data on the relative costs and benefits of IAS control, is a constraint to effective mainstreaming of control efforts in production activities.

83. The legal framework governing IAS prevention activities, and plant and animal quarantine, is currently largely outdated, and not wholly compliant with international standards and guidelines. The *Plant Protection Act* (1996) was initially drafted in 1993-4 and pre-dates IPPC ISPM framework. As a result, the Act does not make all the provisions necessary to undertake pest risk analysis (ISPMs 2 and 11)[22]. The animal import legislation is over 25 years old and as such does not reflect the

[22] Examples of deficiencies in the Act and regulations include: lists of quarantine pests have not been revised; operational instructions do not reflect risk profiles; risk mitigation treatments have not being identified. Although an Operational Manual was written in 1998 it is not routinely used, partly owing to capacity constraints at the individual level. Accordingly, there is no guarantee that procedures are harmonized between inspectors in accordance with the legislation, nor with the applicable ISPMs for import inspection and reporting.

technical developments in disease detection and certification that have been adopted in the interim[23]. A revised Plant Protection Bill has been prepared with assistance through a Regional Plant Protection Project funded by the European Union, and is in the process of being adopted. This draft legislation does address some of the requirements needed to enable the Government to meet certain IPCC standards, such as the need to conduct pest risk analysis to determine import conditions, the need to undertake surveillance for pests and report findings, and the need to meet international standards in undertaking export inspections. However, this legislation was drafted in 2003 and does not incorporate the newer ISPMs that relate to specific requirements for an import regulatory system and the Guidelines for inspection, which are essential for an effective regulatory border control service.

84. There are also inconsistencies between the different pieces of legislation governing IAS, trade and immigration matters. For example, all imports of plants and plant products require a permit under the *Plant Protection Act*, and any person importing such commodities must technically make a written declaration (Art. 5(2)a). However, a written quarantine declaration on the Immigration form, as is required for many countries, is not required in the Seychelles, thus undermining implementation.

85. Ad hoc awareness campaigns on the identification and threat of IAS are being undertaken by Government and ENGOs. There is, however, no comprehensive awareness or communications plan on IAS.

86. The mechanisms for integrating environmental management into long-term, cross sectoral development planning processes currently have significant weaknesses. Capacities for strategic planning and policy development are particularly weak. The respective roles and responsibilities of the Government, private sector and NGOs need to be defined in order to ensure efficient use of the limited expertise available within the country. More effective processes and incentives are needed to encourage stakeholder collaboration, and ecosystem-based partnerships for IAS inventory, monitoring and controls, both within the ENGO community and between it and the Government.

Limited capacities at the institutional level

87. Institutional weaknesses serve as a barrier to the institution of effective quarantine systems guarding against the entry of IAS. Capacity will need to be strengthened within institutions responsible for these functions, including the Customs, Immigration, Port and Airport Authorities and the Plant Protection and Veterinary Sections. A complicating factor in strengthening institutional effectiveness is that regulatory authority is split between agencies and is generally poorly coordinated. Much of the legislative authority that currently exists is often not implemented as a consequence of this fragmentation. The mandated control functions, which are presently dispersed over a variety of institutions, need to be better coordinated and brought together to improve their efficacy and cost-effectiveness.

88. Seychelles has very little functional capacity to prevent the entry (or re-entry) of IAS into the country or between islands. At present, there is de facto open access entry into the country of fresh fruits and vegetables, grain (with associated weed seeds), timber products and ornamental plants. Only the entry of animals and animal products, is subject to meaningful controls based on

[23] The Veterinary Service has no Operational Manual setting out the import procedures to be followed by inspectors. Currently, almost all testing of animals and animal products is undertaken overseas and there is very limited local capability to respond to any outbreak of an introduced animal organism. This is recognized by the Veterinary Service and a revision of the Act and regulations in line with the OIE Animal Health Code is planned.

international animal health standards applied and certified in the exporting country[24]. There is no consistency in the application of legislation at the two ports of entry. Implementation of inspection, detention, treatment and destruction functions is weak. Procedural manuals are out of date, apparently not used, and agents are poorly trained in diagnostic assessments. There is virtually no capacity for performing risk assessments of IAS entry pathways. Intra-island movement of established IAS is not well and uniformly controlled.

89. The Plant Protection Section has weaknesses at all levels. At the organisational level the Section is not able to undertake all its legal obligations as in many cases it relies upon other authorities to refer activities for action at some entry points and lack of status results in poor direction. Current staff have limited technical qualifications and experience. There are few graduates in the Section and those that are tend to have general agricultural qualifications rather than specialist ones.

90. The facilities and equipment at both the airport and seaport are inadequate for the safe clearance of goods and passengers, and there are limited effective treatment facilities if alien pest infestations are detected. The only options for the treatment of infested or infective commodities are the deep burial of material at the municipal garbage tip or incineration. Occasionally, fumigation of commodities is undertaken using phosphine tablets, but this is undertaken on commodities that are not suitable for this type of host/pest treatment. There is an X-Ray machine located at the airport, but it is only used for screening baggage for dangerous goods by the Transport Security Division, and the machine is not available for use by the Plant Protection Section to screen commodities with a view to detecting IAS.

91. The discovery of 3 new species of alien marine organisms in Victoria harbour underscores the IAS entry risks evident from shipping. The country is currently assessing the possible sources of this infestation, including whether there is a link to either internal (ballast water) or external (hull fouling) carriage. The practical management of marine IAS presents particular problems for Seychelles, which has limited resources and facilities. Ballast water management (GloBallast) guidelines are being developed by the IMO and are being adopted as national standards. Seychelles is part of the Southern and East Africa GloBallast network. The procedure requires the monitoring and recording of ballast water activities during the voyage, the audit of documentation on arrival, as well as prescribed off-shore areas for ballast water exchange. The Maritime Safety Administration is the focal point for GloBallast activities. There is a need to strengthen the capacity of the MSA to perform this function, and to ensure that activities are properly coordinated with those of other agencies concerned with IAS management. Equally there is a need to include the strategy and action plan for control of marine invasive species which will be developed in an overall IAS strategy and Action Plan, otherwise this remains in isolation.

Technical capability and knowledge systems

92. The capacity to identify pathways, commodities and organisms (terrestrial and marine) that present an IAS risk, to evaluate the effectiveness of management systems and to effectively capture and adapt practices to ensure effective control and eradication measures, is weak. The current list of prohibited pests, diseases and weeds in the legislation is incomplete, and out of date, and in any case was not developed using international guidelines for risk analysis, such as ISPM#11 guidelines. Within the country there is no common agreed list of priority IAS that should be monitored, or controlled. No complete island-by-island inventory exists of introduced IAS and species considered

[24] It is important to record that international standards are being used, but that the onus is on the exporting country to do the work to gain access and ensure that standards are applied, even though Seychelles is not an OIE member.

to be native/endemic and at risk. Despite considerable practical experience in the field eradicating IAS from, and restoring small islands, there are no agreed models. This is compounded by a failure to document "lessons learned" or "best practices" for control of IAS on the ground. There is no coordinated information management system for IAS. Seychelles has a number of individual compilations of information on a wide range of species in various ecosystems and habitats, but there is no systematic standardisation of survey methodologies, data compilation and data access. Until reliable information management systems are in place, confidence in planning and executing IAS management strategies will be undermined.

93. The role of the GEF will be to lift these barriers, and thus ensure the attainment of the normative solution. The GEF investment will build on the existing policy and institutional framework, and quarantine/ phytosanitary control systems, covering the incremental costs of ensuring that biodiversity management objectives pertaining to IAS are mainstreamed into the production practices of the travel, transport and trade sectors. This will involve expanding the management paradigm, to improve risk management (risk identification and action prioritisation), interception systems, and private sector involvement. This will safeguard Seychelles' biodiversity against the threat of introduction and spread of IAS, and hence improve the conservation status of globally important ecosystems and globally endangered species. Improved control of introduction and spread of IAS within Seychelles will also impede further regional and global spread of IAS.

1B.4 Stakeholder Analysis

94. There are three main groups of stakeholders for this project – (i) Government agencies, (ii) ENGOs and (iii) production sector agents engaged in trade, the movement of merchandise, and travel and tourism. A complete list of stakeholders and an accompanying Stakeholder Involvement Plan is provided in Annex II. The Project team undertook extensive consultations with interested parties through a series of presentations, interviews, and workshops during preparation. Progress reports were presented monthly to the EMPS Steering Committee, which comprises all major stakeholders.

PART II: Project Strategy

2.1 Project Rationale and Policy Conformity

95. The Biosecurity Project is one of two initiatives being pursued under the Seychelles Integrated Ecosystem Management Programme, designed to assist in implementation of core elements of the EMPS pertaining to biodiversity management. The Programme is geared to mainstreaming biodiversity management into the production activities of the main production sectors, and addressing threats to biodiversity across the production landscape.

96. Project design is predicated on the precautionary principle. This project will address the broader threat associated with the introduction and spread of alien invasive species into the archipelago. This threat derives from trade and commerce, transport and the movement of people, and has its roots in cross sectoral economic activities including services, tourism, fisheries and agriculture. Although the Government has established policies, regulations and infrastructure to perform its duties under applicable international law and national legislation dealing with phytosanitary issues, there is a need to improve the effectiveness of management strategies and responses (i.e. through identifying risks and gearing interventions towards reducing the highest risks). This is expected to improve the efficacy and cost effectiveness of interventions. Furthermore, lessons learned and best practices on IAS eradication and habitat restoration efforts need to be established and disseminated. These measures need to be accompanied by awareness-raising to garner support from decision makers, the identified risk groups and the general public at large.

Additional measures to improve the efficacy of current controls are particularly critical in light of the increasing probability of IAS invasions emanating from increased trade and the movement of goods and people.

97. The role of the GEF will be to lift the identified barriers, and thus ensure the attainment of the normative solution. The GEF investment will build on the existing policy and institutional framework, and quarantine/ phytosanitary control systems, covering the incremental costs of ensuring that biodiversity management objectives pertaining to IAS are mainstreamed into the production practices of the travel, transport and trade sectors.

98. The project takes an innovative approach, in so far as managing the Invasive Alien Species from a production sector and landscape approach, as well as emphasizing the control and prevention aspects, summarized in the term "biosecurity". The approach builds on strategies traditionally undertaken in the agricultural sector (quarantine and phytosanitary measures). Most IAS projects, including those funded by GEF, have in the past mainly concentrated on eradication efforts, which in many cases has not proven to be cost effective. It is expected that this approach will also generate knowledge and best practices that can be replicated in other countries, especially Small Island Developing States (SIDS), undergoing similar threats.

2.2 Project Goal, Objectives, Outcomes and Outputs

99. The Goal of the Integrated Ecosystem Management Programme is:
The functional integrity of the terrestrial and coastal ecosystems is secured now and into the future, thus providing a base for sustainable development.

100. The project will be responsible for achieving the following project objective:
Increased capacities to prevent and control the introduction and spread of Invasive Alien Species through Trade, Travel and Transport across the Production landscape.

101. The Project Objective will be achieved through 3 Project Outcomes:

Outcome 1: Enabling conditions for effective control of the introduction and spread of IAS in place.
Outcome 2: Strengthened Institutional capacity to prevent and control the introduction and spread of IAS.
Outcome 3: Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS.

Outcome 1: Enabling conditions for effective control of the introduction and spread of IAS in place.

