PROJECT DOCUMENT

Republic of Seychelles

United Nations Development Programme

Global Environment Facility

Full Project: "Mainstreaming Biodiversity Management into Production Sector Activities"

PIMS: 2053

Isolated from the continents for 65 million years, the fauna and flora of the Seychelles have evolved into unique forms with ancient Gondwanan lineage. The archipelago is a repository of globally important terrestrial diversity. It is also a storehouse of marine biodiversity. The Seychelles is part of one of the major biodiversity hotspots in the world: Madagascar and the Indian Ocean Islands. Its biodiversity is at risk of extirpation, and in some instances outright extinction, from a variety of human induced pressures. Seychelles faces the typical constraints of a SIDS, with its small land area and population, remoteness from major markets, limited natural resources and environmental vulnerability. Its most important assets are the truly rare beauty of the environment, and a significant fishery resource including pelagic and various coastal stocks. Biodiversity is the base upon which the two major economic sectors – tourism and fisheries – have developed. This makes the conservation and sustainable use of biodiversity of vital importance for the country's sustainable development. Seychelles is a frontrunner in environmental management in the region – one of the success stories has been the effective partnerships developed between tourism operators and NGOs for the eradication of invasive alien species and the restoration of small islands. Seychelles' ecosystems and biodiversity are relatively intact compared to that of many other islands, but development pressures are expected to increase substantially. Past efforts at biodiversity conservation have focused on protected areas, but the major threats are associated with the main production sectors. The main threats stem from overfishing, tourism, and physical infrastructure development. This project differs from past programs by taking a sector-based approach that seeks to integrate biodiversity conservation into the day-to-day operations of the main production sectors. Barriers to this integration include insufficient capacities at the systemic and institutional levels, resource tenure and access rights, and insufficient know-how for sustainable ecosystem management. The project will: a) create enabling conditions for mainstreaming biodiversity management; b) develop methods and means for integrating biodiversity into artisanal fisheries management; and c) make biodiversity conservation a routine part of business operations in the tourism sector.

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LIST OF ACRONYMS AND ABBREVIATIONS

AG	Attorney General
BD	Biological Diversity (Biodiversity)
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
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)
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
GOS	Government of Seychelles
GCRMN	Global Coral Reef Monitoring Network
GVI	Global Volunteer Initiative
IBRD	International Bank for Reconstruction and Development (World Bank)
IAS	Invasive Alien Species
ICS	Island Conservation Society
ICRAN	International Coral Reef Action Network
ICZM	Integrated Coastal Zone Management
IDC	Island Development Company
IMO	International Maritime Organization
IMPASP	Integrated Marine Protected Area Systems Plan
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IPPC	International Plant Protection Convention
ISO	International Standards Organisation
IUCN	World Conservation Union
LIS	Land Information System
LME	Large Marine Ecosystem
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
MSP	Medium Sized Project
NBSAP	National Biodiversity Strategy and Action Plan
NC	Nature Conservation (Division of MENR)
NCSA	National Capacity Needs Self Assessment
NEAC	National Environment Advisory Council
NGO	Non-Governmental Organization
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
PMU	Project Management Unit
PPS	Policy Planning & Services (Division of 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
SWIOFP	South West Indian Ocean Fisheries Project (GEF-UNDP)
TCPA	Town and Country Planning Act
TPR	Tripartite Review (UNDP)
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

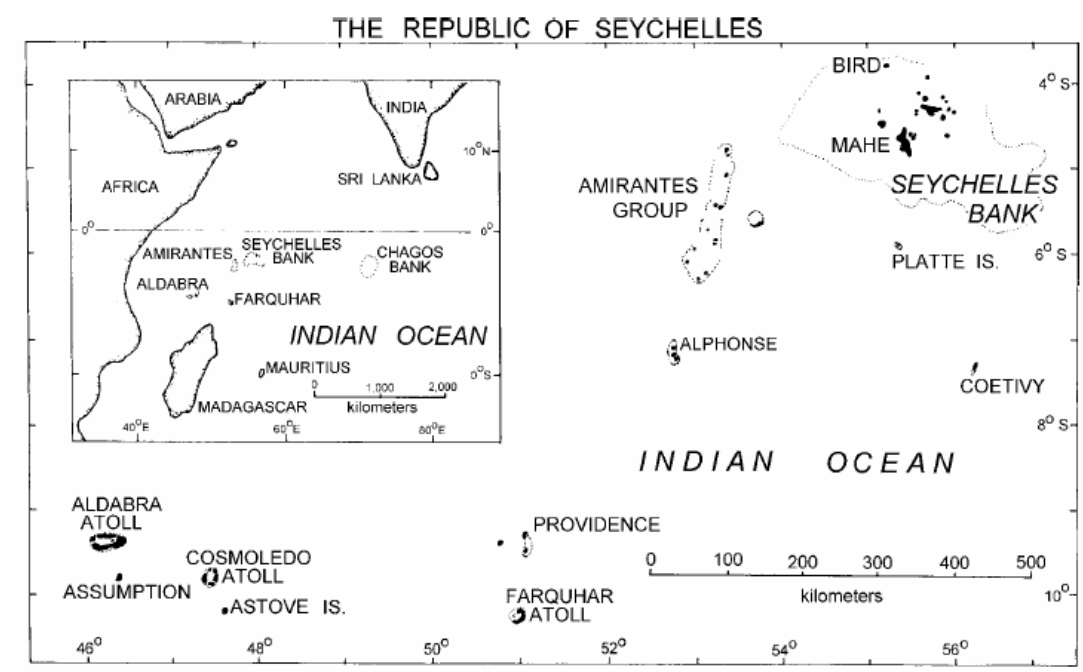
The official exchange rate in February 2006 is 5.6 Seychelles Rupees (SR/US$)

PART I-A: Situation Analysis

1A.1 Environmental Context

1. 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, (see Map 1). 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 granitic and the rest of coralline origin. The main granitic islands, also known as the inner islands, in descending order of size, are Mahé, Praslin, Silhouette and La Digue. The main outer islands are, from North to South, Bird, Denis, the Amirantes group, Alphonse, Coetivy, and the Aldabra, Cosmoledo and Farquhar groups. Map 1 shows the physical location of the Seychelles archipelago, while Map 2 (overleaf) shows the location of the granitic islands.

Map 1. Location of the Seychelles Archipelago

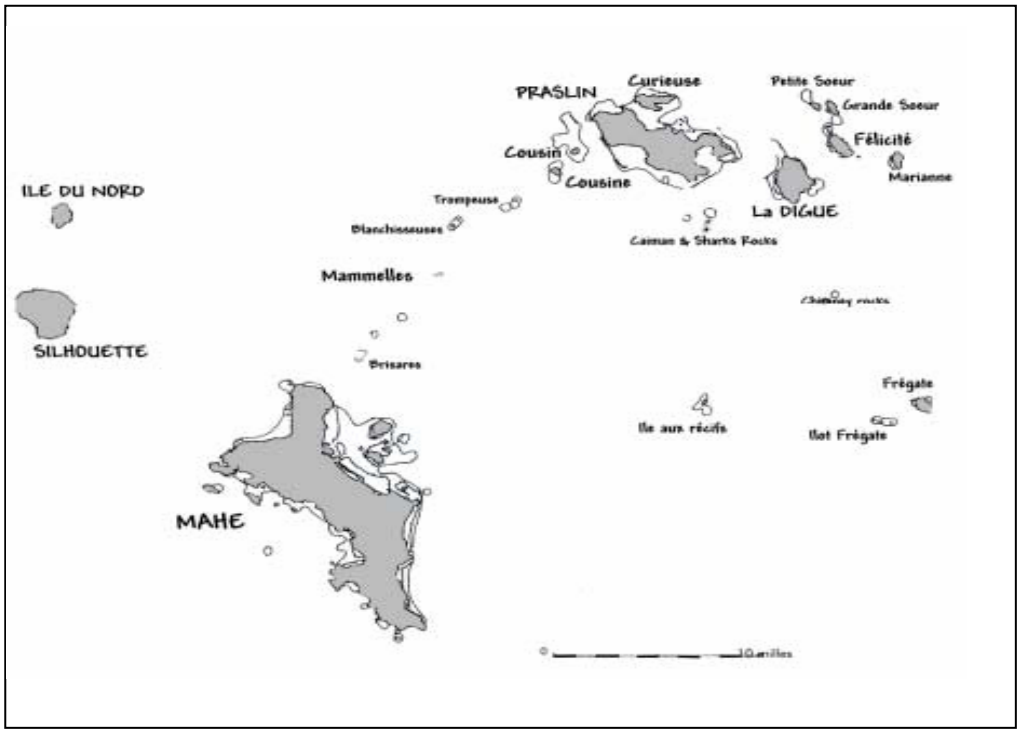


2. The climate is equatorial with an average rainfall of 2,200 mm. Humidity is uniformly high, and mean temperatures at sea level range from 24°C to 30°C. The prevailing winds bring the wet northwest monsoon from December to March and the drier southeast monsoon from May to October. Climatic conditions, however, vary dramatically between islands, mainly in relation to their altitudes and positions; the mean annual rainfall in the country diminishes on a trajectory from the north-eastern to the south-western island. Rainfall can be as high as 5,000 mm per year on the top of Morne Seychellois (900 m.) on Mahé and as low as 867 mm on the coralline island of Assumption (Walsh 1984). The main granitic islands lie to the north of the West Indian Ocean cyclone belt, but they can suffer storm surges from cyclonic activity to the south. Seychelles lies in the South Equatorial Current. This current is an important forcing system for the Agulhas and Somali Currents Large Marine Ecosystems along the Eastern African coastline.

[1] A total of 155 islands and islets are named in the Seychelles Constitution (1993). The Granitic islands comprise of 42 islands, the Amirantes group, 29, the Farquhar group, 13, Aldabra group, 67, with with Coetivy, Platte, Denis and Bird amount to 155. In many documents a number of 115, or "over 115" islands is quoted. This includes amalgamations of different groups of islands / islets, e.g. the African Banks, Cosmoledo and Farquhar atolls.

3. The main 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, the higher parts are characterised by a 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. Marine habitats include 1,690 km^2 of reef[2] habitats that may be broken down into three types: a) fringing reef; b) atolls; and c) platform reefs. Offshore environments include submarine plateaux.

Map 2. Inner Granitic Islands



1A.2 Global Significance of Biodiversity

4. Madagascar and the Indian Ocean Islands Region, to which Seychelles belongs, has been classified as one of the world's "hottest biodiversity hot spots[3]". The unique biodiversity of Seychelles has developed

[2] The reefs of the Seychelles are bathed in clear, oligotrophic waters (with low nutrient levels) having a relatively shallow thermocline. Primary productivity ranges from 40 mg/m^2 in the first 100m where upwellings form on the edge of the bank to 3 g/m^2 nearer inshore and down to 0.5 g/m^2 in more pelagic situations. Satellite observations indicate higher levels of chlorophyll around the granitic islands, indicating that land-based nutrient runoff contributes to the regional patchiness of phytoplankton production.

[3] 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

largely because of its long geological history of isolation, allowing evolution to follow its own course in relative isolation from the continents. The granitic islands are ancient remnants of Gondwanaland and have been separated from the continental landmasses of Africa and the Indian sub-continent for more than 65 million years. The granitic islands are a repository 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 of the interior mountains. The granitic islands are generally characterised by a rugged central range of hills with many steep, smooth, bare rock inselbergs known as "glacis". The hills of the granitic islands are often surrounded by a narrow, flat, sandy and often marshy coastal strip of land. 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, 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 is the largest raised coral atoll in the world, and is considerably older than the other coralline islands and accordingly has a higher degree of endemism.

5. The following describes some of the additional 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.
- Aldabra has the largest surviving wild population of giant tortoises in the world (around 140,000), and the last remaining wild populations of 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.

6. Although the marine fauna of Seychelles remains largely unexplored, and the inventory is incomplete, recent surveys have shown diversity to be high. While the terrestrial fauna and flora of Seychelles are quite well studied and understood, the marine biodiversity of this equatorial zone is more poorly known. Further, recent surveys indicate that earlier estimates of the area of coral reef (1,690 km^2) may well be a significant underestimation (Bijoux, 2005). The marine and coastal environment contains a storehouse of many different species of mangroves, seagrasses, algae, phytoplankton, zooplankton, sponges, corals, crustacea, molluscs, echinoderms, reef and pelagic fish, sea turtles, sea birds and marine mammals. The islands provide breeding and nursing grounds for many sea birds and fish. The position of

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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.

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

Seychelles in the central southwest Indian Ocean ensures that these islands act as stepping stones for marine dispersal between the western Indian Ocean and the eastern Indian Ocean/western Pacific, with the range enhanced by the monsoonal system. Phylogenetic and biogeographical evidence indicates that Seychelles and other mid-oceanic archipelagos (e.g. Chagos) play a key ecological role in this respect.

7. The Seychelles is also a globally important storehouse of marine biodiversity[5]. The Seychelles is a center of distribution of many taxa, straddling a large geographic area that includes many different marine habitats. The levels of faunal diversity are particularly impressive[6]. Most of what is known about the marine biodiversity is from the top 20m of the reef environment (Bijoux, 2005). The following lists the key attributes of the country's marine and coastal biodiversity (Bijoux et al., 2003):

- 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.
- Four species of sea turtles forage in Seychelles waters: the hawksbill turtle (*Eretmochelys imbricata*) and the leatherback turtle (*Dermochelys coriacae*) are listed as "Critically Endangered", while the green turtle (*Chelonia mydas*) and loggerhead turtle (*Caretta caretta*) are listed as "Endangered" by IUCN. Seychelles hosts one of the largest remaining nesting populations of hawksbill turtle in the world and a significant nesting population of green turtles.
- 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.
- Over 26 species of Cetaceans (7 dolphin species and 19 whale species) have been observed in Seychelles waters.
- Dugong (*Dugong dugong*) sightings have been reported around Aldabra but they have not been studied and little is known about their status. The dugong is an endangered species worldwide and probably close to extinction in Seychelles.

8. A summary of the key characteristics of different terrestrial and coastal habitats is provided in table 1 below[7].

[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] Important habitats include sea grass beds, extensive areas of which are found on the Mascarene Plateau. Of the 50 globally described seagrass species, 13 are found in the Mascarene Plateau area. Coral reefs are found throughout the area. There is high endemism within the coral fauna, with over 370 species predicted to be found (UNEP-WCMC). The reefs of the Seychelles have been highly impacted by coral bleaching associated with climate change. However, important areas of reef remain. Some 67% of the generic level and 88% of the family level diversity of hard corals in the region are represented (Engelhardt et al 2002). These reefs provide important recruitment areas for coral and fish and invertebrate larvae, which can be carried by sea currents over long distances.

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

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. • Important for bird habitats/turtle nesting
Coastal and lowland forests (up to 200m)	• 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 grantic 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 Socio-Economic Context

9. The Seychelles has been inhabited by humans since 1770. It was sequentially colonised by both the French and the British, and obtained independence from Britain 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 mostly 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 population is projected to reach 100,000 by the year 2016.

10. The Seychelles has managed its economy in a pragmatic way since independence, evolving its development strategies to address emerging problems. This strategy has brought about significant changes in the development status of the country and has transformed the country from a quasi mono-crop agricultural economy (based on cinnamon and copra) to a dual economy heavily dependent on tourism and fishing, 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 as 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 Human Development Index Report 2003 classified the Seychelles among the list of countries having achieved medium human development with a global ranking of 36 (the highest in Africa), life expectancy of 71 years, net enrolment rate in primary education of 99.6%, literacy rate of 84% and a population growth rate of 1 per cent. 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. This has led to a slowdown of the economy resulting from a shortage of foreign exchange.