102. *Output 1.1: an overarching and comprehensive IAS policy developed*. A comprehensive IAS policy will be developed to guide the effective prevention and control of the introduction and spread of IAS. The policy will make provision for the creation of a Biosecurity Service, charged with coordinating and undertaking all the necessary functions to manage the introduction of IAS. The IAS Policy will be harmonized with other relevant plans, programmes and initiatives, including the EMPS, National Biosafety, Marine Invasives and GloBallast Frameworks. The policy will be developed in a participatory manner with ample input from stakeholders spanning the production sectors and civil society groups. Economic valuation of the influence of IAS on the national economy, including on ecosystem services, etc. will be undertaken.

103. *Output 1.2: National legislative framework dealing with IAS amended and brought in line with international standards*. A Biosecurity Act will be drafted in tandem with the developing legal framework for Biosafety out of the draft Plant Protection Bill. The Act will ensure that the functions of the Biosecurity Service are legally binding and meet international norms/ standards. Key components will be:

- Legal framework for setting up of the Biosecurity Service charged with coordinating and undertaking all the necessary functions to manage the introduction of IAS.
- Identification of a Biosecurity Consultative Committee to advise the Minister on the general direction of policy and technical decision making. This will involve strengthening and reformulation of the IAS Committee[25]. The committee will be capacitated to plan and organise multi agency activities.
- Powers to require permits for declarations, search for goods, detain, treat and destroy without compensation.
- Capacity to determine import conditions based on risk assessment of pathways and commodities.
- Capacity to charge and retain fees, and to levy fines.
- Requirement for agencies other than Biosecurity Service to provide facilities to permit it to undertake measures (eg the airport authority, port authority and importers).
- Powers to eradicate IAS and to take appropriate actions to restrict spread.
- Inter-island controls against the spread of IAS, notably the formalization of protocols for access to smaller islands.

104. *Output 1.3: Cost Recovery System for Bio-security Service is in place.* A system for part-financing of the Biosecurity Service, through the institution of fees for inspection services will be established, to recover the costs of operation. This will require the inclusion in the legislation to establish the authority the right to charge fees for the services provided under a set of schedules. Activities that would generate fees would include the following: approval of an import request and issuance of import permits (permits would only be valid for a single importation); assessment of the risks associated with a request for import of a new commodity or from a new source; treatment of a commodity to remove an IAS risk after detection; inspections of commodities at points of entry; maintaining plants or animals in post entry quarantine prior to release; issuance of certificates for export; and fines for non-compliance.

105. *Output 1.4: National Communication Plan / Public Awareness Strategy on IAS management developed and Implemented*. A comprehensive public awareness strategy to raise stakeholder awareness of the importance and need for the prevention of the introduction of IAS into the country and control of establishment and spread within the country will be developed. Targeted awareness programmes for different audiences on IAS will be implemented, with a view to engendering attitudinal change. This will include the design, production and broadcasting of information through a range of media, targeting specific stakeholders, e.g.:

- Items of general IAS interest in magazines, TV and papers for the general public;
- Technical information on the importance and need for prevention of introduction of IAS and on the IAS pathways for importers, tourism operators, travel industry, travelers, shipping agents, etc.;
- Technical information on spread of IAS within the country for tourism operators, tourists, IDC, etc.;

[25] The IAS committee will be expanded to include representatives from civil society and private sector, to broaden stakeholder representation.

- Leaflets for distribution with import permits and documents, traveling documents, passports, tickets etc.;
- Articles in travel airline magazines on IAS for information of travelers;
- Posters at entry and exit ports, international as well as domestic (inter-island);
- IAS information in schools curriculum (in relevant academic subjects);
- Displays with merchandise at local gatherings, fairs and relevant meetings;
- Talks and information meetings for key industry and government groups;
- National Biosecurity website developed and used as accessible information source.

NGOs that have an already acquired expertise in this regard will take the lead in these programmes. All targeted awareness programmes will be monitored and evaluated in a participatory manner, involving all major stakeholders (private, NGO and public), in order to adapt the campaign to address emerging needs and circumstances.

Outcome 2: Strengthened institutional capacity to prevent and control the introduction and spread of IAS.

106. *Output 2.1: "Biosecurity Service" created*. An institutional review of the quarantine and control functions, both at national borders and between islands will be completed. This will include an evaluation of the identifiable threats of specific IAS in all production sectors. Recommendations for strengthening institutional arrangements and cooperation will be developed. A Biosecurity Service will be created by consolidating the IAS control and quarantine functions that are currently shared between the Plant Protection and Veterinary Sections of DONR, and the Nature Conservation Division in DOE, in conjunction with Trades Tax (Customs), Immigration and Port and Airport Authorities, etc.. The Service would report to the Minister for Environment and Natural Resources. At the operational level, the Biosecurity Service will enter into Memoranda of Understanding with the Trades Tax (Customs), Immigration, Environmental Health, Police, Port & Airport Authorities and their Security services, Island Development Company (IDC) and Maritime Safety Administration with a view to coordinate inspection activities at the airports and wharves, both for international and domestic (inter-island) transport. A new position of Chief Biosecurity Officer within the DONR will be created, who will have the mandate to ensure that all biosecurity activities are properly coordinated and adhered to.

107. *Output 2.2: Biosecurity Service equipped and staffed with capacitated human resources*. Capacities to conduct inspections, carry out effective control measures, and enforce compliance with the revised Biosecurity regulations will be enhanced. The project will enhance the capacity of the Biosecurity Service to function in accordance with international guidelines and to conduct risk assessments, inspections and to undertake treatments through the provision of equipment and training. This will entail the establishment of secure commodity, conveyance and passenger inspection facilities at the international and domestic seaports, airports and at the premises of importers. Furthermore, the project will provide funds to develop a comprehensive Biosecurity Operational Manual for inspection and quarantine, for use by inspectors. The capacity of inspectors to identify IAS and undertake diagnostic tests will be strengthened.

Outcome 3: Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS.

108. *Output 3.1: IAS baseline established*. A comprehensive baseline of nationally significant native and invasive plants and animals will be established by compiling all previous information on IAS and by conducting participatory surveys where necessary, so that the whole of Seychelles is covered. This should provide the necessary information on the different species, abundance and

distribution of IAS in the country, and thereby their potential threat to highly sensitive and priority habitats. This is a priority activity and should be started as early as possible so that the results can be used in determining further actions. The survey will involve ENGOs, Wildlife Clubs, private hotels and entrepreneurs and other stakeholders, partly as a means of awareness raising and also to encourage these stakeholders to participate in a voluntary network for the monitoring of the spread of IAS. This will also entail enhancement of the current survey activities of various government agencies and ENGOs, in order to develop and adopt a standardized methodology for survey techniques and data management. This will lead to the development of a national database, linked with international networks. The baseline needs continual updating, in order to monitor the establishment, (changes in) invasiveness and spread of IAS. A National Network for the monitoring of the establishment and spread of IAS established, comprising of all relevant stakeholders (Government, NGO, private) will be set up.

109. *Output 3.2: Lessons learned and best practices on IAS eradication & control, and habitat restoration established and disseminated*. A review of past and current IAS eradication practices and an evaluation of their effectiveness and efficiency will be undertaken with a view to documenting lessons and establishing protocols to improve the efficacy and cost effectiveness of IAS control activities. This will cover important IAS and different habitat needs. IAS eradication and restoration protocols/manuals will be developed. There will be on-going evaluation and revision of the eradication protocols/ manuals as a result of experience in its use. The Biosecurity Service will be responsible for helping to prioritise and coordinate IAS control activities based on the protocols / manuals, undertaken by (partnerships of) NGOs, Government or Private Sector. Provision is made for site based demonstrations in the partner project under the IEM Programme: "Mainstreaming Biodiversity Management into Production Sector Activities". Information and best practices generated through the knowledge facility will be shared regionally (COI, NEPAD, Inter African Phytosanitary Council) and internationally, e.g. through GISP, Invasive Species Specialist Group (ISSG) of IUCN, FAO Biosecurity Working Group and other IAS networks. A national Knowledge & Learning Network will be created, modeled after the recently established internet based Pacific Invasives Learning Network (PILN), to engender learning within the participant network, and which will be expanded to a regional internet based Indian Ocean Network. This will be complemented by dissemination through scientific, popular or advocacy articles, and participation in external meetings or conferences. The lessons learned and best practices will also feed into awareness and educational activities.

Link with UNDP-GEF Biodiversity Mainstreaming Project.

110. The Biosecurity project is designed to be synergistic with its sister initiative under the Integrated Ecosystem Management (IEM) Programme, viz. "*Mainstreaming biodiversity management into production sector activities*". Both projects were developed under a single PDF grant under the GEF Strategic Priority "Biodiversity Mainstreaming", and have the same Goal, but address different threats. The latter project addresses the threats to biodiversity associated with the activities of the main production sectors: viz Tourism (cumulative impact of new and on-going tourism operations) and Fisheries (localized overfishing), and attempts to mainstream conservation management vertically into the production practices of these two sectors. The Biosecurity project addresses the cross-cutting threats to biodiversity emanating from IAS, and attempts to mainstream prevention and control measures in the entire production landscape. The different focus of each initiative is elaborated in Table 9 below. Collectively, the two projects will address the major threats to biodiversity arising from production activities, taking appropriate measures within sectors and across landscapes, as needed to protect biodiversity, in conformity with the EMPS. The IEM Programme will make a seminal contribution towards strengthening the enabling environment,

institutional capacities and know-how for biodiversity management in the Seychelles.

Table 9. Biodiversity management needs addressed by the IEM programme.

Management Needs / Project Objectives + Outcomes	**Systemic Capacity needs**	**Institutional Capacity Needs**	**Knowledge management**	**Awareness**	**Incentives / Financial sustainability**	**Sector needs**	**Landscape**
GOAL: The functional integrity of the terrestrial and coastal ecosystems is secured now and into the future, thus providing a base for sustainable development							
BD Sector Mainstreaming Project Objective: *Biodiversity conservation objectives are integrated into key production sectors of the economy*							
Outcome 1: Enabling conditions for mainstreaming biodiversity management within and across sectors are strengthened	Land Use and Biodiversity Planning; Stakeholder involvement		Biodiversity inventories, spatial assessments and monitoring; Data Management: Meta-database;				Sensitive terrestrial and marine environments
Outcome 2: Methods and means for integrating biodiversity and artisanal fisheries management are in place		Institutional capacities for fisheries management strengthened	Baselines, Monitoring, Best Practices, Demonstration and replication	Awareness on BD conservation among institutions and fishers	Resource tenure and access rights for fishers	Fisheries	Sensitive Marine Environment
Outcome 3: The tourism industry is addressing biodiversity conservation needs as part of good practice in business operations		Institutional capacities for BD conservation in Tourism strengthened	Environmental Management Systems for Tourism operators	Awareness on BD conservation among institutional stakeholders and tourism industry	Eco-certification; Financial incentives for BD conservation; Joint management systems for conservation areas	Tourism	Sensitive Terrestrial (coastal + forests); and marine (coral)
IAS Project Objective: *Increased capacities to prevent and control the introduction and spread of Invasive Alien Species through Trade, Travel and Transport across the Production landscape.*							
Outcome 1: Enabling conditions for effective control of the introduction and spread of IAS in place.	IAS Policy; Biosecurity Act			Awareness raising and advocacy for general public on prevention and control of IAS	Incentives and disincentives related to IAS reviewed; sustainable financing mechanisms developed	Cross sector, but with particular relevance to trade, transport, agriculture and tourism	All land- and seascapes
Outcome 2: Strengthened Institutional capacity to prevent and control the introduction and spread of IAS.		Biosecurity Service created, coordinating all IAS prevention, control and management			Fees for Biosecurity Services	Cross sector, but with particular relevance to trade, transport, agriculture and tourism	Safeguarding all land- and seascapes from IAS
Outcome 3: Improved knowledge			IAS baselines, monitoring,			Cross sector, but	Mainly terrestrial

and learning capacities to control the introduction, establishment and spread of IAS.			data management; Lessons learned, best practices and demonstrations on IAS			with particular relevance to trade, transport, agriculture and tourism	(small islands)

2.3. Project Risks and Assumptions

111. The identification of risks was initiated at a very early stage of project development. An economic study conducted as part of project preparation was a key tool for identifying and clarifying some of the important risks. Key risks were discussed and ranked at a major stakeholder workshop conducted in November, 2005. The main risks, risk rankings and mitigation measures are presented below.

Table 10: Risk Analysis

Risk	Risk Rating	Risk Mitigation Measures
Cross-cutting enabling conditions		
Conflict between stakeholder groups emerges.	M	Formal MOUs will be used to define roles and responsibilities. Project activities are designed in a way that will require cooperation in order to benefit from project support. Data dissemination and sharing procedures will be established that are mutually beneficial for all concerned.
IAS prevention		
IAS prevention measures lack broad based public support leading to poor compliance.	M	The project will develop an awareness raising output that will specifically target the development of public support for effective IAS prevention and control measures. The status of the Biosecurity Service within Government agencies will be raised.
Increased Trade related risk		
Trade will increase under a liberalized trade regime that is to conform to the rules and agreements under the World Trade Organization (WTO). Liberalised and uncontrolled trade will increase the risk of IAS introductions.	M	Institutional framework to deal with Biosecurity will be strengthened, so that it can deal effectively with increased imports. Economic Partnership Agreements (EPA) with EU are underway; the link between trade and environment, specifically introduction of IAS, will be re-emphasized in the on-going discussions. Assistance to cope with increased and liberalized trade will be sought from EU (under the EPA) and from WTO (under SPS agreement - Seychelles is currently seeking membership of WTO).
Climate Change		
Seychelles is likely to witness sea level rise and extended dry spells, which may make conditions more suitable for colonization of certain IAS, e.g: Sea level rise may create “gaps” in lowlying coastal and wetland vegetation, which can be occupied by IAS; Increased forest fires may leave “gaps” in native vegetation; Sea water temperature rise may cause coral die off and gaps in marine ecosystems; Import of more drought tolerant plants for the garden which may “escape”; Changed tolerance	S	Increased prevention and control mechanisms to prevent incursion of IAS. Risk assessments will take into account changing climate conditions. General Climate change adaptation measures will be developed and undertaken, some with international support (e.g. GEF).

Risk	Risk Rating	Risk Mitigation Measures
levels for new pathogens.		

*Risk rating – H (High Risk), S (Substantial Risk), M (Modest Risk), and L (Low Risk). Risks refer to the possibility that assumptions, defined in the logical framework in Part 3, may not hold.

2.4 Alternative Strategies Considered

112. The option of investing project resources in the eradication of invasive species already resident in the Seychelles was considered during the course of project preparation, but ultimately discarded. The Threats and Root Cause analysis revealed the fact that the glaring gap in Seychelles' IAS programme is the weak institutional capacity to prevent new IAS species from being introduced into and spreading between the islands within the archipelago. The country is already undertaking a number of IAS eradication/ control efforts. However, these successes are compromised by "leaving the door open" for new re-introductions of IAS. The risks of such invasions are extremely high, and are expected to increase under conditions of climate change and increased trade. Moreover, the costs of controlling IAS once established are very high. Project design is predicated on the principle that prevention is better than the cure. Improving controls over trade, transport and tourism at points of entry has been proven to be an efficient mechanism for IAS management in SIDS, and that this is by far the most effective utilization of scarce technical and financial resources. This lesson has informed project design.

2.5 Expected Global and National Benefits

113. A range of economic benefits are derived from the biodiversity of the Seychelles. The total economic value of Seychelles biodiversity would include the following:

- **Direct use values** from goods such as fish, birds' eggs, timber, meat, fruit, vegetables, which are either consumed directly, or are used as raw materials in production processes.
- **Indirect use values** are best exemplified by the attractions that diverse marine life and luxuriant tropical vegetation hold for the tourism sector.
  The presence of terrestrial and marine biological resources, and their diversity, supports a range of ecological services (e.g. watershed catchment protection, beach protection, soil erosion control and provision of sinks for wastes and residues).
- **Option and existence values** – the premium placed on maintaining biodiversity for possible future uses, and the intrinsic significance that biodiversity holds, regardless of its use. Data on these values are not available for the Seychelles. Both option and existence benefits would be significant components of the total economic value of biodiversity, and it should be noted that they are partly captured in tourism revenues and in donor and Government expenditures on biodiversity conservation.

Table 11: Seychelles Biodiversity Use Value
(5.6 SR/US$)

(Sub-)Sector	Value (million SR; 2003)
Tourism	779.6
Industrial and semi-industrial fishing	1118.6
Other revenue from industrial tuna fishing	350.9
Artisanal fishing	59.8
Agriculture and forestry	74.3
Total biodiversity value	**2338.2**

SOURCES: Government revenue: "Seychelles Biodiversity: Economic Assessment" , IUCN 1997.
Other data: Analysis of data from "Statistics Abstract 2003", Republic of Seychelles

114. **National Benefits**: Biodiversity underpins most economic activities in the Seychelles, as detailed above. This biodiversity value would be compromised by the unabated entry and spread throughout the country, threatening native species and ecosystems' functions. Loss of biodiversity as a result of Invasive Alien Species could have major, negative economic impacts for the country. It stands therefore that the control of invasive species will be critical to enabling the Seychelles in achieving its sustainable development objectives. Immediate beneficiaries from project activities include government agencies mandated with responsibilities for environmental management, who will benefit from enhanced technical capacity for prevention and control of IAS. Improved cross-sectoral institutional cooperation systems, coupled with stakeholder participation schemes will lead to a better deployment of funds and human resources. The NGO constituency will be actively involved in community mobilisation, and planning and executing adaptive management schemes. This constituency will benefit through an immediate enhancement of capacity.

115. **Global Benefits**: Seychelles is part of one the world's greatest biodiversity hotspots with high levels of endemism for its terrestrial biodiversity. The unique biodiversity of the archipelago has developed largely because of its long history of geological isolation, allowing evolution to follow its own course in relative isolation from that on the continental land masses. The rate of terrestrial endemism is particularly high on the granitic islands, with over 80 endemic species of flowering plants, 10 endemic species of ferns and 62 endemic species of bryophytes. The marine ecosystems of Seychelles are much less well known, however, recent surveys have documented an exceptional level of marine biodiversity. The marine ecosystems have more recently been found to be characterized by rich levels of biodiversity. These resources provide a range of global environmental benefits not captured at national level, including existence values and option values. However, these resources are under pressure and absent intervention, threats to biodiversity from IAS are expected to increase. The principle global environmental benefits of the project are derived from the added security provided for ecosystems and constituent flora and fauna through improved prevention of entry and spread of IAS. The planned strategies are expected to improve the cost effectiveness and sustainability of biodiversity conservation. If IAS are allowed to enter and multiply unchecked, the Seychelles may serve as a stepping stone for the spread of IAS in the Indian Ocean Region and even further. This seems already to be the case for one of the recently discovered non-indigenous introduced marine species that seems to have spread from the Seychelles further into the Western Indian Ocean Region.

2.6 Country Eligibility and Drivenness

Eligibility for GEF Funding

116. The Government of Seychelles is a recipient of UNDP assistance and meets the eligibility criteria for GEF Funding. Seychelles ratified the CBD in 1992. The Country has prioritised the project for funding under the country's allocation from the GEF Resource Allocation Framework.

Fit with Focal Area Strategy

117. The Project is designed to address the specific threat to native species emerging from Invasive Alien Species, through a cross sectoral intervention within an entire production landscape aimed at reducing the risk of new IAS arrivals in the country through travel and trade, and their spread between islands within the archipelago. The Project also aims to improve the cost effectiveness of existing IAS control programmes. The project satisfies the revised GEF Strategic Priority 2, BD-2: "Mainstreaming Biodiversity in Production Landscapes, Seascapes and Sectors". The project is in line with the stated Objective of: "*Internalize the goals of biodiversity conservation and its*

sustainable use into production systems, supply chains, markets, sectors, development models, policies and programmes", and therefore contributes to the Outcome: "*Biodiversity conserved and sustainably used in production landscapes and seascapes*". A mainstreaming approach is warranted in order to target the root causes of the threat: namely production interests responsible for bringing IAs into the country and facilitating their spread within it. Successful and sustainable threat remediation will require an attitudinal change in these sectors, and remoulding of production practices.

118. The project has been designed to lift barriers to addressing the threats posed by IAS. Invasive species enter the country and are spread within it through the trade, transport and travel sectors. Interventions are aimed at ensuring that these production activities are managed so as to reduce the risk that IAS will enter into and become established in the Seychelles. The project addresses mainstreaming needs across the entire production landscape. The interventions proposed under the project are compliant with eligibility criteria for BD II, by:

(i) Strengthening the policy foundations to accommodate biodiversity management needs in production activities. The project addresses the policy framework governing the movement of people and commodities into and within the archipelago, addressing gaps in the policy framework that will allow authorities to better control the risk of IAS infestation, and thus threat to biological diversity;

(ii) Strengthening institutional capacities to manage the risks of new alien species' invasions, and improving the cost effectiveness and efficacy of control measures: this includes building institutional capacity outside the traditional environment agencies, for example the customs authorities;

(iii) Cultivating broad-based support from production sector interests to control IAS, ranging from public sector institutions to, in the private sector, the Chamber of Commerce and specific enterprises;

(iv) Strengthening capacity to undertake strategic environment assessments to gauge the risks from IAS, and plan mitigation measures geared to addressing the most serious risks, timeously and cost effectively;

(v) Establishing comprehensive knowledge management systems and a community of practice to abet learning vis-a-vis IAS control efforts; and

(vi) Providing resources to engender attitudinal change amongst businesses and the citizenry, regarding the need to control the entry and spread of invasive alien species.

119. The Project contributes to the following Indicators of BD-2:

Relevant BD-2 Strategy Indicator	**Project's contribution**
At least 10 projects in each production sector (forestry, fisheries, agriculture, and tourism, etc) targeted to mainstreaming biodiversity into the sector.	Project is cross-cutting across the production landscape, but has particular reference to the national agriculture, trade and transport sectors.
At least 75 million hectares in production landscapes and seascapes that contribute to biodiversity conservation or the sustainable use of its components.	Project will ensure improved protection from entry and spread of Invasive Alien Species for the whole of the Seychelles Exclusive Economic Zone, i.e. 1.374 million km^2
70 % of projects in each sector have supported the incorporation of biodiversity aspects into a) sector policies and plans at national and sub-national levels; b) legislation; c) implementation of regulations and its enforcement, and d) monitoring of enforcement.	Project will establish Biosecurity Policy and Act, in coordination with the other national policies and Acts on biodiversity, trade, etc.. It will strengthen and monitor regulations for control of IAS pathways, as well as its enforcement

Relevant BD-2 Strategy Indicator	Project's contribution
50% of projects mainstream biodiversity into Implementing Agency/Executing Agency development assistance, sector, lending programs or other technical assistance programs.	Project will mainstream biodiversity concerns into the cross-sectoral investment programmes.
Measurement of cumulative market changes to which GEF projects have contributed.	Project will install "part-payment for services" for the Biosecurity Service, e.g. the risk assessments and certifications for traders / importers.