11. Strong recessionary conditions continued to persist in the economy in recent years, leading to a GDP contraction of 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 (SR455m., or a 49% increase over 2003) 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 is portrayed. 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. 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 February 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**

Year	*2000*	*2002*	*2004*
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.4 Production Sector Profiles

12. The following section describes the main production sectors: namely fisheries, and tourism.

Fisheries

13. 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, although the number of people employed in the sector has remained stagnant (except for tuna canning), accounting for 15% of total formal employment. The industrial marine capture fisheries have grown considerably over the last two decades, expanding in tandem with the development of industrial tuna fisheries in the Western Indian Ocean. Seychelles now serves as the regional hub for industrial tuna fisheries and hosts the secretariat of the Indian Ocean Tuna Commission (IOTC). The industrial tuna fishery of the Western Indian Ocean is considered to be one of the few industrial fisheries of the world that still has some potential for sustainable development[8]. The industrial fisheries target tuna and tuna like species. Semi-industrial fisheries have only been developed since 1995, with the construction of a small, locally-owned fleet of medium-sized longliners (12-22 meters) that mainly target swordfish and tuna. Although industrial fisheries constitute a major source of foreign exchange earnings for the Government, it is the artisanal fisheries that remain of great importance in terms of assuring food security to communities, and generating local employment.

Table 3: Fish Landed (for the main fishing categories)

Fish Landed (metric tonnes)	2000	2002	2004
Artisanal	4764	4914	4177
Semi-Industrial (long-line)	390	190	111
Industrial:			
Caught	330340	379253	358261
Transhipped	269673	332860	300937

14. Small-scale artisanal fisheries have developed to exploit a high diversity of species and habitats.

[8] A significant unknown factor affecting the future of the industrial fisheries is the continuing increase in oil prices. Industrial fisheries world-wide use 12.5 calories of fossil fuels for each food calorie of fish – the highest ratio of any major category of food in the world. Increases in oil prices could potentially lead to a decline in industrial fishing effort, correspondingly decreasing pressures on open ocean stocks and increasing pressures on artisanal fish stocks.

This has resulted in a wide array of boat/gear combinations and strategies. Nearly 60% of a total of 1750 artisanal fishers are employed in the demersal line fishery that exploits the waters of the Mahé and Amirantes Plateaux using the "whaler" category of boats. This fishery targets the Lutjanids (snappers), Serranids (groupers), Lethrinids (capitaines) and Carangidaes (carangues). The resources of the near shore reef ecosystems are exploited primarily by the trap fishery using small boats (Mini-Mahés) and traps fabricated out of local materials. The artisanal net fishery targets non-sedentary fish, mostly mackerel, using small boats. The octopus, lobster and crab giraffe fisheries employ relatively small numbers of people. The octopus fishery in Seychelles is almost totally an artisanal effort. The lobster fishery is subdivided into: a) the area around the granitic islands; b) the rest of the Mahé Plateau. The live fish fishery has not been developed except for a recent trial in the Farquhar Group by the Chinese. The sea cucumber fishery is the first to have a participatory management plan, which was developed in 2005 – the number of boats licensed for this fishery has been limited to 25. Aquaculture is not highly developed, except for prawn culture at the outer island of Coetivy, and the potential for growth is limited owing to the high costs.

Table 4: Profile of Seychelles Artisanal Fishery

Type of fishery	No. of persons Employed	Potential for Future employment
Demersal hand line	1000	Moderate
Trap	350	Moderate
Net (mackerel)	90	Moderate
Octopus	60	Moderate
Lobster	40	Poor
Crab Giraffe	10	Moderate
Live fish	N/A	Poor
Mothership	N/A	Poor
Sports	60	Good
Sea Cucumber	100	Moderate
Shark	40	Poor
Total no. employed	**1750**	

Source : Nageon de Lestang, 2005

15. The total landings for the artisanal fishery have remained fairly constant for the last 20 years with approximately 4000 metric tonnes of fish landed annually. This catch supplies the local market demand, including hotels and restaurants, and approximately 800 metric tonnes of fish, mostly groupers and snappers are designated for the export market. This long term stability could indicate that the local market serves as a constraint on the total amount of the artisanal catch. Some observers posit that the artisanal fisheries have nearly reached an optimum level of sustainable exploitation (Nageon de Lestang, 2005). However, another measure would indicate that the artisanal fishery has more serious problems, because the catch per unit effort (CPUE) has declined over the last ten years (Grandcourt and Cesar, 2003). In particular, the demersal resources within 10 km of shore are considered to be overfished (de Lestang 2005).

16. The main components of the artisanal fishery are summarised below:

Table 5: Main Components of the Artisanal Fishery

Fishery	Features	Annual catch (approx.)
Handline (including dropline)	The most important type of fishery, accounting for more than 73% of total fish landings Targets mostly high value demersal species, such as snappers and groupers, as well as semi-pelagic species such as carangues and becunes caught mostly inshore within a radius of 15 miles from the main granitic islands	2950 metric tonnes

Fishery	Features	Annual catch (approx.)
Trap	Only technique that can be used to catch certain species such as rabbitfish Siganus spp. and parrot fish = Scaridae spp Mainly targets species associated with reefs and shallow coral banks Shows a strong seasonal nature - SE Monsoon's rough weather forces fishermen to operate in inshore areas (sometimes in lagoons) Trap fishing is often undertaken by fishermen to supplement other fishing activities	600 metric tonnes
Net	Mainly targets mackerel Mackerel subject to stock variability Therefore market gluts and shortages	Quantity varies
Octopus	Part-time subsistence Skin divers and foot fishermen (spear) Hotel and restaurant market	50 metric tonnes
Lobster	Seasonal fishery (Nov-Feb), subject to Government regulations Some 30 licenses granted per year (3 divers per license) Hotel and restaurant market	Unknown
Crab Giraffe (Ranina ranina)	Distribution and density vary Limited market demand	10-30 metric tonnes
Live fish	Highly valued species Far East market 40 fishermen from China (Farquhar Is)	20 metric tonnes
Sport	30 licensed sport fishing vessels Revenue has declined due to scarcity of larger pelagic fish (tuna) off the Mahé Plateau	Unknown
Sea cucumber	Lack of accurate data 25 licensed boats Far East market Lucrative (SR28000/ton)	72 metric tonnes (2003)
Shark	Most fishermen only keep fins and discard the carcass at sea	Little data available
Aquaculture	Coetivy Prawn farm (SMB) Pearl Oyster farm Giant Clam farm	835 metric tonnes 750 MT oysters 7026 MT clams

Tourism

17. Prior to completion of the international airport in 1971, the only access to Seychelles was by boat. The tourism industry expanded greatly after the opening of the airport. Tourist arrivals increased steadily for the first 25 years, reaching 47,280 by 1982 and peaking at 130,955 in 1996. Arrivals declined gradually to 124,865 in 1999, before recovering to 130,046 in 2000, and then declining again to 120,765 in 2004. The country has some 152 hotels (see Table 5 for details) with some 5,000 beds. 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% percent of the country's GDP in 2004 and directly provided for 20% of national employment. It generated SR756 million of foreign exchange, or 30 % of the country's foreign exchange earnings. 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 value added in other sectors.

Table 6: Profile of Tourism Service Operators 2004

	Mahé	Praslin	La Digue	Other islands	Total
Large hotels	9	11	1	3	24
Small hotels	35	21	16	9	81

	Mahé	Praslin	La Digue	Other islands	Total
Guesthouses/self catering	21	17	9	0	47
Sub-Totals	***65***	***49***	***26***	***12***	***152***
Restaurants and cafes	73	37	10	5	125
Car hire	40	15	0	0	55
Bicycle hire	2	8	17	0	27
Dive centres	6	8	1	7	22
Glass-bottomed boats	14	0	0	0	14
Hire craft	107	64	17	29	217
Water sports	4	3	0	4	11
Travel agents	4	0	0	0	4
Tour operators	5	1	0	0	6
Tour guides	4	4	0	0	8

18. Compared to global and regional trends over the past 10 years, Seychelles' performance has been inconsistent. Tourism's performance has softened slightly since 2002, as witnessed by the 9.3% decrease in arrivals over the last 2 years. Average length of tourist stay has also decreased slightly, resulting in an annual occupancy rate of 44%. The high end of the tourism sector, however, has a much higher occupancy rate than the sector as a whole. Over the last 10 years, the policy of the Government has favoured the growth of high-end, or "haute de gamme" tourism, which was also indicated by the recent incentives for this type of tourism (Tourism Incentive Act, 2003). This has caused major investment growth in the high end tourism market in Seychelles. Recently, the newly formed Seychelles Tourism Board (STB) is refocusing this strategy to balance the growth towards the smaller establishments as well. The new target of the Government is to increase tourism to a total of 145,000 visitors in 2006, and increase the visitor per capita daily expenditure from SR 375 to over SR 425. The Seychelles tourism industry is now positioned for a major expansion of capacity, with most new investments being made in the high-end portion of the sector. Capacity is expected to increase by some 2,000 new hotel beds (40 % increase) over the period 2006-08, especially on Mahé, although 2 new hotel developments are also planned on Silhouette.

19. The current policy document on tourism development in Seychelles, Vision 21, sets the objective of positioning Seychelles as an exclusive and quality destination, setting it apart from other destinations[9]. It advocates coordinated national efforts to maintain and expand the tourism sector's contribution to the economy in a manner that is environmentally and socially sustainable. It targets eco-tourism development under its Eco-Tourism Strategy. Government has established incentive policies to guide tourism development and to encourage all developments to properly address environmental management objectives.

Other Sectors

Agriculture and Forestry

20. 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 copra 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. The production of traditional crops declined drastically. Agriculture in Seychelles is now characterized by small farms with an average size of 0.5 hectares and rarely exceeding 2 hectares. Farmers employ various levels of technology and

[9] This reflects the fact that the number of people world-wide that can afford to travel is growing exponentially. The number of quality tourism destinations world-wide is relatively finite. The quality of the Seychelles' environment is substantial. If these assets can be protected, the Seychelles will have a high competitive edge vis-à-vis other island destinations.

management, some of it fairly sophisticated. Currently, about 500 registered farms are dispersed throughout the major granitic islands of Mahé, Praslin and La Digue, where they are found on both the coastal plateau and the steeper terrain. Out of a potential agricultural area of 2,900 ha, 600 ha are under some form of agricultural production. Only about 200 hectares are under intensive cultivation. There are about 400 registered crop farmers, some 1,500 legal pig farmers and 55 licensed poultry farmers. In addition, a number of urban households engage in backyard vegetable production (estimated to equate to a total of 45ha vegetable and fruit crops). Farming land is either leased from the State, or is privately owned. 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. Cinnamon and coconut production have dropped considerably in the last 10 years. Agriculture employs around 3,800 persons and currently accounts for about 3.8% of GDP.

21. Total forest cover of the Seychelles has been estimated at 40,600 ha, of which productive 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.

1A.5 Policy and Legislative Context

22. 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). The EMPS 2000 – 2010 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"*.

23. EMPS 2000 – 2010 attempts to integrate environment management concerns into other development sectors while addressing core concerns. It is the country's leading sustainable development strategy document. The EMPS covers ten thematic areas covering all major social and economic sectors, which for the purposes of this project include: Land Use, Coastal Zones and Urbanisation; Biodiversity; Fisheries and Marine Resources & Processes; Tourism; Environmental Economics, Mainstreaming and Sustainable Financing; and Regulatory, Policy and Institutional Mechanisms. EMPS 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 stakeholder participation. The EMPS was designed to be a "living" document which could adapt to changing circumstances through a built-in policy review mechanism.

24. A number of other policies/plans relate directly to biodiversity. The National Biodiversity Strategy and Action plan (NBSAP, 1997) addresses biodiversity issues in the framework of the Convention on Biological Diversity (CBD). The "Plan Indicative d'Aménagement du Territoire" (PAT, 1992) lays the ground rules for land use planning, based on sustainable development; it only covers the three main granitic islands and it has never been enacted. Sector-specific policy documents have direct influence on biodiversity conservation objectives. The Seychelles Forest Management Plan was developed by a consulting firm in 1993 (INDUFOR, 1993). The National Strategy for Plant Conservation (2005) was

recently completed by the NGO Plant Conservation Action Group in collaboration with the MENR. The National Fisheries Policy 2003-2013 lays the framework for sustainable national fisheries development. The Tourism Policy and Vision (Vision 21) encourages protection of natural resources to underpin tourism development. The Ecotourism Policy promotes increased emphasis on ecotourism development in Seychelles. The National Agricultural Policy lays the framework for agricultural development and supports capacity building for agricultural development and extension. The Macro Economic Reform Programme (MERP) was introduced in 2003 to tackle the growing budget deficit and the scarcity of foreign exchange.

Legislation

25. The Town and Country Planning Act of 1972 provides the basis for land use planning in Seychelles, but is currently out of date. The Act provides sufficient basis for environmental protection, but is based on a top-down, Government-driven approach to land use planning with little provision for stakeholder involvement and integration of biodiversity conservation objectives into planning efforts.

26. Numerous pieces of legislation address the conservation of biological diversity in general. The *Environment Protection Act 1994* provides for the protection, preservation and improvement of the environment and for the control of hazards to human beings, other living creatures, plants and property. The Department of Environment administers the Act, and co-ordinates the activities of other agencies concerned with the protection of the environment. To date, two authorities have been legally established under the Act: the Solid Waste and Cleaning Agency (SWAC), and the Marine Parks Authority (MPA).

27. *Environment Impact Assessment (EIA)* is dealt with under the Environment Protection (Impact Assessment) Regulations [EP (EIA) Regulations]. The legislation requires that an EIA study be carried out and that an environmental authorisation is obtained if any person commences, proceeds with, carries out, executes or conducts development. The specific criteria that determine the necessity of an EIA are found in the EP (EIA) Regulations. These regulations list categories of projects or activities requiring environmental authorisation as well as protected and ecologically sensitive areas that will trigger an EIA. An Environmental Impact Assessment Unit within the Department of Environment handles all administrative issues related to the EIA process.

28. Protected Areas are regulated under different pieces of legislation, with some of these laws being quite outdated (see table 8 below). Some of the categories are not used up to the present. Most of the relevant protected areas (National Parks and Special Reserves) have been set up under the *National Parks and Nature Conservancy Act*. Some 47% (210 km^2) of the Seychelles land area is protected through the different categories, as well as some 228km^2 of ocean. An additional 20-25 % of the land area is classified as being sensitive (Country environmental profile, GOS, 2005).

Table 7: Protected Areas in Seychelles and its legal framework [10]

Category of Protected Area	Number of Areas	Regulation
Forest Reserves	None	*Forest Reserves Act (1955)*
Coast Reserves	None	*Coast Reserves and Foreshore Leases Ordinance*
Nature Reserves	10	*Wild Birds Protection (Nature Reserves) Regulations (1961, amended 2001)*
Rivers Reserves	Include all important water courses	*Crown Land and Rivers Reserves Act (1903)*
National Parks	8	*National Parks and Nature Conservancy Act (1969)*
Special Reserves	4	*National Parks and Nature Conservancy Act (1969)*
Strict Natural Reserves	None	*National Parks and Nature Conservancy Act (1969)*

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

Areas of Outstanding Natural Beauty	None	*National Parks and Nature Conservancy Act (1969)*
Protected Areas	4	*Protected Area Ordinance (1967)*
Shell Reserves	4	*Fisheries Act, (1987)*
Fisheries Reserve	3	*Fisheries Regulations (1987)*
Sensitive Areas	308 under various categories (natural, monuments, catchments, etc.)	*Environmental Protection (Impact Assessment) regulations (1996), schedule 2*
Botanical Garden	1	*National Monument Act (1980)*
Bird Sanctuary	1	*No legislative protection*
Bird Reserve	1	*Decision of Council of Ministers*

29. Recently, different acts to support the economic development and creation of employment opportunities in different production sectors were promulgated. This concerns the *Tourism Incentive Act* (2003), and the *Fisheries* and *Agriculture Incentives Acts* (2005). These acts stipulate different incentives to the respective industries, most in terms of tax rebates, foreign exchange allocations and retention, allowances for foreign workers, payment of Government Occupancy Permits, etc.

1A.6 Institutional Context

Government

30. 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 policies, including wealth re-distribution. Seychelles became a multi-party democracy in 1992 and adopted a new constitution (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 Legislative Assembly and the Presidency. Government has three separate branches – the executive, the legislative and the judiciary. Government currently has 8 ministries and 12 departments. The departments are headed by principle secretaries (PS) that fall under either the direction of the ministers or under the direct purview of the President or Vice-President. The main institutions responsible for biodiversity conservation are detailed in Annex IV. The roles and responsibilities of the key Government institutions are briefly described below.

31. The Department of Environment (DOE), under the Ministry of Environment & Natural Resources (MENR), has prime responsibility for environmental management and the sustainable development process. DOE consists of 3 Divisions headed by Director-Generals, an Administration Section and an Education, Information and Communication Section for public relations. The Department of Natural Resources (DONR) under the same Ministry is responsible for Agriculture and Fisheries. The Ministry of Environment and Natural Resources is the parent ministry to several institutions with responsibilities for environment: the Marine Parks Authority (MPA), the Solid Waste and Cleaning Agency (SWAC), the Seychelles Fishing Authority (SFA), as well as the Water and Sewerage Division of the Public Utilities Corporation (PUC). The Department also works in collaboration with a number of local and international NGOs.

32. The Ministry of Land Use and Habitat (MLUH) is responsible for oversight of land and infrastructure development, for land use planning, for providing urban and architectural guidelines, and for Government residential developments and housing projects, land reclamation, planning and building applications. The Local Government Division under the Ministry of Local Government, Culture and Sports (MLGCS) also has a Planning Section for infrastructural projects requested by District Administrators.

33. The Planning Authority (PA) is set up under the Town and Country Planning Act, chaired by the Principal Secretary of the MLUH and mandated to prepare land use plans. Five members of the PA out of

12 are principal secretaries of key ministries concerned.

34. The Ministry of Economic Planning and Employment (MEPE) is responsible for creating a suitable macro-economic enabling environment wherein the production sectors operate. The Ministry of Finance (the President is Minister of Finance) prepares legislation pertaining to national finances, and is the final arbitrator in the preparation of the National Budgets, presented in November/December before the National Assembly.

Sectoral Institutions

35. **Fisheries:** The main institution responsible for the management of the fisheries in Seychelles is the parastatal Seychelles Fishing Authority (SFA). Its duties are to promote, organise and develop fishing, fishing industries and fishing resources in the Seychelles. The parent ministry, the Ministry of Environment and Natural Resources, created a Fisheries Policy Unit in 2005 that works in close collaboration with SFA on fisheries policy matters. Other entities related to the fishing sector are the Department of Environment (Marine Unit), the SCMRT-MPA, the Licensing Authority, the newly created Port Authority and the Maritime Safety Administration. The recently created FBOA represents boat owners rather than fishers, although many FBOA members are fishers. The fishers themselves are not directly organised in any kind of association. Recently, a sea cucumber fisheries management committee has been set up with representatives of various primary stakeholders (including boat owners, divers, processors, and NGOs).

36. A new Fisheries Development Committee has recently been set up (March 2006), which comprises all major stakeholders (government, civil society, fishers associations) from the industrial and semi-industrial fisheries sub-sectors. The committee is charged with charting out a 5 year "fisheries development plan", in the face of changing economic conditions for tuna exports.

37. **Tourism:** The Department of Tourism and Transport (DOTT) is responsible to the office of the Vice President. As a result of the recent creation of the parastatal Seychelles Tourism Board, with its own governing board comprising of state and non-state stakeholders, the role of DOTT has been reduced primarily to policy formulation for the sector. A Policy Planning & International Cooperation Division in the Department of Tourism is mandated to facilitate the development and adoption of good practices pertaining to sustainable development within the tourism industry. "Vision 21" is the official strategy document providing a "road map" for tourism development in Seychelles.

38. A Seychelles Tourism Board (STB) has recently been established through the Seychelles Tourism Board Act (April 2005).The main functions of the STB are to: a) Promote the efficient and sustainable development of tourism; b) assist and advise the government in development of the sector; c) encourage improvement of the tourism product; d) establish codes of practice and standards; and e) carry out market research and implement marketing strategies. The STB is governed by a board of directors comprising members from the public and private sector, all appointed by the President. The STB is headed by a Chief Executive Officer, who is also chairman of the Board. In addition to the STB, a Tourism Advisory Committee has also been appointed by the Vice President (responsible for the Department of Tourism & Transport) with broad representation from the public and private sector. This committee is mandated to advise Government and STB on the planning and development of the industry**.** The Seychelles Investment Bureau (SIB), established in 2004 under the President's Office, facilitates all investment proposals in Seychelles.

Non Governmental Organisations

39. Seychelles has a very vibrant environmental NGO (ENGO) community that has been very successful and innovative in pursuing a range of conservation objectives. The ENGO community has strong capacities and has developed an exceptional range of working partnerships with tourism operators,

especially for invasive alien species (IAS) control and habitat restoration on small islands. These organisations have been successful in mobilising funding, drawing upon international networks of expertise and in undertaking biodiversity conservation and management 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 members. A brief description of the roles and responsibilities and activities of the main ENGO is presented in Table 8 below.

Table 8: 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 the eradication and habitat rehabilitation work on North Island in partnership with North Island Resort. ICS has a special interest in biodiversity conservation on the Outer Islands. The Island Development Company (IDC) considers ICS to be their main partner for environmental issues for the Outer Islands. ICS has also worked on the magpie robin recovery and have expertise in cat and rat eradication.
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. They work with Banyan Tree Resort on sea turtle monitoring and conservation. MSCC works with MPA and with the ENGOs ICS, SIF and NPTS and with the Save our Seas Foundation of the University of London. MCSS does staff training in sea turtle monitoring and data collation under the "Strategic Management of Turtles" programme. They have a strong cetacean and whale shark monitoring and data collation program and conduct monitoring of beach erosion and sea turtles. MCSS works on mooring installation and maintenance to minimise anchor damage to coral reefs.
Nature Protection Trust of Seychelles (NPTS)	Biodiversity research, awareness and management.	NPTS is based on Silhouette Island. They receive support from IDC and have begun work with Universal Hotels who are constructing a large hotel on the island. NPTS publishes an annual scientific journal and a quarterly magazine on nature issues in Seychelles, 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.
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 are printing 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.

NGOs	Roles & Responsibilities	Partners and Activities
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. SIF is presently establishing an international Trust Fund for Aldabra.
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 Institutions

40. **The Fishermens' Boat Owners Association (FBOA)** was created in 2003 to represent the interests of their members. This Association presently has 35 members, each paying an annual subscription fee of SR 500.00 (US$ 89). The Association has monthly meetings with the Fishing Authorities (MENR and SFA) where issues of concern are discussed. The FBOA has also achieved some measure of success in participating in discussions to obtain concessions on duty exemption for fishing material and safety equipment, and in assisting fishers in obtaining compensation for the repair of vessels and replacement of equipment damaged in the 2004 December tsunami. It has proposed certain realistic amendments to the legislation, i.e. new license fee structure, with fishing vessels paying a fee in proportion to the size and capacity of the vessel. Fishers have traditionally been very independent and distrustful of Government. The creation of FBOA has been a positive step towards promoting dialogue between fishers and Government.

41. The main professional organisation representing the economic interests of tourism operators is the **Seychelles Hospitality and Tourism Association (SHTA)**. Until recently, SHTA primarily represented the smaller hotel owners, but the Association is now open to operators of all sizes. SHTA serves as an interface between private operators and Government; the chairperson sits on the board of the STB and a member sits on the EMPS. SHTA is supportive of the idea of the development of a certification scheme for tourism.

42. 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.

Cross-sectoral Planning and Coordination

43. Policy and programmatic coordination is achieved through numerous inter-sectoral bodies, involving other Ministries, the private sector, NGOs and civil society. These include the Environmental Management Plan of Seychelles (EMPS) Steering Committee, the Planning Authority (for land use planning), the National Environmental Advisory Council, the Rivers Committee, National Parks Committee, and various bi/multi-lateral inter-department meetings. 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, coordination and execution are addressed. The private sector is increasingly represented in consultative bodies set up by Government, in particular the Joint Economic Council. The SCCI, SHTA, FBOA and the Farmers' Association are all members of various established consultative planning fora.

PART 1-B: Baseline Course of Action

1B.1 Threats to Seychelles Biodiversity

44. Historical records indicate that the 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 the production sectors and this continues to be true today. Until recently, terrestrial habitats were the most severely affected. Forests were high-graded for timber species and were cleared, first for food crops and later for cash crops and even for fuel to distil cinnamon oil. The physical development of the island contributes to loss and fragmentation of habitats. Dramatic economic transformations have taken place in the past 35 years and are continuing. Modern day threats to biodiversity are increasingly associated with artisanal fisheries, and tourism. The biodiversity of Seychelles is not as severely threatened as that of most other small islands. 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 considerable economic uncertainty exists. Efforts to mainstream biodiversity conservation objectives into production sector activities remain timid.

45. The exact status of the Seychelles' forest communities differs from island to island. 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 amsl, but have been almost completely cleared for timber, fuel and the production of cinnamon. The intermediate-altitude forests, ranging from 200 to 500m, were the richest in terms of endemic taxa, but have now been extensively altered, except for the glacis areas. The mountain mist forests originally covered the highest elevations (above 550m), and they still remain rich in mosses, lichens, ferns and epiphytic orchids (Kueffer and Vos, 2004). Important remnant forests still remain in selected areas of Mahé, Praslin and Silhouette (Carlström, 1996). The vegetation of raised limestone and coralline islands has also been disturbed by past human settlement activities, such as phosphate mining, and guano extraction.

46. The on-going fragmentation and alteration of habitats through human interference exerts pressure on the Seychelles' fauna. A total of 8 spp. of land birds are considered globally threatened. Seychelles hosts globally important colonies of sea birds in both the granitic and outer islands. The Seychelles sheath-tailed bat is highly endangered. Four species of turtle are either "Endangered" or "Critically Endangered". Some 7% of the invertebrate species can be considered threatened.

47. 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[11]. 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).

48. The main threats to biodiversity and their underlying root causes are elaborated in Annex 1.

[11] 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.

Physical Development

49. One of the main impacts of physical development is that it results in the physical destruction or fragmentation of habitats. The land area suitable for development is limited. The granitic islands are characterised by a central range of hills surrounded by a narrow, flat, sandy and often marshy coastal strip. A significant proportion of the main granitic islands of Mahé, Praslin and la Digue is urbanised. The pressure for residential development is strong on the lower part of the mountains (up to around 200 metres high along the main roads crossing the main islands of Mahé and Praslin) and the coastal areas. The scarcity of land suitable for development has prompted the reclamation of some nearly 600 hectares of sea in the vicinity of Victoria and the east coast of Mahé. These reclamations have now interrupted what was one of the largest continuous stretches of fringing reef (27 km) along the east coast of Mahé. Infrastructure development is often accompanied by very high rates of erosion during and after construction: this causes high rates of sediment deposition, which may severely impact marine habitats. Physical development also favours the spread of invasive alien species. The expansion and regeneration of most IAS plant species are facilitated by the disturbances that accompany the construction phase of infrastructure development.

50. Though a large protion of Seychelles surface area, both terrestrial and marine, is protected, the protected area network is disjointed. Some of these areas have not been developed with strict biodiversity priorities in mind. Many Protected Areas are not actively managed, and few management plans exist. The principle threats to these areas derive from production activities such as tourism and fisheries, and physical development, which may lead to habitat fragmentation and isolation.

Tourism

51. While the actual impacts of tourism development are largely unquantified, it is the cumulative impact of this rapidly growing sector that is judged to pose the greatest threat. Impacts from tourism can be grouped under two categories: the impacts associated with the construction or physical development of new infrastructure, and impacts associated with ongoing tourism operations. The impacts from the construction phase are largely the same as those described in the previous section on physical development. Tourism facilities are more strongly concentrated along the environmentally sensitive coastline and on the smaller islands than other forms of physical development. Many islands lack natural harbors and tourism development on the islands sometimes involves the construction of landing facilities. Tourism operations also generate sewage and nutrient pollution. Marine ecosystems found in bays and shallow coastal waters protected by reefs are especially susceptible to nutrient pollution. Environmental stresses such as those caused by nutrient pollution or sedimentation are especially critical for the young coral that has started to recover following the major bleaching event of 1998. Physical damage to coral reefs from tourism operations may be incurred as a result of damage from boat anchors and trampling by tourists at low tide.

Artisanal Fisheries

52. Overfishing is a localised problem in the artisanal fishing grounds. Demersal and reef resources targeted by line and trap fisheries are locally over-exploited, especially around the main granitic islands. Some of the most prized and vulnerable species have disappeared from parts of their natural range or have become extremely rare. Several species of groupers concentrate in large aggregations when spawning, making them vulnerable to open access fishing. All known grouper spawning aggregation sites on the inner islands have collapsed and these species have become rare in these waters. Rabbitfish spawning aggregations remain unprotected and are under increasing pressure. Shark populations around the granitic islands have been decimated over the last century (Nevill, 2005 & 2006, presentations of research work). Octopus and lobster are also under pressure from overfishing. Removal of species, or overfishing of certain species has inter-specific effects within the ecosystem and poses a serious threat to ecosystem functioning and resilience. Shifts in reef fish communities have occurred, e.g. there is strong evidence that increased

bio-erosion of corals by abundant black-spined urchins is due to the removal of keystone predators by fishing. Phase shifts on reefs, from coral to algal communities, is a real threat to reef biodiversity, especially where selective removal of herbivorous reef fish occurs (i.e. areas heavily targeted by trap fishers).

53. Nearly all of the coral reef ecosystems in the Seychelles were severely affected by the 1998 bleaching event, associated with a temporal warming of sea surface temperatures. In general, the Outer Islands were somewhat less affected that the Inner Islands. Several coral refugia that were little affected have been identified around the inner islands. They are generally associated with the upwelling of cold water. All but one (in Curieuse Marine National Park) of the identified refugia are found outside of the existing network of marine protected areas (MPAs). There are currently 17 MPAs in Seychelles (SEYMEMP final report, 2004), with a combined area of 228 km^2 [12]. The Marine National Parks are administered by the Marine Parks Authority (MPA) and cover an area of 62km^2 around the inner granitic islands. All MPA's are potential fishing grounds (SFA). Poaching is taking place in most of the reserves and especially the 6 Marine National Parks around the granitic islands. Recovery of coral assemblages will depend to a large extent on maintaining intact fish assemblages, which in turn is dependent on fisheries management.

Invasive Alien Species

54. Seychelles is typical of remote islands in the susceptibility of its terrestrial biodiversity to invasive alien species (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 seabird colonies on small islands, reducing levels of recruitment. Seychelles has been successful in eradicating plant and animal IAS from some small islands. There are well-established eradication and control programs on Aride, Cousin, Cousine and Frégate Islands. New programs are being developed for North, D'Arros and Cosmoledo Islands[13]. Although the country has been a leader in respect of small island rehabilitation, and the entry of animals is currently subject to meaningful controls, there is a need to strengthen quarantine controls to prevent the open access of fruits and vegetables, grain, and timber products. The Government is in the process of developing a comprehensive initiative to address this need, which will build capacity and put in place the necessary infrastructure to address this problem at ports of entry. However, there is a need to work with the tourism sector to address the inter-island spread of invasives: a risk that is likely to grow more acute as new tourism facilities are established.