120. The project aims at changing attitudes and production practices in the trade, transport and travel industries, which are the vehicle for introducing and dispersing invasive species into and within the Seychelles. A targeted mainstreaming approach focusing on these sectors is needed to modify production. It is accordingly primarily aligned against BD 2. However, a number of planned activities also contribute to GEF Strategic Priority 4 (BD 4): **Generation, Dissemination, and Uptake of Good Practices for Addressing Current and Emerging Biodiversity Issues**. This will be addressed under Outcome 1, through the establishment of an active knowledge management network that will distil and codify knowledge and ensure that it is disseminated within the country and to other SIDS to inform the design of management controls on IAS.

121. Equally, some planned activities also contribute to GEF BD-3: C**apacity Building for the Implementation of the UN Convention on Biological Diversity Cartagena Protocol on Biosafety**. This pertains in particular to the institutional and capacity building under Outcome 2. To ensure synergies it is proposed that the newly set up Biosecurity Service will include the National Biosafety Administration and be responsible for following and implementing the National Biosafety Framework (NBF) and Seychelles Biosafety Action Plan 2005-2010. The NBF and Action Plan look in particular to the intended importation of Genetically Modified Organisms (GMOs), which in the case of Seychelles with its small agricultural sector is very small. In particular the capacity building on Risk Assessment and Management under the Biosecurity Project will also assist in reducing and managing risks through intended and unintended importation of LMOs.

Program Designation and Conformity

122. The project is consistent with the GEF Operational Strategy and Operational Programmes (OP) 2 and 3 for the 'Biodiversity' Focal Area: "Coastal and Marine Environment", and "Forest Ecosystems", respectively. The project focuses on the abatement of the major threat to biodiversity in an area of high global conservation significance. It will cover the incremental costs of strengthening the long-standing commitment of Seychelles to biodiversity conservation, designing and implementing a comprehensive strategy for addressing the threats posed by invasive species at a time when biodiversity loss is still low and habitat degradation is reversible. It is consistent with national conservation priorities, will achieve the participation of a range of stakeholders and provide valuable lessons that can be replicated in other parts of the world. In particular, it satisfies eligibility criteria specified under the Operational Programmes by: i] invoking a highly participatory management strategy; ii] being country-driven, initiated by the Government in accordance with the policy commitments articulated in the Environmental Management Plan for Seychelles ; iii] securing co-financing to share the costs of executing conservation measures; and iv] providing for long-term financial and institutional sustainability. The GEF would finance the agreed incremental costs of attaining biodiversity conservation objectives.

Eligibility under the Convention on Biological Diversity (CBD)

123. Seychelles ratified the CBD in 1992, along with the Framework Convention on Climate Change. The proposed project will fulfill a number of provisions of the CBD, including Article 6:

General Measures for Conservation and Sustainable Use, Article 7: Identification and Monitoring, Article 8: In Situ conservation, Article 10: Sustainable Use Management and Article 12: Capacity Building.

124. The project will play a critical role in achieving the 2010 Biodiversity Target, especially regarding the following goals: a) reducing the loss of biodiversity; b) addressing major threats; and c) maintaining ecosystem integrity. The project will address a number of elements in the thematic work programme on 'Island Biodiversity', especially the following:

> Goal 1: Conservation of island biodiversity; target 2: "*By 2010, 10% of island species are maintained, restored, or their population decline reduced*";
> Goal 3, Address the threats to island biodiversity; Target 12: "*By 2010, scientific capability, institutional support, legal frameworks, and infrastructure are in place to prevent the introduction, establishment, spread, and negative impacts of high-risk, high-impact alien species to islands....*"

125. The project will also consider the 15 guiding principles for the prevention, introduction and mitigation of impacts of invasive alien species (decision VI/23)[26], which is due for in-depth review at Conference of Parties (COP) 9. The project will address the following principles: Border control and quarantine measures; Education and public awareness; Exchange of information; Cooperation including capacity-building, Intentional & Unintentional introductions; Mitigation; Containment; and Control.

Country Drivenness

126. There is a strong policy framework for environmental management and for biodiversity conservation in the Seychelles. Environmental concerns are embedded in the Seychelles' Constitution, where article 38 states that, "*The State recognises the right of every person to live in and enjoy a clean, healthy and ecologically balanced environment and with a view to ensuring the effective realisation of this right the State undertakes… to ensure a sustainable socio-economic development of Seychelles by a judicious use and management of the resources of Seychelles*". Environmental management in Seychelles is guided by the Environment Management Plan of Seychelles (EMPS) 2000-2010. Seychelles was the second country to approve the CBD. An energized NGO community has developed that is very active in biodiversity conservation, with particular strengths on IAS eradication and habitat restoration.

127. The country has taken a number of key steps for environmental management that resonate positively for biodiversity conservation, and particularly regarding IAS. These include:

- The Government of Seychelles is a contracting party to the International Plant Protection Convention and, in conformity with the provisions of the Convention, has established the Plant Protection Section within the MENR as the National Plant Protection Organisation (NPPO). This Section undertakes the primary import and export clearance of plants and plant products, as specified by the guiding principles[27] and the international standards

[26] Guiding principles for the prevention, introduction and mitigation of impacts of alien species that threaten ecosystems, habitats or species : 1 Precautionary approach; 2 Three-stage hierarchical approach; 3 Ecosystem approach; 4 The role of States; 5 Research and monitoring; 6 Education and public awareness; 7 Border control and quarantine measures; 8 Exchange of information; 9 Cooperation, including capacity-building; 10 Intentional introduction; 11 Unintentional introductions; 12 Mitigation of impacts; 13 Eradication; 14 Containment; 15 Control

[27] The principles of plant quarantine as related to international trade (ISPM #1, 1995): Sovereignty;

(ISPMs 1-27) established under the agreement. The NPPO also acts as a quasi-zoosanitary service for the clearance of animals and animal products on a routine basis, with referrals to the veterinary service only on non-routine matters. Although the Government of Seychelles is not a member of the World Organisation for Animal Health (Office International des Épizooites, OIE), it recognises the standards for the specification and diagnosis of animal diseases developed under the agreement and, wherever relevant, applies these international standards.

- The country has established a Maritime Safety Administration that administers the International Ballast Water Convention.
- 47% of the country's land is ostensibly under conservation status within a Protected Area Network, as well as 228 km^2 of ocean. A further 20-25% of land is classified as being sensitive (MDG Status report, 2004);
- There are successful small island IAS eradication and habitat restoration programmes, mainly driven by NGOs in partnership with Government and private tourism operators. Examples are Aride, Cousin, Cousine, Frégate, North Islands, etc. ;
- Total Government co-financing for this project is estimated to be at US$ 1.65 million, which is a further sign of its commitment.

2.7. Linkages to UNDP Country Programme

128. The project will contribute to meeting the objectives as set out in the UNDP Country Programme 2003-2006 for Seychelles (CPD 2003-2006), and will be implemented within that framework. The following components of the Programme are particularly relevant:

- Proposed Programme (III) on 'Bio-diversity conservation, including community participation';
- Improve the institutional capacity for the conservation and management of terrestrial ecosystems of the granitic island.

129. The project is consistent with the agreed terms in the UNDP Country Programme of "...focus on key forest ecosystems and identified priority threats…management of the biodiversity resources. It is expected that biodiversity conservation will be improved through better management of natural habitats, improved techniques for controlling invasive species …...". The project will contribute to Service line 3.5 - *Conservation and sustainable use of biodiversity*, under Goal 3 – *Managing energy and environment for sustainable development*, of the Multi-Year Funding Framework 2004-2007 (MYFF 2004-2007). Furthermore, the project is in line with the development challenges identified in the current Common Country Assessment (CCA), which is being finalized for the Seychelles with the support of UNDP and other UN agencies operating in the country. The CCA identified sound environmental management as one of several key development challenges to be confronted in spearheading sustainable development.

130. The mainstreaming strategies to be adopted under the project are consistent with UNDP's mandates in the development arena, and will complement UNDP's work on strengthening governance, in particular improving institutional effectiveness in public institutions. As the project is focused on building the capacity of public and private sector institutions to control IAs, and will, inter alia, undertake necessary institutional reforms to improve the efficacy of institutions responsible for regulating trade and the movement of merchandise and people, there is strong resonance with UNDP's mandate. UNDP is providing support for the development of a National Plan of Action on

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Necessity; Minimal impact; Modification; Transparency; Harmonisation; Equivalence; Dispute settlement; Cooperation; Technical authority; Risk analysis; Managed risk; Pest free areas; Emergency action; Notification of non-compliance; Non-discrimination.

Social Development which aims at ensuring that larger social concerns, including environment management are accommodated in economic planning. Institutional mechanisms to monitor implementation are being developed. These should abet measures to ensure IAS controls are effectively mainstreamed in production practices.

131. Substantively, the project will benefit from UNDP-GEF's past work on controlling invasive species in small island ecosystems. This work includes interventions in Mauritius, the Galapagos, and Western Pacific SIDS. The lessons and good management practices distilled from these interventions will be incorporated into project design, particularly with regard to the control of entry and spread of IAS. The Project in Galapagos, in particular has a component focused on improving controls on trade, transport and travel. Close linkages will be maintained between these respective initiatives during the implementation stage. Finally, the project is pertinent to UNDP's advisory services and capacity development on trade-helping to ensure that national and global trade operates on the basis of human development concerns. This aims, inter alia, at ensuring that trade reforms contribute to the Millennium Development Goals.

132. The project is also in line with other international activities and regional programmes. It is in line with the Millennium Development Goals (MDGs) adopted by the Seychelles, especially MDG-7 on "Environmental Sustainability". These MDG commitments are further elaborated under the SIDS Plan of Action (Barbados and Mauritius Strategies).

2.8. Linkages with GEF Financed Projects

133. The project is highly complementary with a number of national and regional GEF projects. The Project development team has worked in close collaboration with other project teams to avoid any duplication and overlap between the initiatives, and to optimise synergies. The linkages are elaborated below.