55. Tourism operations increase the risk of IAS in a number of ways. The high-end hotels import an especially wide variety of foods from very diverse geographic origins, increasing the risks of introductions of new IAS. Tourism results in greatly increased movement of people and boats between islands with new tourism facilities, multiplying the chances for the spread of established IAS from island to island. The utilisation of exotic plants for landscaping poses a risk that some of the ornamentals will be invasive[14].

[12] The Marine Protected Areas consist of:
- 6 Marine National Parks (managed by SCMRT-MPA),
- 3 Special Reserves (managed by 2 NGOs and a corporate body),
- 4 Shell Reserves (SFA is responsible),
- 3 Fisheries Reserves (SFA is responsible),
- 1 Protected Area designated under the Protected Areas Act (1967) (MLUH is nominally responsible).

[13] 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.

[14] One new hotel is under construction on Silhouette Island and another is planned; the proposed staffing complement for one of the new hotels under construction will increase the population of Silhouette from about 150 to over 400 persons. Together with the increased movement of tourists, this will increase greatly the risk of introducing new IAS. Silhouette island is generally considered to be in better ecological conditions than the other large granitic islands.

Global Environmental Threats

56. The biodiversity of Seychelles is especially vulnerable to environmental variation associated with global warming and ocean acidification – both traced to the increase in atmospheric CO_2. The two minor coral bleaching events that occurred in 2002 and 2003, indicate that the mega-bleaching event of 1998 was not a one-off isolated occurrence. Despite the massive bleaching, several areas survived because of cold water upwellings. These refugia provide centres for re-colonisation. The identified coral refugia give reason to hope that isolated samples of reef ecosystems may still be conserved. Ocean acidification has only recently been identified as a global environmental problem and its future impacts are still largely unknown.

IB 2 Baseline Course of Action

57. The main economic sectors in Seychelles are highly dependent on natural ecosystems and their constituent biodiversity. 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 environment management and biodiversity conservation in particular. 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 EMPS in 2000-2010.

58. At the same time, recognition has grown of the needs and opportunities for mainstreaming environmental concerns and biodiversity conservation into the day-to-day operations of biodiversity-dependent production sectors and enterprises. Businesses that are dependent on biodiversity must invest in their resource base as a cost of doing business. Also, at a time when Government resources are shrinking, it is recognised that the private sector is more efficient than Government at undertaking many tasks that traditionally have been the remit of the State. Clear opportunities have been identified for a) mobilising private sector investments in the co-management of ecologically sensitive areas; b) directly involving fishers in artisanal fisheries management; and c) increasing the role of tourism operators in enhancing the environmental sustainability of the tourism industry. Biodiversity "mainstreaming" objectives are increasingly reflected in GOS policy frameworks and strategies, although little progress has been made in implementation. There is however one area where Government must continue to play a strong lead role in conservation. This is in the mainstreaming of biodiversity conservation objectives into land, sea and coastal use planning. Seychelles has never produced land use plans of statutory value, but the Government and stakeholder groups in the private sector and civil society have come to a consensus on the need for this.

Gaps in the Baseline

59. The Baseline is the "business-as-usual" scenario that would take place during the next five years in the absence of the planned project. Baseline activities are summarised in the first column of Table 9. In a business-as-usual situation, a range of activities would be undertaken that would have positive impacts on biodiversity. However, most efforts would continue to be focused on protected areas (PA) or 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 in a fragmented fashion, leaving many critical gaps. Importantly, the Baseline does not systematically address the principal threats that emanate from the main production sectors – especially fisheries, tourism, and physical development. Although some 47% of the land area and some 228 km^2 of the Seychelles EEZ have some form of Protected Area status, this is not sufficient for effective biodiversity conservation. The main economic actors, whose livelihoods are dependent upon the biodiversity of the Seychelles, are only weakly integrated into the Baseline and conservation objectives are poorly integrated into their business-as-usual operations. The following analysis presents the principal gaps in the Baseline. Further details are provided in Table 9.

Table 9: Baseline Course of Action

Category	Baseline	Organisation	Gaps
Enabling environment	• Continued implementation of EMPS (2000-2010); • GIS capabilities available, to abet planning; • EIAs required for major developments; • Continued capacity building programmes (ad hoc); • Existing partnerships and participatory processes for collaborative planning and execution of biodiversity initiatives continue; • Regulatory services for inspections and quarantine to minimise the entry/re-entry of IAS at the borders exist; • National Invasive Alien Species Committee in place, including most stakeholders;	MENR ENGOs	• EMPS steering committee functions at sub optimal level of performance, stakeholder engagement in this process is diminishing particularly outside the environment fraternity; Limited development of partnerships between Government, ENGOs and the provate sector for implementation; • No commonly accepted standards for biodiversity inventories and monitoring; No environment meta-database or information clearing house; Little dissemination of Biodiversity conservation results and "best practices"; • Little use of strategic decision-making models (such as multi criteria analyses); EIA standards inconsistently applied and follow-up enforcement of mitigation measures is weak; • Mid and senior-level managers in and out of Government have little capacity for strategic planning, policy development and the facilitation of stakeholder involvement; • Need to better integrate IAS management into national development planning
	• Legislation and policies for land use planning (LUP) exist, but with little emphasis on participatory processes or the integration of biodiversity priorities. The Planning Authority will continue giving ad hoc planning permissions; • A District Development Plan Project started that should cover all the Districts (2 District Land Use Plans (DLUP) are in the final stage of approval); • GIS unit is operational;	MLUH	• The existing legislation for land use planning dates to 1972, and makes no mention of biodiversity conservation priorities; • Planning authority approves ad hoc plans, and does not address long term strategic planning needs; The only existing land use plan covers the three main islands and has no legal status; There is no land use plan or sustainable development plan for the other Inner and Outer Islands; • No consistent use of biodiversity conservation principles in land use planning; Use of participatory processes for land use planning is weak; No integration of natural resource and environmental economics, including valuation of biodiversity in LUP;.
Artisanal Fisheries Sector	• SFA will continue to undertake planning, surveillance and enforcement functions (based on Fisheries (Reserves) Regulations, 2005); • A National Plan of Action for Seychelles' shark fishery is under development; • A project to map the shallow marine environments of a number of the southern islands of Seychelles; • SFA is developing a satellite-based fishing vessel monitoring system;	SFA, Fishing Boat owners Association, individual fishers; NGO's	• Inshore fisheries management systems are approaching the limits of what can be done through a traditional top-down management approach. Opportunities for improvement lie primarily in development of collaborative management with fishers; • All of the artisanal fisheries except the sea cucumber fisheries remain open access fisheries with no management plans; • Enforcement is unsatisfactory; the populations of some large predatory fish are overfished (sharks);
	• SFA has just successfully completed their first joint management initiatives with fishers – a stock assessment and management plan for sea cucumbers;	FAO – SFA, Sea cucumber fishing operators	• The number of fishers specialized in sea cucumbers is relatively small. Approaches are needed to broaden collaborative management efforts to the mainstream of the artisanal fisheries sector.

Category	Baseline	Organisation	Gaps
	• Critical reef fish spawning aggregation areas that are highly vulnerable to overfishing but that have no protection at present have been identified and management measures have been proposed;	MASMA -SFA, fishers on Praslin	• SFA plans to develop collaborative management of the trap fisheries that would integrate reef fish spawning aggregation areas with fishers, but is very uncertain about how to proceed. NGOs also have little experience working with fishers;
	• SFA and others will continue the monitoring of coral reefs begun in 1998 as part of the Coral Reef Network;National Reef Monitoring Network is set up, including NGO's;	SFA, MPA-SCMRT, COI	
	• Integrated Marine Protected Area Systems Plan (IMPASP) was developed through SEYMEMP but has not been implemented;	MENR, MPA-SCMRT; Private island owners, NGO's	• Coral refugia that were little affected by the 1998 bleaching event have recently emerged as inshore conservation priorities, but all but one coral refugia remains ungazetted. The MPA network management plan prepared by the SEYMEMP project has not been approved; • There is no plan for further rezoning/reclassifying the MPAs;
Tourism sector	• Continued partnerships for conservation actions including PA management for eco-tourism purposes (e.g. Banyan Tree resort + MCSS; Cousine Island + Cousin + Nature Seychelles; North Island Resort + ICS + PCA) • Some private islands resort owners have initiated IAS control programs on their respective island (Fregate, Bird, Denis); • Seychelles Island Foundation (quasi NGO) manages Aldabra and Vallée de Mai World Heritage Sites;	MENR/ MPA/ private sector/ NGOs/ communities	• No assessment has been done of the potential of replicating these partnerships or of the conditions/incentives that are needed for doing so; • There are no guidelines/criteria or standard procedures for lease agreements for PA management for tourism purposes. There is no established monitoring program for MENR supervision and oversight of PA management by the private sector; • There has been little analysis of the financial viability and attractiveness for private sector investments in PA management and other conservation activities;
	• Solid waste and sewage treatment facilities are being put in place. • A Strategy Action Plan on Environmental Management Systems (based on ISO 14001) has been developed by Technical Committee. Working Group established; • Cooperation with University of Zurich in studying carrying capacity, eco-tourism options and Environmental Management Systems viability;	Department of Tourism and Transport (DOTT)	• Very little work has been done in Seychelles to define the conditions under which specific EMS investments are viable; • No overall review has been done to identify environmentally sound technologies and best business practices of tourism operators; • Need to strengthen safeguards against the inadvertent introduction of IAS through inter island movements
	• Continued efforts to assess and promote tourism development strategies that both conserve the environment and that aid in marketing; Seychelles as a quality tourism destination • DOT has established a policy to promote the development of a national sustainable tourism label.	STB	• No tourism operators are eco-certified, and the existing international eco-certification schemes are judged insufficient at this time; • Lack of relevant, in-depth tourist profile and economic and marketing studies; • No program or resources identified for the development of the sustainable tourism label.

Normative Solutions needed to Address Threats

Enabling conditions.

60. The baseline situation is typified by numerous but fragmented efforts to manage the natural environment. However, these would be compromised, to a greater or lesser extent, by weak enabling conditions. Biodiversity inventories would remain incomplete, and the coverage of monitoring efforts patchy. What data that does exist would not be readily accessible as data management systems are poorly constructed. Systematic evaluations of the effectiveness of conservation actions at the site level would also be lacking. The land use planning legislation is also weak, in that it does not provide for effective measures to integrate biodiversity management priorities into decision-making systems. There is likely to be a paucity of capacity for strategic planning—a weakness amplified by the inadequacy of systems for explicitly involving civil society and private sector entities in planning and monitoring investment activities. Taken together, these gaps will compromise planning efforts, as needed to ensure that physical infrastructure such as roads and jetties are designed, located and constructed to minimise negative externalities. A suite of measures is needed to create an effective enabling environment for the pursuit of biodiversity management objectives within production landscapes and sectors. A strong legislative framework is needed to facilitate the development of land use and sector plans that properly integrate biodiversity conservation priorities. Capacities will need to be installed to collect, store and analyse biodiversity data in order to define conservation priorities and facilitate integrated planning processes. Furthermore, capacities for participatory land use planning and multi criteria decision making need to be developed to facilitate biodiversity 'mainstreaming' within planning processes. The ability of government, the private sector, and civil society stakeholders to work effectively together will also need to be enhanced.

Artisanal fisheries

61. Under the baseline, artisanal fishery resources would remain as unmanaged, open access resources and pressures on them would continue to increase. This is likely to lead to inter-specific impacts down the food chain, with adverse consequences for biodiversity and ecosystem resilience. The Government's ability to enforce top-down regulatory approaches would be outpaced by threats. Fishers would have little or no-incentives for self-regulation of their activities as open access would imply that they do not reap the benefits. The resolution of these problems will demand a paradigm shift in the manner in which artisanal fisheries are managed, towards an ecosystem based management approach that directly involves fishers in management endeavours. Self-regulation would allow for much more intensive and cost-effective management of the resource. This could best be done through the development of rights-based co-management systems, designed and adapted to suit the needs of different types of artisanal fisheries. Of particular importance will be the need to augment traditional management systems with spatial management tools, that allow fishery refugia to be protected, an action that could both enhance biodiversity management while improve recruitment potential. This would involve strongly participatory, adaptive management approaches with strong monitoring components and with the clear definition of the roles and responsibilities of each party.

Tourism sector

62. The Seychelles is taking a number of significant steps to improve the environmental conduct of the tourism industry. In particular, attention is being paid to the mitigation of pollution from developments. Solid waste collection and sewage treatment facilities are being put in place, and new hotel developments are being required under their development licenses to install pollution control devices. However, there would be little increase in the present low-level of investments in biodiversity conservation by tourism operators, except on small islands that are under the full control of individual operators. Existing policies to promote private sector investments in biodiversity conservation would not be converted into operational

programs with established criteria, guidelines and established oversight mechanisms. Secondly, industry involvement in conservation management would be driven by regulatory demands, without strong incentives, nor codes of conduct and accompanying management schemes championed by the industry itself. This is not cost effective, nor ultimately sustainable—meaning that a new approach needs to be fashioned. A top priority will be to engineer the direct involvement of industry leaders and the SHTA in the establishment, promotion and widespread adoption of high environmental management standards (EMS) for their industry. One of the most important tools for achieving this would be the development of a certification scheme for tourism operators. In another vein, there is a clear opportunity for tourism operators to invest directly in, and to secure benefit from, the management of terrestrial and marine ecologically sensitive areas. Tourism operators must work in partnership with government and other stakeholders to establish appropriate criteria, guidelines, monitoring and oversight mechanisms to realise this opportunity. The Government will need to encourage such initiatives by developing appropriate incentive programmes.

IB 3 Barriers to the Conservation of Biodiversity

63. Barriers have been identified through an iterative, participatory process involving a wide range of stakeholders. The problem analysis involved a literature review, stakeholder interviews, analysis effected by national and international consultants and a formal national stakeholder workshop in November 2005. The main barriers that have been identified through this process are summarized as follows: a) insufficient capacities at the systemic level; b) insufficient capacities at the institutional level; c) poorly defined tenure and usufruct rights; and d) insufficient know-how and lack of proven models to adapt production systems.

Capacity Deficits at the Systemic Level

64. **Legislation.** The Town and Country Planning Act of 1972 forms the legal base for land use planning. It is presently outdated and does not adequately address biodiversity management concerns. One of the glaring gaps in the present legislative system is that there is no legislation regulating, approving or controlling physical development activities in coastal waters and oceans. Much of the legislative authority that does exist is often not fully exploited.

65. **Weak Management of Knowledge** on biodiversity or related issues is a key barrier to the conservation and sustainable use of Seychelles' biodiversity. The biodiversity information system is fragmented and incomplete. There are no agreed standards for biodiversity inventories and monitoring and much of the data are difficult to compare. The lack of a coordinated information management system for biological resources inhibits integrated, inter-sectoral, conservation efforts. There is no meta-database, or clearing house, for data to assist end-users to determine what information exists, which institutions possess the data and the conditions of data access. Biodiversity conservation priorities have only been systematically defined for some of the larger inner granitic islands. Inventory data is incomplete for the remaining smaller inner islands, and is nearly absent for many of the Outer Islands, with the exception of Aldabra. Biodiversity information is frequently outdated and is not commonly integrated into planning work undertaken by agencies such as MLUH. GIS systems have been developed in MENR and MLUH, but are used more as a mapping tool than as a strategic planning and decision making tool. There are a limited number of qualified environmental professionals capable of undertaking inventory work and assessments.

66. The total economic value of biodiversity has been poorly documented and is poorly understood by decision-makers, the private sector and the general public. The use of economic tools, especially environmental economics, is poorly developed in land use planning and in the identification of viable private sector investments in biodiversity friendly activities.