Table 12: On-going/ planned GEF projects

Project Name	Focal Area	IA	Description and Linkages
Improving Management of NGO & Privately Owned Nature Reserves & High Biodiversity Islands	Biodiversity	IBRD	This Medium sized project seeks to improve management of two biodiversity-rich islands owned by civil society organizations (Cousin and Cousine). The activities involve research and monitoring of species and habitats, including eradication and restoration programmes; establishing a conservation resource center; and public education and advocacy programmes. The project is implemented on 2 privately owned islands for a period of 3 years, will be completed by 2007, and is executed by a local NGO (Nature Seychelles). The two projects are thus complementary and the Biosecurity project will liaise with this project during the development and inception stage, and will take into account the lessons learned on eradication of IAS and restoration of small private islands.
Capacity Development of Sustainable Land Management in Seychelles	Land Degradation	UNDP	The Seychelles has just developed (August '06) a medium sized project to build capacity in Sustainable Land Management. The project will address land degradation in the forestry and agricultural sectors. It will focus on addressing forest fires, unsustainable harvesting, soil conservation in agriculture and landslides. The full Biosecurity project will concentrate on the cross-cutting prevention and control of introduction and spread of all IAS in the landscape. These projects are therefore wholly complementary and will actively seek coordination and synergies, through memoranda of understanding, etc. These projects will also benefit from combined coordination and input from the national UNDP Technical

Project Name	Focal Area	IA	Description and Linkages
			Management Unit.
Capacity Development Follow-on to National Capacity Self Assessment (NCSA)	Cross Cutting Capacity Building	UNDP	The Seychelles was one of the first SIDS and African countries to complete its NCSA. The country is requesting funds for a follow-on project to strengthen its capacities to plan and oversee implementation of actions to address the provisions of three global environmental conventions. These include the Conventions on Biodiversity, Climate Change and Desertification (land degradation). The main focus will be on strengthening the role of the EMPS, to serve as a coordinating body for cross-sectoral environmental management. This will complement planned capacity building activities under the Biosecurity Project. The NCSA follow-on project will also develop capacities for state of the environment reporting, thus complementing the knowledge management activities of the Biosecurity project.
Enabling Activity	Biodiversity	UNEP	An enabling activity under UNEP is pipelined. This proposes capacity building within the Department of Conservation and particular attention to Access & Benefit Sharing.
Building Capacity and Raising Awareness in Invasive Alien Species Prevention and Management	Biodiversity (regional)	UNEP / GISP	The project looks at transboundary issues. The purpose/immediate objective of the project is to improve the ability of developing countries and regions to prevent, as far as possible, the incursion of invasive alien species; and to manage existing and new introductions. The two initiatives will share lessons learned during implementation. The PDF-B is expected to completed by June 2007. Seychelles is not directly included in pilot countries, but the eastern and southern African region may be.
Building Regional Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms in Ships' Ballast Water (GloBallast Partnerships)	International waters	UNDP/ IMO	The project is assisting developing countries understand the problem of ballast water transfers of aquatic IAS, and monitor the transfer of ballast water. The Project will assist developing countries to enact the necessary national level policy, legal and institutional reforms to prevent, minimize, and ultimately eliminate the risk arising from the transfer of invasive aquatic species and pathogens in ships' ballast water and sediments, and to develop sustainable mechanisms for the control and management of ballast water and sediments. Seychelles will be a beneficiary from regional activities. A Strategic Action Programme to address the issue in East Africa has been agreed. This makes provision for coordinating information management and training activities, which will benefit the Maritime Safety Administration. Close working linkages, through Memoranda of Understanding, will be established between the Maritime Safety Administration and the Biosecurity Service, to ensure that the respective functions of the two services are coordinated, under the aegis of the IAS strategy.
"Developing a Multi-Country Approach in Support of Country Implementation of the National Biosafety Framework for the Transboundary Transfer, Use, and Handling of Biotechnology Products within the SADC Sub-region of Africa"	Biodiversity (regional)		Seychelles, though not yet an official member of SADC, may participate to a limited extent in this initiative, which will support the implementation of Seychelles Biosafety Action Plan 2005-2010, especially benefitting from regional capacity building initiatives, which will have direct links to the Biosecurity Project (e.g. on risk assessment and management, safe handling, etc.)

Project Name	Focal Area	IA	Description and Linkages
Enabling Activities for the Preparation of Seychelles' 2nd National Communication to the UNFCCC	Climate Change	UNDP	The project will enable Seychelles to prepare its Second National Communication to the Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC). The Project will further enhance the national capacities and will raise awareness on climate change issues.

134. Another initiative that is of interest to this project, and could serve as a model, is the Pacific Invasives Learning Network. This Network is initiated and implemented by the South Pacific Regional Environment Programme (SPREP), with the aim of operating as a network to empower effective invasive species management through a participant-driven network that meets priority needs, rapidly shares skills and resources, provides links to technical expertise, increases information exchange, and accelerates on-the-ground action. The linkage to this information network would ensure exchanges of experiences and could serve as a model for a similar initiative in the Indian Ocean.

2.9. Sustainability

135. Sustainability has been a major consideration throughout the development of this project. There are two key interlinked challenges to assuring sustainability of the Biosecurity Services to be established under the project – (i) financing, and (ii) public awareness and support. The Biosecurity Services will be constituted not by creating an entirely new institution, but rather through the consolidation of existing but scattered functions "under one roof". There will be a re-gearing of existing budgetary appropriations and human resources, with the intention that they be used more effectively. The balance of additional costs will be made up with the institution of a fees-for-service. It is estimated that fees for service will sustain approximately 30% of the recurrent operating costs of the Biosecurity Service. The GOS will cover the balance out of its general revenues – largely through a reshuffling of existing agency budget appropriations. This is detailed in the next table, which projects the budgets of GOS for specific quarantine & IAS control measures, and the Biosecurity Service over the coming years:

Table 13. Existing (2006) and projected (2007 – 2012) government budgets for biosecurity

Year	2006	2007	2008	2009	2010	2011	2012
1. GOS Outlay for quarantine / control / IAS treatment [i)]	1,100,000	1,100,000	850,000	750,000	700,000	650,000	600,000
2. Biosecurity Service recurrent budget [ii)]			250,000	350,000	450,000	500,000	550,000
3. GOS Outlay for Biosecurity Service [iii)]			250,000	315,000	360,000	350,000	385,000
4. Biosecurity Fees-for-Services [iv)]				35,000	90,000	150,000	165,000
5. National Expenditure on Biosecurity [v)]	1,100,000	1,100,000	1,100,000	1,100,000	1,150,000	1,150,000	1,150,000
6. Total GOS appropriations for new Biosecurity Service + other Quarantine / control [vi)]	1,100,000	1,100,000	1,100,000	1,065,000	1,060,000	1,000,000	985,000

Remarks: i) GOS existing (2006) and projected (2007-2012) outlays to existing agencies for performing specific quarantine and IAS control measures (mainly DONR, DOE, TRANSEC, Immigration, Customs, MSA, etc.). From 2008-2012 this will include activities (immigration, customs, security, etc.) not taken over by the new Biosecurity Service;

ii) Recurrent costs for new Biosecurity Service, to be financed by GOS + fees-for-services;

iii) GOS outlay for new Biosecurity Service, from re-shuffling of (parts of) budgets of existing agencies (mainly DONR, DOE);
iv) Projected "Fees-for-services": resp. 10% (2009), 20% (2010), 30% (2011 and 2012) of total Biosecurity Service recurrent costs
v) Total national expenditure on Biosecurity (items 1 + 2)
vi) Total existing (2006) and projected (2007 – 2012) GOS appropriations for Biosecurity + associated control (1 + 3)

136. Awareness raising undertaken by this project will be a key factor in developing support to improve IAS controls from policy makers and decision-makers, the private sector and from the general public. Economic analyses of the costs and risks posed by IAS will be a key tool used in raising awareness on the need to control the entry of produce to the Seychelles. The project will identify the clear threats that IAS pose to the livelihoods of the general public. Similarly, the benefits and gains of eradicating IAS and restoring habitats need to be clearly demonstrated to garner support from the citizenry and private sector. Support to ensure sustainability will depend on the engagement of stakeholders and the generation of ownership of IAS activities and their beneficial outcomes. Such involvement will require increased transparency in the regulatory functions. This will require the construction of information platforms.

137. Global warming is likely to affect the distribution of both endemic and invasive species. The project has internalized this factor into design. The changes and impact of environmental factors will be monitored by surveys of habitats and the collection of species distribution data. Such changes in species distribution, however small or significant, will be taken into account in modifying the inputs and outputs of risk assessments that are the basis for determining IAS management options. As an example, lower rainfall levels would require that assessments for weediness in plants would be skewed towards consideration of drought tolerance as an invasive trait, and the assessment of the likelihood of the entry and establishment of other terrestrial IAS in a pathway would require an evaluation of resistance to periods of low humidity at the different life stages; assessment of marine organisms would consider higher sea temperatures and UV tolerance. As a consequence of any changed environmental conditions in Seychelles, the criteria for determining the risk organisms and their impact will also change, and the management of IAS will be modified accordingly to ensure the sustainability of interventions.

2.10. Replicability

138. The Project incorporates good biodiversity management practices that have been demonstrated elsewhere. During project preparation, technical expertise was sought and provided from competent authorities in the South Pacific and Galapagos islands on IAS management. Relevant good practices have been integrated within project design. The Seychelles is already a leader in the biodiversity conservation field. The merger of the "Seychelles" experience with good practices distilled from other SIDS is expected to yield a number of powerful new models with potential for replication in the Indian Ocean region and globally. Replication will be promoted at two levels. At a national level, the project will seek to roll out promising management approaches and good practices. At the global level, information will be made available through knowledge management systems, particularly through Web links such as the one set up during project development, or through the Global Invasive Species Programme or the Invasive Species Specialist Group (ISSG) of IUCN. Table 14 identifies the opportunities for replication, presents the replication activities, and gives information on their scope and timing.

Table 14: Replication Strategies

Needs/Opportunities for Replication	Project Strategy for Replication	Scope and Timing

The biosecurity service will have a national mandate and is not something to replicate at the national level. Elements of the strategy may be replicable within the region. The organizational structure for the management of the environment wherein the regulation of border activities is within a single ministry with overall responsibility, rather than with a competing agricultural sector ministry, provides the opportunity for the development of an integrated biosecurity service. This system could be extrapolated as an effective example of IAS control and management for other SIDS where human and financial resources are limited.	Toolkits will be placed on the Web site and shared widely through the Global Invasive Species Programme (GISP) or Invasive Species Specialist Group (ISSG) networks and/or a newly developed Regional Learning Network. Ongoing assistance sought from GISP /UNDP Knowledge Management system. Potential UNDP/GEF and/or GEF/SEC review of relative effectiveness of IAS prevention vs. eradication/control of established IAS.	Regional Yrs 2-5 Regional Ongoing Yr 3-5 as regional fora occur
The lessons learned and best practices for eradication and rehabilitation of IAS, identified by the review, need to be broadly disseminated for replication within Seychelles.	Training will be provided for tourism operators (especially on small islands), ENGOs, Wildlife Clubs.	National Yrs 2, 4 & 5
Systems and capacities for island-by-island monitoring of IAS need to be developed and replicated.	Awareness raising and training for Wildlife Clubs, schools and church groups and others.	National Annual

2.11. Lessons Learned

139. A number of key lessons were distilled from an internal review of previous biodiversity management projects in Seychelles and following a worldwide review of lessons for controlling the introduction of IAS. This included a review of lessons from GEF projects in the Pacific and Galapagos Islands.