67. **Weak Stakeholder Engagement.** The mechanisms for integrating environmental and natural resources management into long-term, participatory development planning processes have significant

weaknesses. Capacities for strategic participatory planning, and policy development are particularly weak. Numerous assessments, including the National Capacity Self Assessment (NCSA, 2005), as well as an EMPS Sectoral Review (Nevill, 2004), have found EMPS coordination systems to be weak. While EMPS has sought to improve communication and cooperation, more effort is needed to establish and to regularise the principles for co-operative working relationships between Government and NGO conservation organisations. 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 or forums are needed to encourage collaboration, ecosystem-based partnerships for inventory, research and rehabilitation projects, both within the NGO community and between it and Government.

68. There are insufficient incentives for Government – private sector – community partnerships and uncertain requirements for integrating conservation partnerships into private sector investments. The costs & benefits of private sector investments in biodiversity friendly practices are poorly defined. For example there have been few thorough economic analyses of the returns and/or profitability of investment options in Environmental Management Systems (EMS) techniques. No clear incentives have been developed to interest private sector investments in PA management or other conservation activities. Private sector investment should be encouraged to contribute to biodiversity conservation through various forms of partnership with conservation groups and local communities. Currently, there are no requirements to ensure that there is no net loss of major habitat values as a consequence of development or to invest in offsets in compensation for negative impacts. There are some encouraging examples of conservation partnerships but more commitment to, incentives for and possibly requirements for such cooperative initiatives are needed.

Capacity Weaknesses at the Institutional Level

69. Planning: There are limited institutional capacities for land use planning and it is difficult for Government to retain expertise. The 1992 Land Use Plan only covers the three main populated islands but is used only as a reference document. Biodiversity priorities are not adequately identified and integrated into planning and zoning activities. No land use or sustainable development planning has been done for the other granitic islands and the Outer Islands. There are no island-specific land use management strategies.

Resource Tenure and Access Rights

70. Sustainable use and conservation of natural resources usually demands as a prerequisite clearly defined resource tenure and access. Artisanal fisheries in Seychelles have always been characterised by open access. As pressures on the resource increases, open access can lead to accelerating resource degradation and loss. Open access is also a constraint to the pursuit of fishery co-management. Nearly all artisanal fisheries have already evolved some level of resource partitioning – a precursor to the formal definition of tenure or formal access rights. However, until recently artisanal fishers in the Seychelles have been relatively poorly organized as an economic interest group. Further improvement in fisheries management will necessitate the empowerment of representative fisher groups to control access and to manage inshore waters complemented by support for capacity building for these groups. The potential for joint management of ecologically sensitive areas with private sector operators is severely constrained by resource tenure/access rights. Appropriate conditions must allow the operator to realise a profit and must involve a clear definition of roles and responsibilities for each partner. The length of the lease and conditions for renewal are critical factors that will need to be systematically addressed to address this issue.

Know-how and Models for Sustainable Management

71. Co-management: Current legislation provide for an array of conservation designations in different sectors (e.g., forest reserves, fisheries reserves etc.), in tandem with formal protected areas; these various

designation tools need to be organised into a co-ordinated management system, in combination with collaborative management mechanisms, involving civil society and the private sector.

72. Models for Fisheries Co-management. The management of artisanal fisheries has been characterised by top-down approaches by Government regulators, focussed on gear restrictions and the seasonal closure of fishing grounds. Although capacities for fisheries management in the Seychelles are relatively strong, the administration of such approaches is inherently costly, and restrictions are often difficult to enforce over large areas. The Government has acknowledged that the efficacy and cost effectiveness of artisanal fisheries management could be improved were collaborative management approaches to be instituted, involving partnerships between Government and artisanal fishers. The SFA has just completed an initial, collaborative management project for sea cucumbers which has proven to be relatively succesful. However there is limited capacity to extend such a paradigm to cover other artisanal fisheries. The trap fisheries and the demersal line fisheries have been identified as priorities in this regard. However, appropriate management systems need to be developed. While a number of models have been developed in other parts of the world, they will need to be adapted to local conditions. A key priority is to develop spatial management tools to protect spawning aggregation areas and other ecologically sensitive areas. No-take-zone (NTZ) management has emerged in recent years as one of the most effective management systems for the ecologically highly complex coral reef and lagoon ecosystems. Under NTZ management, roughly 15-35% of the total area is set aside as no take zones. In time, fishery productivity in fishing areas can increase, owing to an increase in spawning biomass and recruitment from the NTZ.

73. Rights based management approaches involving geographically defined access rights and or limited entry rights will need to be developed, with tied management circumscriptions. One of the key conditions for joint management is the definition of suitable forms of partnerships – involving Government, private investors, ENGOs, fishers associations, and communities. There are clear opportunities for tourism operators to work in partnership with fishers associations on the management of coral refugia or non-gazetted fishing grounds. Strategic selection of No Take Zones can serve the commercial interests of both tourism operators and fisher groups. The development of successful management models will also require the assessment of the capacity needs for the partners involved and the development of these capacities.

74. **Models for tourism operations.** At present, international standards, including environmental standards, are weakly applied in the tourism industry. It is alleged that only a few tourism operators are aware and understand the importance of investing in biodiversity conservation except on isolated private or leased islands. A recent study (Schneider, 2004) on eco-certification for tourism operators recommended, in consultation with the industry, the development and introduction of a "Seychelles" label, on the basis of strict, transparent, fair and externally checked criteria. This could be affiliated with the best international label at a later point in time (none are deemed suitable for Seychelles conditions at this point in time). The development of a Seychelles specific sustainable tourism label integrating environmental, social and economic factors, has now become Department of Tourism policy. In a similar fashion, there is interest in promoting international standards for environmental management systems (EMS) for tourism operators, such as ISO 14001. This may be pursued directly with ISO and the standards could be integrated into the sustainable tourism label or individual EMS techniques may be promoted for adoption simply based on the financial returns on these investments. An Action Plan for the promotion of the ISO 14000 EMS in Seychelles has been finalized by a Technical Committee on EMS, but it is yet to be implemented.

1B.4 Stakeholder Analysis

75. There are three main groups of stakeholders for this project – Government agencies, ENGOs and production sector operators. A complete list of stakeholders and an accompanying Stakeholder Involvement Plan is provided in Annex III. The Project team undertook extensive consultations with interested parties through a series of presentations, interviews, and workshops during the preparatory phase. Progress of the

work was reported monthly to the EMPS Steering Committee, which comprises all major stakeholders.

PART II: Project Strategy

2.1 Project Rationale and Policy Conformity

76. The project responds to the critical threats to biodiversity conservation by addressing barriers to mitigation. The Project is based on the precautionary principle. Although biodiversity is generally not under severe immediate threat in Seychelles at the present time, threats are expected to grow in time. The Project seeks to build the adaptive management capacities needed to integrate biodiversity management into production sector operations and to maintain it, as production sectors undergo change. The Project will build capacity for society and institutions to change management paradigms as external situations change. The Project thus adopts a learning by doing approach – demonstrating good practice and systematically integrating it into production sector activities – building the capacities to ensure success in this endeavour.

77. The project will improve the enabling conditions for mainstreaming biodiversity management into production activities by strengthening policies, the legal framework, and cross-sectoral institutional capabilities. The project will target two key production sectors – artisanal fisheries and tourism. In particular, the project will seek to make biodiversity conservation part of the business-as-usual operations of artisanal fishers and tourism operators. The project will develop co-management models, and the capacity for replication of these models, for: a) the artisanal trap fisheries around the granitic islands; and b) for the demersal line fisheries that go out to the limits of the submerged Mahé Plateau. The tourism component will cover all tourism operators throughout the Seychelles. It will involve: a) investments by tourism operators in biodiversity management of ecologically sensitive sites – both gazetted and non-gazetted; and b) adoption of international environmental standards for tourism operations.

2.2 Project Goal, Objectives, Outcomes and Outputs

78. The project will contribute to the achievement of the following goal:
The functional integrity of the terrestrial and coastal ecosystems is secured now and into the future, thus providing a base for sustainable development.

79. The project will be responsible for achieving the following project objective:
Biodiversity conservation objectives are integrated into key production sectors of the economy.

80. The Project Objective will be achieved through four Project Outcomes:

Outcome 1	*Enabling conditions for mainstreaming biodiversity management within and across sectors are strengthened.*
Outcome 2	*Methods and means for integrating biodiversity and artisanal fisheries management are in place.*
Outcome 3	*The tourism industry is addressing biodiversity conservation needs as part of good practice in business operations.*

Outcome 1: Enabling conditions for mainstreaming biodiversity management within and across sectors are strengthened.

81. Information and knowledge management capacity for biodiversity mainstreaming is developed. Common standards for biodiversity inventories, assessments and monitoring will be developed and applied. Existing data on terrestrial, marine and coastal biodiversity at the species, habitat and ecosystem levels will be synthesised and used to better define biodiversity conservation priorities. Key knowledge gaps in the

biodiversity database will be identified. Targeted new inventories will be undertaken to fill pressing gaps. A biodiversity meta-database will be developed providing easy definition of existing information, where the information is housed, and access. The meta-database will also be used to disseminate lessons learned in the region and more broadly. A gap analysis will be conducted for all priority sites for biodiversity conservation. This will lead to the identification of appropriate land use, feeding directly into the land use planning process. Institutional capacities to utilise GIS tools will be developed in support of LWC planning.

82. Land, Water and Coastal Use Plans integrating biodiversity priorities developed and implemented for all Islands. The legal basis for participatory Land Use Planning will be revised (i.e. Town and Country Planning Act, District Land Use Planning regulations, EIA regulations). Capacities will be built for participatory Land Water and Coastal (LWC) planning that integrates biodiversity conservation needs. A strong emphasis will be placed on district-level LWC planning. An LWC sustainable development plan will be developed for the Outer Islands. This will integrate a gap analysis for the Outer Islands and economic analyses of identified LWC use options. The planning process for the Outer Islands will also seek broad participation from all interested stakeholders. A key focus of such planning will be to ensure that physical infrastructure, associated with the tourism industry or other sectors (such as jetties, roads, or paths) are located to minimise damage to the natural environment.

83. Stakeholders are effectively engaged in "mainstreaming" biodiversity management into production. Implementation of the project will be built on an adaptive management approach. One of the main tools for this will be an annual, stakeholder review of all the components of the project. The review will be led by non-Governmental stakeholders, especially the ENGOs. The review will determine whether the new knowledge management standards are being applied and whether project interventions are being grounded on sound science. Stakeholders will be engaged to review what has been done, to identify what does and does not work and to recommend changes in approach where necessary. Training and support will be given to the stakeholders on the Project Steering Committee and the steering committees for each project component – the training will cover the integration of biodiversity into production sectors and management effectiveness for oversight committees. Further training will be targeted towards the strengthening of skills of middle and senior managers in environmental governance-i.e. strategic planning, policy development etc.

Outcome 2: Methods and means for integrating biodiversity and artisanal fisheries management are in place.

84. Pilot co-management systems are developed for artisanal fisheries. The project will test and develop co-management systems for artisanal fisheries that are deemed appropriate for a participatory, rights-based management approach and that are compatible with larger biodiversity conservation objectives. This will include pilot management systems for: a) the trap fisheries; and b) the demersal line fisheries that extends out to the limits of the Mahé Plateau[15]. Fishing rights will be defined building upon the resource partitioning wherever this already exists, e.g. as it does for the trap fisheries in an informal way. The management systems for each pilot will be developed jointly between SFA and the fishers holding the fishing rights to the pilot area. The fishers will be organised into formal or informal institutions as they deem appropriate. The project will support a range of capacity building support measures for the

[15] Demonstration sites will be selected using the following criteria: a) Level of biodiversity significance (the existence of ecologically important ecosystems, e.g. reefs); b) existence of threats from over fishing; and c) enabling social and institutional environments (receptive fisher communities, informal groupings or associations). The sites will also be selected to provide a good cross sample of different management challenges. The following priorities have been identified: (1) Fisheries co-management area for the trap fishery (south Praslin and adjacent areas) integrating existing PA, new fisheries reserve(s). The demonstration is replicable over an area of 2000 km^2 of fishing grounds). (2) Fisheries co-management areas and associations for the inshore line fishery, integrating existing PAs, new fisheries reserve(s) and a rights-based management system in sensitive areas on the Mahé Plateau (the area for replication covers 4544 km^2 in inshore areas and ca. 37,000 km^2 in offshore areas).

fishers associations. Fishers will be responsible for self-policing compliance with agreed co-management rules and regulations. Joint monitoring systems will be developed and implemented by SFA and fishers working in collaboration. All pilot systems will be adaptive management systems. Fishers, SFA and other partners will periodically review the strengths and weaknesses of the techniques and approaches being tested and will adapt them as needed. The SFA will play the lead role in performing stock assessments and its capacity to monitor ecosystem status will be built through training and the induction of knowledge management systems.

85. Capacity to replicate and adapt the piloted management systems is developed and applied to new areas. As each pilot management system is adapted and "proven", emphasis will shift towards the development of institutional capacities for replicating and adapting the pilot systems throughout all the appropriate artisanal fishing grounds. Capacities for replication will be built within SFA, FBOA, pilot fishers' associations and ENGOs. Guidelines for collaborative management systems will be developed and knowledge management systems will be developed. Capacities will be built through actual replications of the pilot; at least one replication will be initiated for each successful pilot fishery management system. Lessons learned will be disseminated actively, also internationally.

Outcome 3: The tourism industry is addressing biodiversity conservation needs as part of good practice in business operations.

86. A Sustainable Tourism Label and Environmental Management Systems will be adopted by tourism operators. The project will provide support for the development of a national sustainable tourism label[16]. Environmental Management Systems (EMS) for tourism operators will be promoted. Support for marketing the certification scheme and EMS in the industry will be provided by STB and DOT. This will be facilitated through the development of a clearing house mechanism for tourism operators providing information on environmentally sound technologies and practices, accompanied by information on the associated costs and benefits. Harmful development practices will also be highlighted and discouraged through industry led advocacy efforts. The investment guidelines for submitting "project memoranda" to the Seychelles Investment Bureau (SIB) for new tourism developments will be strengthened, to address biodiversity management needs. These will be in line with revised planning requirements, especially highlighting biodiversity concerns and management options (off-sets, partnerships, etc.). To encourage tourism operators to invest in these practices, a system of awards and public recognition for outstanding tourism operators and sponsors will be instituted. This will further lead to networks of environmental champions, with the active involvement of the SHTA and possible other tourism associations (e.g. divers association).

87. Incentives and sustainable financing for mainstreaming of biodiversity in the tourism sector are in place. Existing policies and incentives concerning tourism (e.g. the Tourism Incentives Act) will be reviewed to determine the effects, both positive and negative, on biodiversity conservation. This participatory review will involve the private sector, SHTA, ENGOs and Government, with the Ministry of Economic Planning & Employment playing a key role. Steps will be taken to improve the incentives framework for private sector investment in conservation, to take effect through quantity or price controls that allow for adaptive choice and decentralized decision making by enterprises whose behavior is to be modified. Examples of possible economic instruments include charges/fees, subsidies, performance bonds, and tradable development rights. These may be instituted through the development of subsidiary regulations under the Tourism Incentives Act. The project will supply specific technical expertise and provide support for economic and financial modeling to establish the costs and benefits of different schemes. A preliminary analysis of possible economic incentives for biodiversity conservation has been undertaken during project preparation. A number of economic instruments are already employed in the Seychelles. A summary of the new interventions that will be considered – building where possible on existing schemes is provided below.

[16] At some point in the future, this may qualify for a viable and recognised international label as well, when an appropriate certifying body emerges.

Table 10: Existing environmental incentives and possible new interventions.