Table 15: Lessons Learned

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
Cross Cutting			
Stakeholders need to come to a common understanding of the project purpose, outcomes and outputs. A consensus should be established from the start and nurtured.	Interests of NGOs and GOS are sometimes in concurrence and sometimes not. Highly participatory process engineered in designing the project.	Inception workshop at project start-up. Annual stakeholder review of what does and does not work, with formulation of corrective measures.	Outcome 1
Strong and independent project implementation unit needed to achieve objectives.	Experience with projects in Seychelles has shown that some projects fall short of meeting their full objectives because of conflicts over ownership, and issues surrounding efficiency of implementation.	Strong Project Management Unit in place with capable staff. Remuneration will be attractive and according to qualifications. Inclusive steering committee with detailed TOR in place. Strong technical and management guidance of PCU by qualified national and international experts. Independent annual stakeholder review.	Implementation modalities
Need to have an incentive system with adequate penalties and levels of enforcement to	Enforcement of IAS legislation is largely absent but commitment to change this has been built.	Strong emphasis on inspections and enforcement of IAS legislation and on building public support for measures needed.	Outcome 2

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
act as a deterrent against malfeasance.			
IAS need to integrate prevention and quarantine with eradication and control.	Seychelles has been a leader in E&R, but has left the door open for entry of new IAS. Political commitment to development of effective IAS prevention capacities was built during project preparation.	Outcome 2 is focused on building biosecurity service capacities for preventing the entry of IAS.Outcome 1 builds awareness.	Outcome 2, 1;
Internal quarantine systems must be in place to support primary border activities so that eradication and restoration activities on the smaller islands in the country are also sustainable.	There has been little work done to identify the IAS present on each island or on the risks they pose. There has been some awareness raising about the need to limit the movement of IAS from one island to another, but such efforts are sporadic and poorly co-ordinated. Only private owners or resorts that have full control of an island are able to institute appropriate controls on the entry of IAS. Even for these situations, there is a legal question about their ability to prevent fishers/citizens from landing boats on beaches.	Project will conduct island-by-island inventories of IAS and will set up a voluntary monitoring system for IAS. A major awareness raising effort will be made on the need to prevent the inter-island spread of IAS.	Outcome 2, 3
Procedures for the inspection and clearance of commodities can only be undertaken with consistency by using an operational manual developed for the work profile of the country and reflecting the risk levels of the commodities or pathways within a legal framework.	The list of black-listed species for Seychelles is out of date and there is no capacity for conducting risk assessments. A manual exists but is rarely used. Staff have little capacity for diagnostics and identification.	The legal framework will be revised and updated. Capacity for risk analysis will be built and black lists and white lists will be prepared. An updated manual adapted to Seychelles conditions will be developed and biosecurity services staff will be fully trained in its use.	Outcome 1, 2.

PART III: Implementation Arrangements

140. The project will be implemented over a period of five years beginning in June 2007, in partnership with the associated project under the Integrated Ecosystem Management (IEM) Programme: "Mainstreaming Biodiversity into Production Sector Activities", and under a UNDP-GEF Programme Coordination Unit (PCU).

Programme Coordination Unit

141. The "Lessons Learned" from earlier environmental projects in Seychelles have shown that it is crucial to have a strong project coordination mechanism. This is of particular importance when several sizeable UNDP-GEF Projects need to be coordinated at the same time, even more so taking

into account the human resources and capacity constraints in the Seychelles (e.g. as reflected in the national Capacity Self Assessment, NCSA, 2005). It is with this in mind, as well as to ensure a certain independent and effective facilitation between the different stakeholders (government, private sector and civil society), that a central Programme Coordination Unit (PCU) is being proposed. This UNDP supported PCU will oversee, support and coordinate all daily activities of the different UNDP-GEF projects. The PCU would be lead by an overall "Programme Coordinator". This Coordinator could be either a national or international expert, with strong management credentials, and supported by an effective administrative and accounts set-up, to ensure transparency and accountability, especially in its procurement. The procurement will entail several service contracts with local entities (e.g. private-NGO partnerships), following a transparent, open and independent tender process, regulated by UNDP procurement procedures. An important role for the PCU is therefore the management of these tenders, in particular preparation of tender documents and compilation and recommendations of bids for evaluation by the Project Steering Committee. This will be assisted by the UNDP Technical Management Unit (TMU) which is already presently operating. A National Project Director needs to be appointed by Government to ensure the liaison between the PCU and government, as well as the timely and adequate disbursement of funds.

Project Management & Implementation

142. Daily project management is provided through a National Project Manager, responsible for the Biodiversity thematic level, i.e. the combined Biodiversity Sector Mainstreaming and Biosecurity Mainstreaming Projects. Implementation of the projects will fall largely to national entities within the different sectors (fisheries, tourism, agriculture, forestry, etc.) and thematic areas. Because the main emphasis lies on "mainstreaming" and "capacity development", broad participation will be sought within the relevant production sectors and civil society. Already some platforms and structures for discussion, exchange & coordination exist; these will be used in further sectoral and project coordination (e.g. IAS committee, national parks committee, legal review committee, etc.). Changes in the set-up, as well as support to these committees may be envisaged in order to make them more effective. It is envisaged that apart from activities that will be allocated to the most relevant and competent entities in the sector/area, several project activities will be contracted out locally, in most cases likely to private sector / NGO partnerships. These contracts will follow a transparent, open and independent tender process, coordinated by the PCU and following UNDP-GEF procurement procedures.

Technical Assistance

143. Short-term national as well as international technical assistance (TA) will be provided by the Programme, in order to overcome barriers and achieve the project outputs/outcomes. The TA will be directly contracted by the PCU, through a transparent procurement process (i.e. the development of Terms of References and recruitment) following UNDP regulations and will directly assist the implementing entities and report to the PCU.

Project Steering Committee

144. For effective direction and steering of the project, a committed and balanced Project Steering Committee (PSC) that represents stakeholders' interests is required. It is proposed to set up a relatively small Steering Committees for the Biodiversity thematic area dealing with the Biodiversity and Biosecurity projects. This Steering Committee comprises of the most pertinent stakeholders / implementers of the project/ programmes, preferably some 6 – 12 members, proposed by the EMPS Steering Committee and endorsed by Government and UNDP. The PSC may meet periodically (e.g.

quarterly) to consider progress, budgets & workplans, set policies and targets for the different projects, and evaluate major TORs and bids for contracts (prepared by PCU). The PSC will periodically inform the full EMPS Steering Committee. Other members may be co-opted to the PSC to discuss emerging technical or administrative issues. The Steering Committee members will be remunerated under Government Counterpart fund, and the PSC will have a budget to contract out services if needed, e.g. M&E. Training and support will be given to the stakeholders on the Project Steering Committee, if needed.

Reporting

145. The implementing partners of the specific activities (organizations, consultants, contracted entities) will report to the respective Project Manager. The Project Managers will prepare the necessary project progress and other (technical, etc.) reports. The overall Programme Coordinator approves, edits and consolidates the Project Reports, and submits to the PSC and UNDP following standard UNDP reporting procedures.

146. The responsibility for Project delivery/impacts ultimately rests with UNDP, acting as the GEF implementing agency. UNDP will monitor all project activities and outputs, with a view to assuring outcomes. UNDP will ensure that the activities are being conducted in close co-ordination with the government and other stakeholders. UNDP will provide technical backstopping services and monitor adherence to the work plan. The Project will comply with UNDP's monitoring, evaluation and reporting requirements, spelled out in the UNDP Programming Manual.

PART IV: Monitoring and Evaluation Plan and Project Budget

147. A comprehensive monitoring and evaluation system will be established for the Biodiversity thematic area, including both the Biodiversity Mainstreaming and Biosecurity Projects. M&E will be conducted in accordance with established UNDP and GEF procedures. The Logical Framework Matrix in PART VI provides impact indicators for the project that will guide project implementation, along with their corresponding means of verification.

148. The Programme Coordination Unit will be responsible for day to day monitoring activities, assisted by TA on IAS / Biosecurity. The Programme Coordinator will be responsible for the preparation of reports for the Steering Committee and UNDP on a regular basis, including the following: (i) Inception Report; (ii) Annual Project Report; (iii) Project Implementation Review; (iv) Quarterly Progress Reports; and (v) Project Terminal Report. The Quarterly progress reports will provide a basis for managing project disbursements. These reports will include a brief summary of the status of activities, explaining variances from the work plan, and presenting work-plans for each successive quarter for review and endorsement. The Annual Project Report will be undertaken annually, and will entail a more detailed assessment of progress in implementation, using the set indicators. It will further evaluate the causes of successes and failures, and present a clear action plan for addressing problem areas for immediate implementation.

149. Annual Monitoring will occur through the Tripartite Review (TPR). The TPR will be composed of representatives of GOS, UNDP and the Project. This will serve as the highest policy-level meeting of the parties directly involved in the implementation of the project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

150. The project will be subject to at least two independent external evaluations:
Mid-term Evaluation - will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed;
Final Evaluation - will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.

151. The Programme Coordination Unit will provide the designated UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a commercial auditor engaged by the PCU.

152. Total project financing amounts to US$ 6,605,000, excluding preparatory costs. Of this, the GEF will finance US$ 2,000,000. Total co-financing amounts to US$4,605,000, broken down as follows:

Table 16: Outcome Budget (US$ 1000, 5 years)

Outcome	**GEF**	**GOS**	**EU**	**FFEM**	**ENGOs**	**Total Oil Company**	**Private Sector**	**TOTAL**
1. Policy and regulatory framework	400	620	330	0	140	40	70	**1600**
2 Institutional framework	1200	810	1100	100	100	50	100	**3460**
3 Knowledge and learning	400	220	350	200	200	50	125	**1545**
TOTAL	**2000**	**1650**	**1780**	**300**	**440**	**140**	**295**	**6605**

Cost Effectiveness

153. The natural ecosystems of the Seychelles are still relatively intact when compared to other small islands. The costs of preventing the entry and spread of IAS are considerably less than the cost of control and eradication, assuming that eradication and restoration is technically feasible. The cost of IAS eradication and ecosystem restoration on one small island alone, North Island, is estimated to run in excess of US$600,000 or US$ 3000 / hectare (excluding recurrent costs). Trials performed in Morne Seychellois National Park have shown that the costs of IAS eradication and restoration back to native forest can be as high as US$50,000/ha (Kueffer et al, 2004). The cost of preventing the entry of new IAS into Seychelles is much lower. While the improvement of quarantine and border controls will require high up-front investments in infrastructure and capacity building, these combined costs are lower (< US$ 80 per hectare) than the eradication costs. Moreover, the Seychelles has already made substantial investments in eradicating IAS from and restoring small islands, such as Cousin. IAS prevention interventions will help to protect these investments that have already been made, or are planned, that may not be sustained in the absence of an effective IAS prevention/quarantine system for the entire country.

PART V: Incremental Cost Analysis

National Development Objectives

154. The Government of Seychelles is presently drafting a new National Development Plan (NDP 2005 – 2015), entitled 'restoring growth and stability'. The overriding development objective is to improve economic performance, and foster economic growth rates well above the trend in recent years. This is required to sustain the socio-economic progress that the country has achieved in the last 25 years. Factors that might impact negatively on growth prospects include risks related to exogenous volatility (natural disasters), uncertainties in the oil markets, erosion of preferential market access to the EU market for fisheries products, regional conflicts and security issues that affect tourism, and a slowdown in global economic recovery. The intrinsic relationships that exist between the natural environment and the socio-economy are particularly evident in Seychelles. The limited natural resource endowment greatly restricts the economic options of the country, which is marked by the essentially heavy reliance on the tourism and fishery industries. The growth of the economy is linked therefore to the sustainable use of the country's natural resources, and dependent on the effective protection and management of its environment.

Global Environmental Objectives

155. The Seychelles is a repository of globally significant marine and terrestrial diversity. The importance of the terrestrial component of biodiversity is amplified by the fact that the rate of endemism is high. Some taxa are threatened or endangered, in particular the higher plants, birds, turtles, amphibians and invertebrates. The marine biodiversity is still largely unknown. The goal of the project is to secure the functional integrity of terrestrial and coastal ecosystems of the Seychelles. Much of the sensitive biodiversity in the Seychelles is already under some form of protection or maintenance but the main threats to biodiversity emanate from the production sectors and trade. The project is mainly designed to counter the threats to biodiversity from colonization by invasive alien species across the landscape. It attempts to address this threat through prevention and control of introduction and spread of IAS, which is linked with increasing trade, and the movement of persons and goods through the travel and tourism industries.

Baseline Scenario

156. Under the baseline scenario, defined as business as usual, a total investment of some US$ 15,475,000 equivalent will be invested by different national stakeholders (Government, International donors, NGO community and private sector) to address the threat of IAS over the next five years. While insufficient to ensure complete prevention and control of IAS in the country, these activities provide an important foundation in which this project is nested. A sketch of the main baseline activities follows:

157. Enabling environment The total baseline investment dealing with the enabling environment for measures concerning biodiversity and the threat of IAS is estimated at US$3,880,000. This includes spending by MENR of some US$1,640,000 million for policy development addressing biodiversity (EMPS and NBSAP review; forestry, agriculture and fisheries policies, etc.). Several Government ministries (MENR, MLUH, etc.) and the office of the Attorney General will allocate some US$2,040,000 to revise existing legislation and put in place new legislation and policies for biodiversity with relevance to IAS (i.e. Biodiversity Act, Biosafety Act, revise Environmental Protection Act, Environmental Impact Regulations, etc.). NGOs and Private Sector are estimated to contribute some US$ 100,000 each, mainly in kind, for participating in policy, legal and regulatory development.

158. The baseline investment in awareness raising to garner support for biodiversity and IAS management is estimated at US$ 800,000. Government is estimated to spend US$ 600,000 on on-going education and awareness relating to biodiversity and IAS. The Education Information and Communication Section under MENR will continue to undertake ad hoc awareness activities. Periodic clean up campaigns sponsored and organized by the MENR will continue, some with support of the private sector (e.g. SeyBrew, Barclays Bank). The Environment Education Section in the Ministry of Education and Youth will devote further resources to biodiversity conservation. The Nation newspaper in its weekly environment page will continue reporting on biodiversity related issues. The Biodiversity Centre will be completed and will become a central point for education and awareness programmes on native flora and fauna. The yearly Agriculture and Horticulture Show organized by DONR usually pays attention to agricultural and general biodiversity. NGOs will continue with ad hoc awareness campaigns on biodiversity related issues at an estimated cost of US$ 150,000. The Wildlife Clubs will undertake biodiversity awareness and education programmes, with the youth in schools. Some private islands have awareness programmes for tourists, e.g. trails with specific information on biodiversity and invasive species, estimated at US$ 50,000.

159. Institutions. The total baseline investment under this component is estimated at US$7,860,000. Several Government agencies including the Customs, Port and Airport authorities, Coast Guard, Maritime Safety Administration, MPA, Plant Protection & Veterinary Services, Environmental Health, etc. will spend over US$ 5,700,000 to run existing regulatory services for inspections and quarantine, as part of their current mandate. MENR will allocate some US$ 600,000 for continuing IAS programmes from the National Parks & Forest and Conservation Sections (mainly trials with invasive woody and herbaceous species in forest, and eradication of animal species like alien birds, lizards, terrapins, etc.). The Agricultural Extension and Plant Protection Services will continue to provide extension services to farmers and other clients on measures against invasive weeds and pathogens, at a cost of US$ 800,000. This component also includes a baseline investment of US$ 200,000 by NGOs and a contribution of US$ 500,000 over the next 5 years by private land owners, including private island resort owners, for ongoing IAS eradication and control/restoration programmes.

160. Knowledge and learning. Total baseline investment under this component is estimated at US$ 2,935,000. GOS will continue to outlay US$ 2,100,000 for knowledge and learning activities pertaining to biodiversity. This will mainly involve on-going ad hoc trials and monitoring activities from DOE, DONR, SFA and SCMRT. The Forestry Information Unit within DOE will continue to manage biodiversity related data, as will the GIS units within MENR and MLUH. SBS will continue to process biodiversity research applications and compile research data and publications, and EMPS and stakeholders will discuss individual research applications. A new GIS unit has been established in the Agricultural Planning section, assisted by an FAO project for US$ 235,000, which will manage land information pertaining to agricultural production. ENGOs will undertake research, and data collection and management on biodiversity conservation at an estimated cost of US$ 300,000. This includes on-going conservation activities from: Nature Seychelles on Inner islands, especially Cousin; ICS on Aride, and some outer islands; NPTS on Silhouette; MCSS in the marine environment; and PCA is working on restoration efforts with Geobotanical Institute at the University of Zurich, and the Botanical Gardens and Forestry Sections of MENR, as well as compiling a data list on endemic plant species. Nature Seychelles, with assistance from a GEF-WB Island Biodiversity project, will also open a biodiversity research and resources centre on Praslin. A turtle monitoring research network is managed by MCSS with the cooperation of private sector and other ENGOs. Private Hotels will continue to undertake ad hoc conservation efforts and compile some data in collaboration with ENGOs at a cost of US$ 300,000.

Alternative Strategy

161. The Seychelles Government has limited financial and human resources, as well as the knowledge base to move beyond simple nature conservation paradigms and to ensure that biodiversity is valued, and used sustainably. This holds also true for IAS management, where the Government and other stakeholders attempt to prevent and control the introduction and spread of IAS but are limited in their capacity to do so, especially in view of the increasing probability of IAS invasions emanating from increased trade and movement of goods and persons, and global climate change. The total cost of the baseline described above is US$15,475,000. This is not sufficient to ensure adequate prevention and control of IAS in the Seychelles' production landscape. In addition, serious inadequacies in the controls over IAS entry and inter-island transfer threaten to compromise the efficacy of baseline programmes. The GEF Alternative aims at addressing these unmet needs, with a focus on the pathways for IAS invasions created through trade and the movement of people into and within the country, and knowledge management for IAS eradication efforts. The aim is to improve the enabling environment, enhance the existing institutional capacity, and foster the existing knowledge and learning capacities. This will safeguard biodiversity of global importance within Seychelles, as well as prevent further regional and global spread of IAS. The total cost of the Alternative is US$22,080,000 with an incremental cost of US$ 6,605,000 (30% of the Alternative) for which GEF funding of US$ 2,000,000 is sought (30% of the increment).

162. Outcome 1: Enabling conditions for effective control of the introduction and spread of IAS in place. The incremental cost for policy and legislative reform under this component is US$ 810,000 with requested GEF funding amounting to US$ 200,000 or 24% of the increment. GOS will develop an encompassing Biosecurity Framework, and ensure harmonization with all related policies (e.g. the new Biosafety Framework and Forestry Policy, as well as existing policies that need to be revised, e.g. EMPS, NBSAP, Agriculture and Fisheries policies). Similarly, in terms of legislation, GOS will develop a new encompassing *Biosecurity Act* and ensure harmonization with all *Acts* that will be reviewed (e.g. *Environmental Protection Act*) and newly developed *Acts* (e.g. *Biosafety, Access and Benefit Sharing*). The GOS will also fund Seychelles' participation in international forums on IAS. Total funding from the GOS, including the work needed ratify the legislation, amounts to US$ 420,000.

163. The EU will commit a total of US$ 130,000 under their different projects for developing an Integrated Coastal Zone Management Plan (addressing coastal degradation which may provide fertile environments for the spread of invasive species) and developing the draft *Plant Protection Act* which will be integrated in the *Biosecurity Act*. The Marine Invasive Species Project undertaken by MPA-SCMRT, is developing a Marine Invasive Species Management Plan, with funding from Total Oil Company to the tune of US$ 50,000, which will be integrated into the overall Biosecurity policy framework. NGOs and private sector are estimated to spend US$40,000 and US$20,000 respectively in participating in the revision and development of pertinent IAS policies and legislation. The GEF will fund the recruitment of technical expertise and capacity building for policy and legal revision to ensure that IAS controls are addressed in a holistic manner, and that these instruments are compliant with established international standards. The GEF will also support the establishment of a cost recovery system for the new Biosecurity Service.

164. The total incremental cost of awareness raising activities under this Outcome is US$790,000 with requested GEF funding of US$ 200,000 or 25% of the increment. Different government entities (MENR, MEY, SFA, MPA) will provide some US$ 200,000 for enhanced and targeted awareness programmes on IAS prevention, control and eradication through the different media (newspaper, SBC, campaigns and shows, curricula, etc.). The EU will mount specific and targeted awareness and

education campaigns on IAS at a total estimated cost of US$ 200,000 through their different projects (Melon Fruit Fly eradication, Regional Plant Protection and Regional Coastal Zone projects). NGO's and private sector will provide specific and targeted awareness programmes on IAS control for US$ 100,000 and 50,000 respectively. The Marine Invasives Project is currently undertaking an awareness programme, funded by Total Oil Company for US$ 40,000. GEF will provide 200,000 for expertise in developing an encompassing Communications Plan on IAS / Biosecurity, as well as for developing specific and targeted awareness programmes for the general public, travelers and private entities that create support for prevention and control measures on the risk pathways for entry and spread of IAS.

165. Outcome 2: Strengthened institutional capacity to prevent and control the introduction and spread of IAS. The total incremental cost for this component is US$3,460,000 with requested GEF funding of US$ 1,200,000 or 34% of the increment. Government will provide co-finance to review and strengthen existing quarantine functions and expand their mandate, and set up the new Biosecurity Service (with a total outlay of US$800,000). NGOs and the private sector will provide some US$100,000 each for strengthened IAS control activities, mainly on smaller islands. The EU will provide funding of US$ 800,000 as part of the EU Melon Fruit Fly Eradication Project for the installation of 2 incinerators at ports of entry and other fruit fly control activities. The COI Regional Coastal Zone Project will allocate some US$ 100,000 for activities to control invasive alien species in coastal areas. The EU Regional Plant Protection Programme will commit US$ 200,000 for training on plant quarantine matters. GEF will provide US$ 800,000 to assist in setting up the Biosecurity Service, by providing necessary equipment, training and technical expertise.

166. Outcome 3: Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS. The total incremental cost for this component is US$1,545,000, with requested GEF funding of US$ 400,000 or 26% of the increment. GOS will provide US$200,000 through different entities (DOE, DONR, SCMRT, SFA, SBS) for specific research programmes on IAS, including data collection and management, which will assist in establishing the necessary baseline. EU is expected to provide US$ 350,000 towards biodiversity baseline assessments, knowledge management systems and strengthening of knowledge and learning capacities from their different projects, especially the **"**Regional Programme for the Sustainable Management of the Coastal Zones of the Countries of the Indian Ocean". FFEM will finance biodiversity and IAS assessments, as well as IAS eradication and restoration programmes on different islands to the tune of 200,000 US$ from its Island Rehabilitation Project. NGOs, private sector and individual researchers will provide some US$ 325,000 to undertake biodiversity assessments with specific relevance to IAS, strengthen information management systems, and undertake IAS eradication and restoration activities. The MPA-SCMRT Marine Invasive Species project, through funding from Total Oil Company, has undertaken a baseline port marine survey which cost US$50,000, and will continue periodic monitoring. GEF will contribute US$ 400,000 towards the review of existing data, establishment of lessons learned and best practices, as well as installing improved knowledge management and learning systems to facilitate and demonstrate good IAS control practices.