Instrument	Existing examples in Seychelles	New Interventions
Pollution charges, taxes and fees	Sewage charge Solid waste charge Water charge	Review pricing of water, solid waste and sewerage charges
Performance bonds		Require new developments to pay and to buy environmental performance bonds
Liabilities	Criminal and civil sanctions (Environmental Protection Act)	Revision of existing laws
Information provision	Environmental audit of Banyan tree hotel Product labeling	performance rating of companies, hotels Pollutant release and transfer register Product labeling by Seychelles authority
Voluntary mechanisms	Phase out of CFC (agreement between government and industries) 'Industrial park' (STAR uses waste from sewerage treatment plant for production of compost)	Voluntary eco-certification schemes for tourist hotels Implementation of ISO 14001 work programme on EMS

88. Joint management systems involving tourism operators developed for biodiversity conservation in ecologically sensitive areas[17]. The project will identify, promote and support opportunities for private sector direct investments in the management of ecologically sensitive areas. Criteria, roles and responsibilities and conditions of joint management leases will be defined. Systems for oversight & monitoring of partnership activities will be developed. The Project will provide capacity building support to operators for management and self-monitoring. The criteria for joint management will specifically allow for a wide range of joint management partnerships that may include private investors working in partnership with ENGOs, trade associations or communities as well as Government. Guidelines for management will be developed.

2.3. Project Risks and Assumptions

89. 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. A listing of the main risks, risk ranking and risk mitigation measures is presented below.

Table 11: Risk Analysis

Risk	Risk Rating	Risk Mitigation Measures
Cross-cutting enabling conditions		
1. Conflict between stakeholder groups emerges.	M	• Formal MOUs will be used to define roles and responsibilities. • Steering committees and other stakeholder groups will receive training on governance and conflict resolution. • 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.

[17] Demonstration sites will be selected using the following broad criteria: a) Biodiversity significance of the target; b) active management to mitigate threats; c) accessibility in order to establish activities and for wider demonstrative effect; and d) the existence of a positive enabling environment, including supportive stakeholders, institutions and receptive tourism enterprises.

Risk	Risk Rating	Risk Mitigation Measures
Artisanal fisheries		
2. Fishers prove to be too distrustful of Government and too independent (of character) to enter into co-management systems with Government and to form effective associations for self-policing under collaborative management of near-coastal fisheries.	M	• Co-management systems will be investigated and designed in collaboration with fishers in conformity with local circumstances, so that the advantages to fishers outweigh the disadvantages. Key factors will be their control of access rights and their empowerment for decision-making. The pilot will build on existing management measures being instituted locally. • Close attention to the choice of support agencies capable of gaining and holding fishers' trust. • Develop conflict mitigation measures.
Tourism		
3. Inability to obtain universal acceptability of the sustainable tourism labelling scheme that is chosen for Seychelles.	M	• Continue to work with industry leaders in the development of the labelling system. • Work closely with appropriate Government agencies to develop incentives for tourism operators to qualify and to adhere to the labelling system.
4. Private sector investments in conservation and rehabilitation of some small, private islands will not be sustained over time because they are not financially viable but rather driven by wealthy personalities. .	L	• Wealthy individuals dedicated to nature conservation will find the appropriate legal and financial mechanisms to ensure the sustainability of their initiatives. • Develop appropriate incentives such as tax rebates for conservation work.
Macro-economic risks		
5. Major economic changes to production sectors, with consequent impacts on biodiversity, could result from potential macro-economic changes that could be triggered by factors such as the devaluation of the rupee, measures imposed to reduce high level of indebtedness or from continued major increases in the world price of petroleum.	M	• The impacts of these factors will be analysed and integrated into land/water/coastal use planning. Economic analyses will be done of land use options under different scenarios. • Devaluation could lead to greatly increased local food production. Land use planning will provide for zoning for adequate agricultural land. • The "high end" tourism markets will be the least affected by higher fuel and energy costs. • Artisanal fisheries management will better conserve this resource base if high energy prices lead to a shift away from the energy intensive industrial fisheries and increased pressures on artisanal resources.

*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

90. This project has gone through a long development process. It was originally proposed as a joint UNDP/World Bank integrated ecosystems management project, but the original concept was poorly focused and included a strong PA component. The Project was reclassified as a BD2 Mainstreaming project, to give it better definition. The strategic priority for protected areas was considered, but it was found that a PA focus would have ignored the larger threats from the key production sectors of the country. During the development of the project under the BD2 Mainstreaming Strategic Priority, one of the key alternatives considered was the expansion of the project into other production sectors beyond artisanal fisheries and tourism. Another alternative was to include a component on IAS eradication and habitat restoration. These alternatives and the rational for the approach selected are detailed in Table 12 below.

Table 12: Alternative Strategies and Rationale for the Approach

Alternative	Rationale for Approach Selected
Focus the Project on improving the effectiveness of the management of protected areas (PAs)	A pure protective area focus would have been too narrow; it would have ignored the larger threats coming from the production sectors – especially artisanal fishing, and tourism. The unilateral creation of MPA in the past resulted in the alienation of fishers and has diminished political support for MPA. The development of co-management systems with fishers will develop sustainable fisheries management tools that might later be integrated in MPA management, as they are in many parts of the world. Seychelles has an exceptionally large percentage of its terrestrial area that is gazetted as some form of conventional PA under Government or parastatal control. However, some of the PAs are "paper parks" with little or no management. At a time when Government resources are shrinking, one needs to be looking for private sector investments and new forms of partnerships for the management of PAs and ecologically sensitive areas. The Strategic Priority on Mainstreaming allows for private sector investments within the larger context of mainstreaming biodiversity into production sectors.
Include additional production sectors within the project scope.	Industrial fisheries is economically more important that the artisanal fisheries sector and covers the deep-water open ocean portion of the exclusive economic zone of Seychelles. However, it is already covered by other, regional GEF projects. It was decided the project would focus exclusively on the artisanal fishing grounds within the Mahé Plateau. Inclusion of the agriculture and forestry sectors was also considered. However, the main impacts of agriculture on BD were considered to stem from land use These issues are included at cross-cutting level in the project. Specific threats from agricultural production on biodiversity are not considered to be major at this time. Furthermore, questions of agricultural sustainability will be covered under a planned UNDP/GEF Medium Sized Project (MSP) on Sustainable Land Management (SLM). The forestry sector is extremely small. Forest degradation will also be dealt with under the SLM MSP.
Invest in IAS eradication and rehabilitation.	Seychelles has actually been a leader in implementing IAS eradication and habitat rehabilitation efforts, with numerous examples of private sector tourism operators' investments in IAS eradication and rehabilitation of small islands. The country is developing a comprehensive initiative to strengthen capacities and install infrastructure to better regulate the import of products and live plants that might provide pathways for the introduction of invasive species or become invasive. This will address the need to improve quarantine systems, -- a need that transcends the focus on the two main production sectors: tourism and artisanal fisheries -- meaning that the issue is best addressed separately in parallel to the project. The project will work with tourism operators to ensure that safeguards are in place to ensure the inadvertent spread of IAS through inter island movements of visitors. The issue will also be accommodated in the Land Use Plans that will be developed, reducing the risk that infrastructure development will provide pathways for IAS colonisation.

2.5 Expected Global and National Benefits

91. A range of economic benefits are associated with Seychelles biodiversity. The total economic value of Seychelles biodiversity would include:

a) **Direct use values** from goods such as fish, birds' eggs, timber, meat, fruit, vegetables, shells, coral, and sand, which are either consumed directly, or are used as raw materials in production processes.
b) **Indirect use values** are best exemplified by the attractions that diverse marine life on coral reefs, whale sharks, giant tortoises, colonies of sea birds and luxuriant tropical vegetation hold for the tourism sector.
c) 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 sink for wastes and residues).
d) **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.

92. **Global Benefits:** Seychelles is part of one the world's greatest biodiversity hotspots with high levels of endemism for its terrestrial biodiversity. The marine biodiversity has more recently been found to be characterised by rich levels of biodiversity. These resources provide a range of global benefits not captured at national level including existence values and option values. Moreover, the natural environments of the Seychelles are an important asset for the tourism industry, providing recreational opportunities and scenic and other amenity values to international visitors. However, these resources are under pressure and absent intervention, threats to biodiversity are expected to increase. The principle global environmental benefits of the project derive from the added security provided for ecosystems and constituent flora and fauna through effective integration of conservation objectives into production sector practices. Planned strategies are expected to improve the cost effectiveness and sustainability of biodiversity conservation activities.

93. **National Benefits:** Biodiversity underpins most economic activities in the Seychelles. Loss of biodiversity could have major, negative economic impacts for the country. Unintended consequences, positive or negative, may occur from global economic events that lie outside of the control of the Seychelles. Any negative changes in tourism and/or industrial fishing will put considerable strain on economic coping mechanisms, especially in areas of the more 'informal' economic activities, particularly artisanal fishing and tourism. This would in turn threaten the natural resource base and may accelerate biodiversity depletion. The use value of biodiversity in Seychelles is summarised below. National benefits will be obtained by the maintenance of economic use values linked to the tourism and artisanal fisheries sectors, as well as employment, that might otherwise be forfeited should biodiversity be extinguished.

94. Beneficiaries include government agencies mandated with responsibilities for environmental management, who will benefit from enhanced technical capacity for biodiversity management. Improved cross-sectoral institutional cooperation systems, coupled with stakeholder participation schemes will reduce conflict between stakeholders, and lead to a better deployment of funds and human resources. The NGO constituency will be actively involved in the delivery of services for demonstration projects, including community mobilisation, and planning and executing adaptive management schemes. This constituency will benefit through an immediate enhancement of capacity, and an improvement in their funding position, through the development of private sector funding initiatives. At the local level, the project will yield benefits to communities by improving the sustainability of artisanal fisheries and thus livelihoods. Finally the project will help to ensure the long-term ecological sustainability of the main production sectors, thus reducing the accruing risk and liabilities from the destruction of natural assets vital to sustainability.

Table 13: Seychelles Biodiversity Use Value and resource based employment
(5.6 SR/US$)

	Value (million SR) 2003	***Employment***
Tourism	779.6	8300
Industrial and semi-industrial fishing	1118.6	4000
Other revenue from industrial tuna fishing	350.9	
Artisanal fishing	59.8	1800
Agriculture and forestry	74.3	3800
Total biodiversity value	**2338.2**	**17900**

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

2.6 Country Eligibility and Drivenness

Eligibility for GEF Funding

95. The Government of Seychelles is a recipient of UNDP assistance and meets the eligibility criteria for GEF Funding. The project is consistent with the GEF Operational Strategy and Operational Programme (OP) 2 for the 'Biodiversity' Focal Area: Coastal and Marine Environments. The project concentrates on GEF Strategic Priority 2 (BD2): "*Mainstream biodiversity in production landscapes and sectors"* The project is consistent with guidance prepared by GEF on activities under this strategic priority the specific objective of which is " to integrate biodiversity conservation in …. production systems and sectors to secure national and global environmental benefits. [The operational emphasis is flexible] to allow for the development of tailored activities based on understanding of country context, biodiversity conservation problems, opportunities and demand." The Project adopts STAP guidance to the GEF Council on activities under BD II: Mainstreaming Biodiversity in Production Landscapes and Sectors Report (GEF/C.24/Inf.11). The project addresses the following elements of the GEF Strategy:

(i) Strengthening policy to accommodate biodiversity management needs in production activities Integrating biodiversity conservation objectives into spatial and sectoral planning systems;
(ii) Addressing barriers to the uptake of biodiversity production systems in key production sectors, in particular by strengthening management capacities at the systemic and institutional levels;
(iii) Establishing schemes (i.e. certification initiatives) to recognize good practices at the enterprise level; and
(iv) Demonstrating good production practices at the site level and engendering replication.

Eligibility under the Convention on Biological Diversity (CBD)

96. Seychelles ratified the CBD in 1992, along with the Framework Convention on Climate Change. The proposed project will fulfil a number of provisions of the CBD convention, 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.

97. The project will play a critical role in achieving the 2010 Biodiversity Target, especially in regard to the following goals: a) reducing the loss of biodiversity; b) promoting sustainable use of biodiversity; c) addressing major threats; and d) maintaining ecosystem integrity. These goals will be difficult to realise in the Seychelles archipelago without project intervention. The project will address a number of elements in the proposed thematic work programme on 'Island Biodiversity'. Table 14 lists the specific targets of this Programme that will be addressed. The project also addresses elements of the thematic work programme of "Marine and Coastal Biodiversity". The project will also take into account the CBD guidelines on "biodiversity and tourism development", which deal with activities related to sustainable tourism development in vulnerable terrestrial, marine and coastal habitats of major importance for biological diversity. The project also has relevance to the cross-cutting area on "Impact Assessment" and the attached guidelines.

Table 14. Elements of the Draft Programme of Work on Island Biodiversity addressed by the Project.

GOAL	TIMEFRAME & GLOBAL TARGETS
1. Conservation of island biodiversity	2. By 2010 10% of island species are maintained, restored, or their population decline reduced.
	6. By 2010, scientific capability, institutional support, legal frameworks, and infrastructure are in place to inventory and monitor the components of island biodiversity.

GOAL	TIMEFRAME & GLOBAL TARGETS
2. Sustainable use of island biodiversity	7. By 2010, unsustainable consumption of biological resources and its impact upon biodiversity is reduced
	9. By 2010, island biodiversity based products are derived from sources that are sustainably managed, and production areas managed, consistent with the conservation of biodiversity and in order to support human well-being.
3. Address the threats to island biodiversity	10. By 2010 ,pressures from habitat loss, land use change and degradation, and unsustainable water use, are significantly reduced.

Country Drivenness

98. The Government of Seychelles has always made a very strong commitment to biodiversity conservation. Seychelles has done more in this field than just about any other SIDS – especially within the African region. Seychelles was the second country to approve the Convention on Biodiversity. The country has established a large PA network. An energized NGO community that is very active in biodiversity conservation has developed. Government has involved NGOs in Government programmes. Although NGO/GOS working relationships are sometimes contentious—in part because there is a strong sense of ownership-- they are also generally more effective than those in many other countries within the region.

99. The country has taken a number of key steps for environmental management that resonate positively for biodiversity conservation. These include:

- Application of stringent water quality standards regulating the discharge of sewage and sediments from hotels;
- Taking strides to improve solid waste and effluent management;
- Banning of destructive fishing practices including spear guns;
- 47% of the country is ostensibly under conservation status within a Protected Area Network;
- Banning shark finning by foreign fishing vessels (the shark fishery is a highly destructive fishery targeting shark fins for export – the rest of the shark is usually discarded at sea).

100. The Government's current agreement to replace the existing Land Use planning system with a participatory, District based planning system that integrates biodiversity conservation objectives, and their agreement to restructure Government agencies to better control the entry of IAS into the country, are further evidence of the strong country commitments. Total Government co-financing for the project will be US$ 3,625,400.

2.7. Linkages to UNDP Country Programme

101. 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'

1. *Improve the institutional capacity for the conservation and management of terrestrial ecosystems of the granitic island.*

The project is consistent with the agreed terms 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 habitat...*"

- Programme on 'Climate change and energy efficiency'

2. *Enhancement of regional and international cooperation in land use and coastal management.*

- 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). It will contribute to the resource mobilization efforts of the country office under the current (2003-2006) and the next country programme starting in 2007. It will specifically address the following intended outcomes of the 2003-2006 Country Programme:

Strategic areas of support	Intended outcome	Indicators of outcome or purpose
Institutional framework for sustainable environmental management and energy development. Programme Area A1 and D2.	Improved capacity of local authorities, community based groups and private sector in environmental management and sustainable energy development	Capacity building of environmental NGO's in environmental management with an institutional framework established and memorandum of agreement signed with the Government and environmental NGO's.

102. Furthermore, the project is in line with the major 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. The CCA identified sound environmental management as one of several key development challenges to be confronted in spearheading sustainable development. Moreover, the project will further strengthen the capacities of stakeholder to enter into productive partnerships. This work will be complemented by an EU-funded and UNDP-implemented decentralized cooperative governance programme starting in 2006 for capacity building of state and non-state actors in project management.

103. 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 Strategy). Seychelles is part of the Atlantic and Indian Ocean, Mediterranean, and South China Seas (AIMS) grouping within SIDS, where it has assumed a leadership role.

2.8. Linkages with GEF Financed Projects

104. 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 links are elaborated below.

Table 15: On-going/ planned GEF projects in Seychelles

Project Name	Focal Area	IA	Description and Linkages
Improving Management of NGO & Privately Owned Nature Reserves & High Biodiversity Islands	Biodiversity	IBRD	The 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 BD Mainstreaming Project is broader in scope (dealing with production interests), and does not directly target ecological restoration work on small islands. The two projects are thus synergistic and the BD Mainstreaming project will liaise with this project during the development and inception stage, and will take into account the lessons learned, especially with regard to community participation

Project Name	Focal Area	IA	Description and Linkages
			and incentives.
MSP on "Capacity Development and Mainstreaming of Sustainable Land Management in Seychelles (SLM)"	Land Degradation	UNDP	The Seychelles is developing a small medium sized project (<US$ 300,000) to build capacity to attenuate land degradation. The initiative is being designed to take full account of the scope of and strategies employed by the BD Mainstreaming project. In particular the SLM project will focus on sectors that are not addressed under this project, namely forestry, agriculture and urban and peri-urban settlement. The BD Mainstreaming project focuses mainly on the coastal zone and biodiversity specific planning and management needs, while the SLM project will address "brown issues" (i.e. problems such as soil erosion, land slippage and chemical degradation of soil). The BD Mainstreaming project will liaise fully with this project, especially where it concerns agricultural land use initiatives and forest degradation.
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 BD mainstreaming Project, which will not address the capacity needs of the EMPS. The NCSA follow on project will also develop capacities for state of the environment reporting thus complementing the knowledge management activities of this project.
Reduction of Environmental Impact from Coastal Tourism through Introduction of Policy Changes and Strengthening Public-Private Partnerships	International Waters (Regional)	UNEP/ UNIDO	The planned project aims at reducing contaminant discharge into coastal waters from tourism developments in coastal areas in 10 African countries. The Seychelles will participate in regional activities aimed at distilling and disseminating knowledge and providing training. The tourism related activities of the BD Mainstreaming project will be linked to the initiative, allowing lessons and good practices to be shared widely at the regional scale. The regional project, will not provide funding for specific demonstration work in the country, so as to avoid overlap,
Agulhas and Somali Large Marine Ecosystem Programme (ASCLME Programme) West Indian Ocean Marine Electronic Highway Project	International Waters (Regional)	IBRD/ UNDP/ UNEP IBRD	Funding for a suite of regional projects has been provided to build the capacity of the countries in the Western Indian Ocean to manage the Large Marine Ecosystems of the Area. Projects under the ASCLME Programme will seek to fill gaps in information in the following areas: land based sources of pollution, fisheries, productivity and oceanography. The focus is on mitigating threats to trans-boundary resources, such as over fishing of pelagic fisheries and release of contaminants into coastal waters. The Programme will develop a trans-boundary diagnostics analysis (TDA) and Strategic Action Programme (SAP) defining priority measures that may be adopted by the region to address shared trans-boundary concerns. The Programme will thus contribute to efforts to manage pelagic fisheries and other issues, outside of the scope of this project. However the Biodiversity project will share data and with the

Project Name	Focal Area	IA	Description and Linkages
			ASCLME Programme for the purposes of preparing the TDA. The Seychelles lies in a major oil shipping lane. It is vulnerable to oil spillages caused by accidents at sea, including ship collisions. The WIO Marine Electronic Highway project will build regional capacity to manage ship navigation to reduce this risk. The initiative is wholly complementary to the Biodiversity project, reducing the risk of oil spillages in ecologically vulnerable areas.

2.9. Sustainability

105. Sustainability has been a major consideration throughout the development of this project. The different facets of sustainability are analysed thematically for each of the major outcomes of this project.

106. **Land/water/coastal use planning.** The institutional base for the new LWC use planning system exists already. What has been lacking has been the commitment to give land use plans the statutory power needed to make them effective planning tools for sustainable development. In particular, the development of a sustainable development plan for the Outer Islands presents an exceptional opportunity to maximise the chances for ensuring the biodiversity conservation objectives are addressed when spearheading development initiatives. The Outer Islands are unique in their near lack of physical presence of either private sector or Government entities. The Outer Islands present a rare opportunity to integrate biodiversity conservation into private sector investments from the very start of development planning instead of trying to make difficult post facto adjustments to investments.

107. **Participatory management of artisanal fisheries**. Seychelles has reached a critical point at which the catch per unit effort (CPUE) of the open access artisanal fisheries is falling. Unchecked, this would lead to decreases in the total amount and the value of the catch. The total catch, the CPUE and the value of the artisanal fisheries are dependent on replacing open access with management systems that set geographical and numerical limits on fishers. The focus of the artisanal fisheries outcome will be on the development of participatory, rights-based artisanal fisheries management systems. Close attention will be paid to ensuring social equity, economic viability and ecological sustainability. Much of the enforcement of regulations under the new management systems will be undertaken by the fishers themselves – applying the regulations that have been developed jointly through a consensus building process. One of the tools for sustainable management of the artisanal fisheries will be the use of no-take-zones (NTZ). Experience around the world has shown that NTZ management of coral reef and near-shore fisheries is a win-win strategy. Biodiversity conservation is obviously much more effective with the NTZs. But the NTZ set-asides result in an overall increase in the absolute amount of the catch as well as an increase in the per kilogram value of the catch – because the average size of the fish caught is greater. There is therefore a clear economic incentive for fisher-based resource management.

108. The greatest dangers to sustainability arise from conflicts that may develop through the awarding of exclusive fishing rights to specific fisher “communities”. There is however, already a certain level resource partitioning for most artisanal fisheries that this project will build upon. Great attention to equity and good governance will be made in the definition and allocation of fishing rights using a highly participatory approach. Continued bleaching events and ecological changes resulting from climatic change and ocean acidification are to be expected, although their precise nature is not fully predictable. Although there can be no guarantee of ecological sustainability in this context, local control over local resources, accompanied by the development of adaptive management systems, should optimise the prospects for assuring sustainability.

109. **Joint management of ecologically sensitive areas** by tourism operators provides one of the most

obvious opportunities for leveraging private sector investments for biodiversity conservation. Joint management should remain viable as long as tourism operators can realise a profit from their investment in the protection and management of these areas. The biggest risks to the sustainability of joint management are the same macro-economic risks to the tourism sector in general and to the world economy that tourism depends upon. On another level, the sustainability of joint management is also dependent upon Government policies that promote investments by production sectors (incentives), and identifying financing mechanisms. The EMPS provides a firm basis for this and policy trends for the foreseeable future are positive in this respect. There are already good examples of tourism industry behaviour in Seychelles and industry-led examples of mainstreaming in other countries. Tourism operators in Seychelles increasingly recognise that their business model is economically dependent on the ecological, social and cultural environments within which they operate. The sustainability label will trade on this reality, so as to encourage its wide uptake.

110. An economic assessment has been performed during project preparation to assess the profitability of enterprises in the tourism and fisheries sectors. A modelling exercise was undertaken for different enterprise types, using data from the Seychelles Investment Bureau, the SFA, individual operators and from research and analysis. The enterprises considered included hotels and guesthouses, yacht charter, diver centres, and artisanal fishing. The economic yardsticks used included the Internal Rate of Return, Average Net Profit: Capital Ratio and Average Capital: Turnover Ratio. The analysis showed that net profitability in these sectors should be sufficient to accommodate the additional marginal costs associated with adapting production practices[18]. However, more detailed second order analyses will need to be undertaken at the enterprise level to define the exact costs and benefits associated with different conservation interventions. Provision is made for this in project design. Activities will be designed to ensure cost effectiveness, so as to encourage uptake by businesses. This is a key pivot of the strategy to ensure the financial sustainability of interventions initiated by businesses.

2.10. Replicability

111. The Project incorporates good biodiversity management practices that have been demonstrated elsewhere. Relevant good practices have been integrated within project design. The Seychelles is already a leader in the biodiversity conservation field, and has developed numerous good practices, especially with respect to the restoration of small island ecosystems. The merger of the "Seychelles" experience with good practices distilled from other SIDS is expected to yield a number of powerful new models with promising potential for replication not only within the Indian Ocean region but also globally. The project has been designed based on a careful analysis of barriers to biodiversity conservation in production sectors. Some of the barriers to be addressed are cross-cutting and some are sector specific. Accordingly, the project has been designed to work at two levels. A first set of interventions will create the enabling conditions for more effective mainstreaming of biodiversity conservation. The second set will be composed of sector specific interventions, which will pilot improved production systems.

112. Replication will be promoted at two levels. At a national level, the project will seek to roll out promising management approaches and good practices tested and adapted at discrete sites in other locations. The Project will work at the national level through industry associations, ENGOs and other actors to promulgate the scaling-up of good practices across each sector. 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. Table 16 identifies the needs and opportunities for replication, presents the strategies for replication and gives information on the scope, timing and costs of replication activities.

[18] However the results are highly sensitive to the assumptions, for instance the number of beds and occupancy rate of hotels. This factor will be considered in subsequent economic assessments, in order to manage investment risks.

Table 16: Replication Strategies

Outcome	Needs/Opportunities for Replication	Project Strategy for Replication	Scope and Timing	Cost (US$)
Outcome 1: Enabling conditions for the mainstreaming of biodiversity management within and across sectors are strengthened.	Enabling conditions that may be replicated in the region, or beyond, are the following: a) new land use planning legislation; b) the synthesis of biodiversity conservation priorities and the gap analysis of the status of these priority sites; c) guidelines for integrating geographic biodiversity conservation priorities are formally adopted; d) appropriate land use zoning categories for every priority biodiversity conservation site in country identified.	Key strategy for replication is the web site that is set up. The UNDP/ Knowledge Management System Network will play a key role in sharing information within and across regions. Regional fora that will be used for sharing information on enabling conditions are the following: • COI / IOC • WIOMSA • ICRAN • The AIMS group with the SIDS	Regional/life of project Regional/ life of project Regional/ ongoing as regional fora occur	10,000
	The agreed standards for biodiversity inventory, assessment, monitoring, data storage and access will need to be adopted by all users.	Development of the standards will be an open, transparent, participatory process, leading to adoption by consensus. Use of standards will be obligatory for all project funded interventions.	MENR & other Government agencies, ENGOs Ongoing in Yrs 2-6	15,000
	Integration of biodiversity priorities/ecologically sensitive areas into LWC use planning process will be done with Project assistance at the national and Outer Islands levels, but integration into district-level land use planning needs to be replicated for every District preparing district land use plans.	Capacity for integration into all LUP will be built in MLUH and MENR and training will be conducted for all districts. Web site will be used for regional replication.	District planning bodies Annual Yrs 2-6 Regional/ Yrs 3 to 6	24,000
Outcome 2: Methods and means for integrating biodiversity conservation and artisanal fisheries management are in place.	Output 3.2 is specifically for the replication of the participatory, rights-based model management systems for artisanal fisheries developed at pilot sites under Output 3.1. These pilot systems need to be replicated throughout all the suitable artisanal fishing grounds in Seychelles.	The strategy is to build capacity within SFA, FBOA /fishers' associations on the pilot sites and ENGOs for awareness raising and replication/ adaptation of the participatory pilot models throughout the fishing waters of Seychelles that are suitable for each type of artisanal fisheries management. FBOA will be used as a vehicle for awareness raising.	National Ongoing Yrs 2-6	200,000
	The pilot artisanal management systems should also be replicated and adapted more broadly throughout the region and beyond.	The main tool will be the Project Web site. The following regional fora will be used: • IOC • WIOMSA • ICRAN	Regional Ongoing in Yrs 2-6	14,000

Outcome	Needs/Opportunities for Replication	Project Strategy for Replication	Scope and Timing	Cost (US$)
		• NEPAD • The AIMS group with the SIDS		
Outcome 3: The tourism industry is addressing biodiversity conservation needs as part of good practice in business operations.	The joint management systems for biodiversity conservation of ecologically sensitive areas should be replicated and adapted to all suitable terrestrial and marine sites in Seychelles wherever conditions are suitable.	The criteria and conditions for joint management will be developed and demonstration sites will be established. A major awareness raising effort will be developed through MENR, DOT, STB, SHTA and ENGOs. Adaptive management reviews will be done annually with all joint-management partnerships, leading to dissemination of lessons learned and best practices. Exchange visits will be organized for interested parties.	National Ongoing Yrs 2-6	24,000
	A national sustainability label is developed and is widely adopted by tourism operators	The labelling system will be set up in Yrs 1 & 2 and will be tested in Yr 2. Following modifications, a national marketing program will be launched in Yr 3 seeking widespread interest and adoption. Information on the labelling systems will be disseminated in the region through the Web site (clearinghouse) and other fora (seminars, working sessions, conferences, etc.) and through the activities of the World Tourism Organisation.	National Yrs 3 to 6- Regional Yrs 2 to 6	24,000

2.11. Lessons Learned

113. 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 mainstreaming. The latter was undertaken for the GEF Scientific and Technical Panel (STAP) in preparation for a mainstreaming workshop in September 2004. Lessons from the BPSP Biodiversity Planning Support Program in regard to tourism and fisheries have also been accommodated.

Table 17: Lessons Learned

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
Cross Cutting			
Need to establish that the private benefits of interventions outweigh the costs over the long term. Mechanisms to compensate for the public good attributes of interventions should be established through	Relatively little work done in Seychelles on economics of land use. Project addresses two sectors: tourism and fisheries, where businesses are intrinsically dependent on ecosystems and have motivations to address	Analyses undertaken during project preparation established win-win opportunities within the fisheries and tourism sectors encouraging the involvement of the private sector. Economic analyses to be undertaken during implementation will weigh the cost versus the benefits of industry involvement in activities design and	Outcome 1: Outputs 1.1 & 1.4 Outcome 2: Outputs 2.1 & 2.2 Outcome 3: Outputs 3.1 & 3.2

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
incentive mechanisms.	threats.	rollout. In tourism, this includes certification systems, BD offset requirements will be incorporated into LUP and licensing regimen. Fisheries will establish user rights and vest benefits in people that bear the costs of stewardship, thus overriding the free rider problem.	
Effective mainstreaming requires attention to the enabling environment, in particular to ensure that policies, strategies and plans are in compliance, that there is strong political support and an institutional framework to implement policies.	Strong policy framework for environment. Good institutional capacities within Government and NGOs. Political commitment developed during project preparation for development and passage of new legislation for LWCUP. Focus has been on PAs rather than addressing threats deriving from production sector activities. Expanding the enabling environment to accommodate this need, in particular, ensuring engagement outside the environment sector.	Knowledge management capacities for biodiversity conservation will be strengthened considerably and integrated into land use planning and production sectors. New legislation for LWCUP and participatory LWCUP systems will be developed and LWC plans will be produced and implemented. Annual stakeholder reviews of the Project component will be led by civil society.	All Outputs in Outcome 1
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.	Implementation modalities Outcome 1; Output 1..3
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 PMU 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 act as a deterrent against malfeasance.	SFA lacks resources for meaningful enforcement of existing top-down regulations on artisanal fisheries. EIA process procedures are well established but	Artisanal fisheries co-management systems will transfer much of the burden for enforcement onto the fishers themselves and will make partners rather than antagonists out of fishers. Participatory LWC planning and civil society oversight will lead to improved	Outcome 1; Output 1.2. Outcome 2; Output 2.1 Outcome 3: Output 3.1