Incremental Cost and Benefits

167. The incremental cost matrix provides a summary of the domestic and global benefits arising from the project. The baseline cost, incurred irrespective of the GEF support and which is undertaken primarily to produce domestic benefits amounts to US$ 15,475,000. The cost of the additional activities required to achieve the project outcomes is estimated at US$ 6,605,000, of which the GEF would finance US$2,000,000 and co-financiers (local and international) US$4,605,000. The total cost of the Alternative Strategy, comprising of the total project costs and the business-as-usual

baseline, is US$ 22,080,000. The GEF funds under the Alternative Strategy are geared towards safeguarding the biodiversity of global importance within Seychelles from the threat of the introduction and spread of IAS. General improved quarantine measures that will generate National Benefits (improved protection for the small agriculture sector) are funded from other sources (e.g. government funding and incinerators at sea- and air-port provided by EU National Melonfly Eradication Project). See Table 17 for details and Table 18 for a summary.

Table 17: Incremental Cost Matrix

Outcome	Cost	Cost ('000 US$)		National Benefits	Global Benefits
Outcome 1: Enabling Conditions for effective control of the introduction and spread of IAS in place.	Baseline	National Assembly	80	-Improved policy and legal foundations, especially concerning IAS introduction and spread and its threat to Biodiversity. -Increased protection of prioritized larger habitats and ecosystems through improved knowledge.	-Control of IAS safeguards biodiversity of global importance
		GOS	4200		
		Env. NGOs	250		
		Private Sector	150		
		Total	**4680**		
	Increment	GEF	400		
		Others:			
		GOS	600		
		National Assembly	20		
		EU Plant Protection	130		
		EU Coastal Zone	100		
		EU Melonfly eradication	100		
		Env. NGOs	140		
		Private Sector	70		
		Total Oil	40		
		Total	**1600**		
	Alternative	**Total**	**6280**	-New encompassing policy on IAS/Biosecurity, in tandem with local policies and in line with international requirements, is more effective to face increasing threats. -Sustainable development is better ensured with enhanced protection towards introduction and spread of IAS. - Public sensitized on general IAS issues through ad hoc awareness programmes.	-Biodiversity hot spots secured for the long term through mitigation of IAS threats. -Improved conservation of Ecologically sensitive areas of global importance. -Globally endangered species secured by reducing extinction threat levels. -Public support and active participation in mitigating and controlling the threat of IAS in biodiversity important and sensitive areas.
Outcome 2: Strengthened Institutional capacity to prevent and control the introduction and spread of IAS	**Baseline**	National Assembly	60	- Basic protection of agricultural crops, livestock and native fauna and flora from the entry of new pests and diseases	- Status of some ecological sensitive areas with globally important biodiversity maintained through continued prevention and control programmes.
		GOS	7100		
		Env NGOs	200		
		Private land owners	500		
		Total	**7,860**		
	Increment	GEF	*1200*		
		Others			
		GOS	800		

		National Assembly	10		
		EU Melonfly eradication	800		
		EU Plant Protection	200		
		EU Coastal Zone	100		
		FFEM	100		
		Env NGOs	100		
		TOTAL Oil	50		
		Private Sector	100		
		Total	**3,460**		
	Alternative	**Total**	**11,320**	- Greatly improved protection of agricultural crops, livestock, forest production areas and natural ecosystems in general from the entry of new IAS	- Risk of loss of globally important biodiversity/ ecosystems from new IAS greatly reduced - Improved control of regional and global spread of IAS
Outcome 3: Improved knowledge and learning capacities to control the introduction, establishment and spread of IAS	**Baseline**	GOS	2100	- Collection of some general biodiversity baseline data; - Further ad hoc restoration and eradication programmes by GO, NGOs and private entities,	- IAS in small areas, e.g. on private islands, further eradicated and habitats for some globally important biodiversity improved.
		Env NGOs	300		
		Private land owners	300		
		FAO (GIS)	235		
		Total	**2,935**		
	Increment	GEF	*400*		
		Others			
		GOS	200		
		National Assembly	20		
		FFEM	200		
		EU Plant Protection	100		
		EU Melonfly eradication	150		
		EU Coastal Zone	100		
		Env NGOs	200		
		TOTAL Oil	50		
		Private Sector	125		
		Total	**1,545**		
	Alternative	**Total**	**4,480**	- Improved baselines and knowledge management systems that facilitate increased protection of prioritized larger habitats and ecosystems. - Implementation of uniform, effective and sustainable control, eradication and restoration programmes.	- Global body of knowledge on IAS, in particular on small islands, greatly improved; - Threat of main IAS in priority habitats and ecosystems effectively minimized and habitats including globally important BD restored

Table 18. Summary of Incremental Cost Analysis

Grand Totals	Baseline	All Stakeholders	15,475,000
	Increment	GEF	2,000,000
		Non GEF	4,605,000
		Total increment	6,605,000
	Total	**Alternative**	**22,080,000**

PART VI: Logical Framework Analysis

168. The LFA with Project Goal, Objectives and Outcomes is presented in Table 19. An LFA matrix describing the Outputs with indicators, etc. is presented in Annex II.

Table 19. LFA with Project Goal, Objective and Outcomes.

Project Strategy	**Objectively verifiable indicators**					
	Indicator	**Baseline**	**Mid-term Target**	**End of Project Target**	**Sources of verification**	**Risks and Assumptions**
Goal: The functional integrity of terrestrial and coastal ecosystems of the Seychelles is secured and provides a base for sustainable development.						
Project Objective: Increased capacities to prevent and control the introduction and spread of Invasive Alien Species through Trade, Travel and Transport across the Production landscape.	Well functioning national IAS inspection and quarantine system in place that functions across all production sectors of the country. No up-grading or addition of threatened or vulnerable species from Seychelles on IUCN red list of threatened species due to effects of IAS	Uneven IAS control and quarantine system in place IUCN Red list for threatened animals in Seychelles exists and continually updated; Red list for threatened Seychelles plants being updated	Comprehensive Biosecurity Service in place operating at all points of entry clearing main commodities and baggage. No upgrading or addition of any species on red list of threatened animals due to effect of IAS; New red list for threatened plants in Seychelles established	Biosecurity Service inspection activities at all points of entry capable of identifying risk profiles and inspecting all risk goods, passengers, conveyance, doing treatments and collecting fees for service Responding to IAS incursions No up-grading of any species from Seychelles on IUCN red lists of threatened species from effects of IAS.	Reports of Biosecurity Service with information on: • Number of import permits issued and the outcomes; • Data on passenger numbers, commodity quantities and numbers of interceptions and treatments; • Value of fees collected. Project Progress and Technical Reports Project Annual reports/PIR Surveys and reports of new IAS introduced and reaction to such incidents. IAS Eradication Protocols / Manuals Demonstration sites GIS IUCN red data lists	Continued interest in IAS from Government. Cooperation of other government regulatory authorities continues. Collected fees from Biosecurity Service are used for own recurrent costs. Red lists of threatened species continued to be updated

Project Strategy	Objectively verifiable indicators					
	Indicator	**Baseline**	**Mid-term Target**	**End of Project Target**	**Sources of verification**	**Risks and Assumptions**
					Seychelles threatened and vulnerable species lists	
Outcome 1: Enabling conditions for effective control of the introduction and spread of IAS in place.	New overarching and comprehensive Policy on IAS implemented New legislation which conforms with international standards is enacted for IAS prevention, control and management Amount spent from non-government sector on IAS control and management Traveling public, tourism operators, importers and shipping agents aware of risks of IAS and need for biosecurity.	No IAS Policy Present legislation is outdated, not conforming to international standards and ineffective 90% IAS control and management efforts financed by Government Few posters available and some reports in newspapers and magazines. No specific information	IAS Policy developed New comprehensive legislation conforming to international standards prepared 75% of IAS control and eradication financed by government (10% fees-for-services of recurrent costs of Biosecurity Service and increased NGO and Private Sector spending on IAS eradication) 40 % of traveling public and 66% of risk commodity importers, agents and tourism	Policy implemented Laws enacted and implemented; All IAS inspection, treatment and destruction activities are legally supported 50% of IAS control and management financed by non-government (30% fees-for-service for recurrent costs of Biosecurity Service + increased NGO and Private Sector funding for IAS eradication and habitat restoration). 75% of traveling public and 100% of risk commodity importers, agents and tourism operators aware of risks of IAS and	Policy document disseminated New legislation published in GoS official gazette. Project Progress and Technical Reports; Government budget Biosecurity Service reports & audits IAS / Biosecurity Communications Plan Survey of travelers, importers and tourism operators Number of positive interceptions, number of erroneous declarations of regulated goods (seeds, plants and foodstuffs) on travelers and importers. Import declarations Audit reports	Government, civil society and private sector continue to work together in a participatory, constructive fashion. Key stakeholders reach agreement of policy and legal reforms needed. Laws and policies will be enacted promptly without delays that would constrain the timely implementation of the project. Theme is acceptable to all sectors of the public and interpreted in a positive manner. Trade, Tourist and travel sector continues to cooperate with programmes.

Project Strategy	Objectively verifiable indicators					
	Indicator	**Baseline**	**Mid-term Target**	**End of Project Target**	**Sources of verification**	**Risks and Assumptions**
		targeting tourism operators, importers and shipping agents. In general little awareness of IAS and no knowledge of biosecurity	operators aware of risks of IAS and need for Biosecurity	need for Biosecurity		
Outcome 2: Strengthened Institutional capacity to prevent and control the introduction and spread of IAS.	Fully functioning Biosecurity Service. % of commodities, conveyances, goods and passengers that are inspected or undergo targeted or random baggage searches for IAS	Institutional responsibilities are fragmented and most pathways have no routinely inspections Less than 5%	Biosecurity Service created and staffed 60%	Biosecurity Service fully functional conducting routine inspections, identifications and effective treatments over all pathways. 100%	GOS official gazette MTR Project Final evaluation Annual reports of Biosecurity Services MTR and EOP evaluation	Biosecurity Service is able to develop and retain the capacity to undertake the technical risk analysis to an international standard. Political/economic opposition will not prevent the levy and retention by BS of fees for service that are needed to cover most of the recurrent costs of BS Opposition by the general public and other regulatory services to the luggage and container searches
Outcome 3: Improved knowledge and learning capacities to control the introduction,	Economically important IAS established in Seychelles are identified.	No established list of priority IAS in country. Non-uniform information on different species exists with	IAS Baseline established, including white and black lists of priority IAS.	Baselines updated; IAS eradication protocols /	Reports IAS Baseline (Database, online?) Demonstrations	Stakeholders willing to share information; Specific expertise available. Agreement on

Project Strategy	Objectively verifiable indicators					
	Indicator	**Baseline**	**Mid-term Target**	**End of Project Target**	**Sources of verification**	**Risks and Assumptions**
establishment and spread of IAS.		different entities			Networks established (website)	Demonstration projects reached.
	Cost effective control and mitigation programmes of IAS in place.	Some past and on-going efforts described; eradication programmes, not following uniform and agreed eradication methodologies	Best practices compiled and reviewed; Cost effective IAS eradication models developed and Demonstrations in place	Manuals for IAS mitigation and control in place and demonstrated in priority sites	Hits on website Feedback on network website Interactive network participants and customer surveys	Facilities and equipment and trained staff are operating efficiently. National and regional interest in IAS continues
	Knowledge & Learning Network in place and used	No national or regional IAS network	National IAS Knowledge and Learning Network in place	Indian Ocean IAS Knowledge and Learning Network in place and used		