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
	enforcement is irregular.	governance and enforcement for EIA systems.	
Need to find systems for managing conflicts as they arrive.	Conflicts occur fairly frequently but measures for conflict management are poorly developed.	Project places strong emphasis on development of partnerships for management of environmentally sensitive areas and for artisanal fisheries. Annual stakeholder review will provide an official forum for civil society stakeholders to evaluate the program and to recommend changes.	Outcome 1; Output 1.3. Outcome 2; Output 2.1. Outcome 3; Output 3.1
Fisheries			
Fisheries need to involve fishermen in undertaking stock assessment and defining sustainable off takes and management measures	Stock assessments for the sea cucumber co-management plan were performed unilaterally by specialists working for SFA. Results were difficult to accept by fishers as basis of sustainable catch calculations. SFA now involves fishers in stock assessments.	The development of co-management pilot systems for other artisanal fisheries will be highly participatory and adaptive management procedures will be standard. Capacity of fishers to understand and to participate in sampling procedures and other technologies will be built.	Outcome 2; Output 2.1 & 2.2
Need to ensure benefits (in terms of increased recruitment from spatial fisheries set aside areas) are quickly obtained and visible.	Recruitment effects will be different for different species. Lobsters and some other species rebound quite quickly	Increases in catch contiguous to MPAs will be studied jointly with fishers. Study tours to successful co-management sites in the region will be organized. Protection of rabbit fish spawning aggregation areas will yield rapid population response. The first artisanal fishery targeted is the trap fishery. The very wide range of species is sure to include several that display rapid recovery to diminished fishing pressures.	Outcome 2; Output 2.1 & 2.2
Management systems need to integrate adaptive management principles.	SFA has initiated periodic adaptive management joint reviews with fishers as part of their pilot management system for sea cucumbers. All other artisanal fisheries have no management plans and no co-management systems.	Adaptive management will be a basic principle of project interventions in all sectors. Adaptive management reviews will be a basic part of the all fisheries co-management pilot systems. Review will include SFA, fishers, actors in the market chains for the products concerned, ENGOs, concerned tourism operators and other stakeholders.	Outcome 1; Output 1.3 Outcome 2; Output 2.1
Tourism			
Visitors need to be aware of their impacts and environmental externalities imposed by the lodgings.	Relatively little has been done to target visitors with such messages to date.	Awareness raising for tourists/visitors will be an integral part of the marketing of the new tourism sustainability label.	Outcome 3; Output 3.2

Lessons	Notes on Seychelles	Design Feature	Outcome / Output
Certification systems need to be designed with the full involvement of the industry from the start to optimise uptake.	The tourism industry has been involved in dialogue with DOTT & STB and workshops on this subject. Industry support for labelling was further developed and validated during Project preparation.	SHTA and industry leaders will be fully involved from the beginning in the development of the sustainable tourism label and in the promotion of EMS standards.	Outcome 3; Output 3.2

PART III: Implementation Arrangements

3.1 Execution and Implementation Arrangements

114. The Project will be implemented over a six-year period, and will be executed by MENR, in close consultation with all implementing agencies and pertinent stakeholders, and in conformity with the EMPS. The project will receive backstopping from UNDP (the GEF implementing agency). A Project Steering Committee (PSC) will direct and steer the project and will report to and receive guidance from the EMPS Steering Committee. The different Outcomes will be implemented by different lead agencies, in close consultation with the relevant stakeholders through existing or newly created committees and stakeholder fora. Since the objective of the project is to mainstream biodiversity management into the operations of the main production sectors, a high level of involvement of the private sector is required. This will be achieved by working through the trade associations, as well as through individual private enterprises that may act as environmental champions. This is likely to be established though partnerships with civil society groups, ie. Environmental NGO's, that may have the drive and expertise to assist the private operators to effectively conserve biodiversity areas of concern. The day to day implementation and monitoring of the project will fall to the Project Management Unit (PMU). Technical advice will be provided through short-term international and national technical advisors directly engaged by the Project. Many of the activities will be contracted out to NGOs through a transparent and independent tender process. The implementation and management structure of the Project is illustrated in the organogram (Figure 1), and the roles and responsibilities of implementing partners are detailed in the Stakeholder Involvement Plan (Annex III).

Project Steering Committee (PSC)

115. The Project will be directed by a Project Steering Committee (PSC), co-chaired by MENR and MEPE. The PSC is a sub-committee under the EMPS, to which it will report periodically. The primary task of the PSC is to set the policies and provide guidance (institutional, political and operational) and direction for the Project to ensure that it remains within the agreed framework, and achieves its outcomes and objectives.

116. The Project Manager will be responsible for the implementation of the PSC policy and direction and for reporting back to the PSC on progress of the Project. Membership of the PSC will be on an honorary basis and no fees will be paid. However, any actual and reasonable expenses incurred by members of the private and non-Government sector in conducting affairs directly related to PSC activities will be reimbursed. Membership will comprise of the following: MENR/DOE (Co-chair), MEPE (Co-chair), FBOA, SHTA, SCCI, STB, SFA, two ENGOs, MLUH and the Project Manager. Observers, advisors and other participants will attend on invitation and at the discretion of the Chair. PSC business will be conducted on a consensus basis. The PSC will meet quarterly (to consider and clear Budget and workplan issues) or more frequently if required PSC will receive technical advice from consultants and from working groups that may be formed to address specific needs as they arise.

Project Management Unit

117. The PMU will oversee and support the implementation of all daily Project activities. The PMU will be composed of a Project Manager (PM), an Administration and Finance Officer and support staff (Finance & Administration). Most of the activities will be implemented on a contractual basis. The PMU will be responsible for coordinating the work of all the project components. The PMU will assume the following duties:

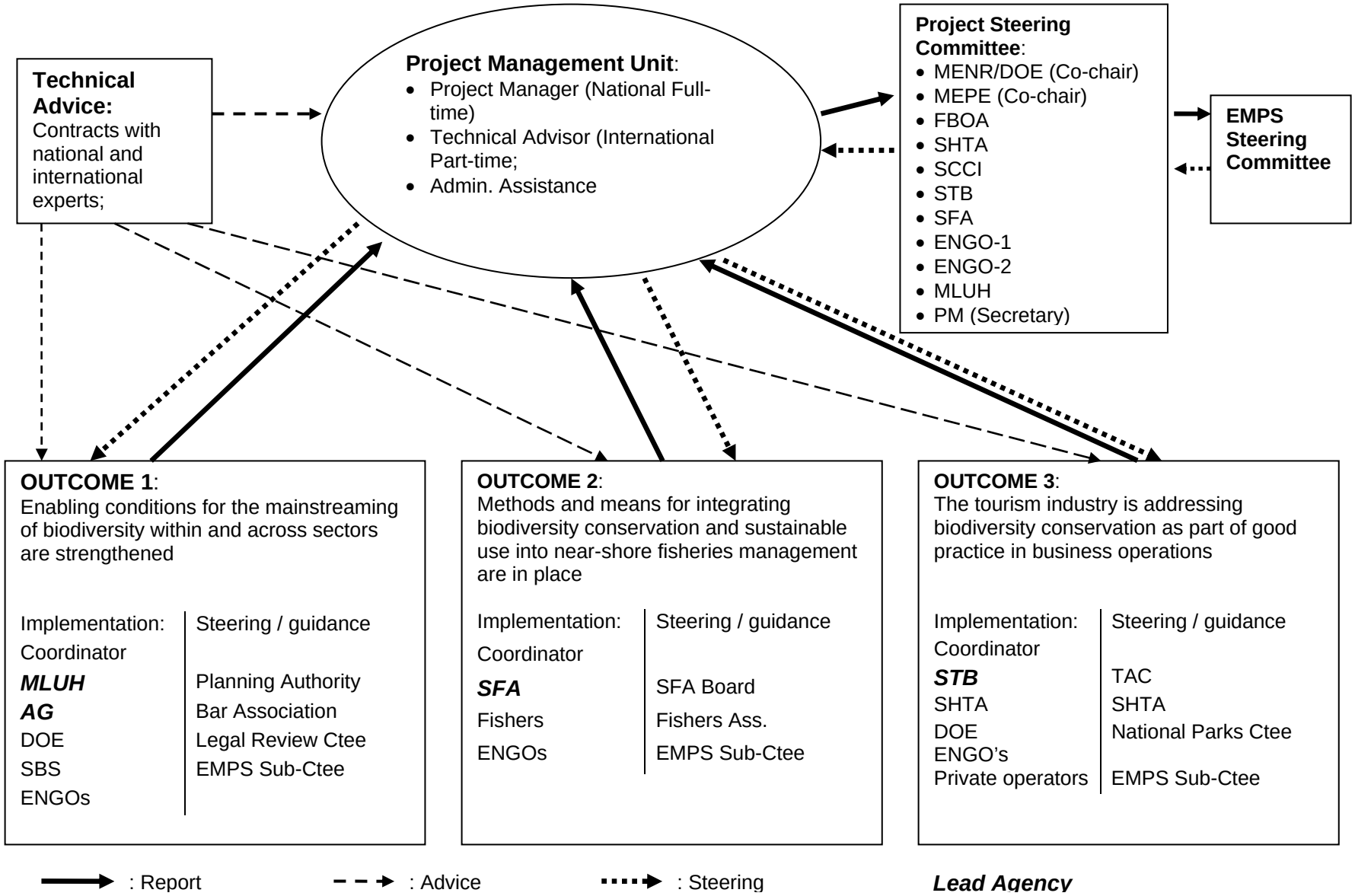
(i) preparing quarterly and annual progress reports;
(ii) preparing annual work plans;
(iii) preparing terms of reference and tender documentation for good and services outsourced to vendors;
(iv) coordinating project activities, and taking steps to identify and resolve implementation bottlenecks;
(v) preparing and disseminating project reports and other information materials;
(vi) maintaining accounting books and records required for sound financial record-keeping and internal control in line with generally accepted accounting principles;
(vii) submitting timely progress reports to the Executing Agency.

Implementation

118. The different Outcomes, or components (i.e. on: Policies/legal framework; Fisheries; Tourism) will be implemented by the relevant lead agencies. These will be guided by respective committees and stakeholder fora (e.g. legal review committee, National Parks Committee, Tourism Advisory Committee). These committees may be re-structured and will receive specific support to be able to perform their tasks. Specific strategic guidance and technical assistance for achieving the set outputs will come from the PMU, or may be specifically contracted within or outside of the country. Most activities will be contracted out through a transparent and independent tender process, following UNDP regulations. These will include work at fisheries or tourism demonstration sites in partnerships between private sector and NGOs. A strong administrative set-up within the PMU will be installed to prepare, guide and monitor the contractual process

119. The responsibility for Project delivery/impacts ultimately rests with UNDP, acting as the GEF implementing agency. UNDP will monitor all activities and outputs. 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 User Guide.

Fig. 1. Implementation and Management Structure



PART IV: Monitoring and Evaluation Plan and Project Budget

120. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures. The Logical Framework Matrix in Section II provides impact indicators for project implementation along with their corresponding means of verification. The Monitoring and Evaluation Plan is appended to Annex III. This provides: (i) a detailed explanation of the monitoring and reporting system for the project; (ii) a presentation of the evaluation system; and (iii) a work plan and the budget for M&E.

121. The Project Management Unit will be responsible for day to day monitoring activities. The Project Manager 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 objectives of these reports are detailed in Annex III. 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.

122. *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.

123. The project will be subjected to at least two independent external evaluations:

(i) 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;
(ii) 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.

124. The Government 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 the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

125. Total project financing amounts to US$ 11,293,360, excluding preparatory costs. Of this, the GEF will finance US$ 3,700,000. Total co-financing amounts to US$ 7,593,360, broken down as follows:

Table 18: Outcome Budget
(US$, 5 years)

Outcome	GEF	GOS	EU	ENGO's	Private Sector	TOTAL
1. Enabling conditions	1,744,750	598,520	700,000	352,150	32,300	3,427,720
2. Fisheries	965,000	1,353,140	400,000	20,790	31,180	2,770,110
3. Tourism	990,250	1,092,780	400,000	770,000	1,842,500	5,095,530
TOTAL	3,700,000	3,044,440	1,500,000	1,142,940	1,905,980	11,293,360

Cost Effectiveness

126. The natural ecosystems of the Seychelles are still relatively intact when compared to other small islands. This is because development pressures have hitherto been fairly constrained. However, macro-economic and other stimuli are spurring the country to expand the pace of economic development. This is already manifest in decisions to increase hotel capacity in the country, and pressures to increase the scale of artisanal fisheries and the fishing grounds targeted by fishing vessels. Consequently, threats to biodiversity are set to accelerate substantially. Once degraded, the costs of restoring island ecosystems are extremely high. Indeed, some ecological changes are likely to be irreversible. In contrast, the costs of preventing ecological degradation from occurring in the first place are more modest. This project is different from past programmes in the country in that it seeks to remedy threats to biodiversity by modifying operational practices in production sectors that are the key drivers of economic change. Over the longer term, this approach is expected to be more cost effective than approaches that attempt to address the symptoms of threats without a deeper sector focus. Furthermore, by adopting a precautionary approach to biodiversity conservation, the project is expected to eliminate or lessen threats that might otherwise have occurred, thus reducing future threat mitigation costs, and avoiding the need for costly investments in island restoration.

127. **Fisheries.** The cost of enforcing top-down fishery management approaches without the active participation of fishers is very expensive and in many instances unsustainable. The proposed co-management strategy will shift a portion of the cost burden of compliance monitoring and enforcement to the fishers themselves. Past attempts to create marine protected areas have tended to lock out fisheries, leading to conflicts with fishermen. Such approaches have tended to have high opportunity costs and to work only on a small scale. Fishers were not involved in the creation of the existing MPA network. They resent this and are distrustful of proposals to create new MPAs. By seeking to accommodate production needs with conservation objectives, the proposed strategy is deemed ultimately to have a higher chance of success. Accordingly, this is expected to result in a more effective future application of scarce conservation monies.

128. **Tourism** The project seeks to galvanise support and investment from the tourism industry in managing on-site impacts and off-site externalities. It is recognised that developments may impose collateral damage, even when planned and executed to the highest standards and in compliance with EIA legislation. The project will seek to internalise these costs by providing developers with a menu of management options, which could include on-site and off-site remediation work. While investment will be encouraged through modifications to tourism licensing regimen and through incentives, the focus will be on setting standards and leaving it to the operator to work out how best they may be realised. This approach is

anticipated to be more cost effective in the long run when compared to strict command and control approaches.

PART V: Incremental Cost Analysis

National Development Objectives

1 The Government of Seychelles is presently drafting a new National Development Plan (NDP 2005 – 2015), entitled 'restoring growth and stability". The over riding development objective is to improve economic performance, and foster economic growth rates well above the trend level in the recent past. This is vital to sustain the remarkable 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 market access preference to the EU market for fisheries products, and slowdown in global 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 structure of the country, which is marked by the essentially heavy reliance of the country on the tourism and fishery industries. The continued growth of these two sectors, and of the economy by extension, depends on the sustainable use and conservation of the country's natural resources, and on the effective protection and management of its natural environment.

Global Environmental Objectives

2 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 the rate of endemism is high. Some taxa are threatened or endangered, in particular the higher plants, birds, turtles, amphibians and invertebrates. 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 other, but the main threats to biodiversity emanate from the production sectors. The Project aims to integrate biodiversity conservation into key production sectors of the economy. The project is mainly designed to counter the threats to biodiversity from increased physical development of the main granitic islands, overfishing and environmental impacts associated with tourism. It attempts to address this by safeguarding habitats and sensitive ecosystems against fragmentation from physical development, and from pressures linked to tourism and fisheries activities.

Baseline Scenario

3 A total investment of some US$23.96 million equivalent will be provided by different national stakeholders over the next five years to address the principal threats facing Seychelles biodiversity. Under the baseline scenario, defined as business as usual, a number of significant interventions will be financed to improve biodiversity management by the Government, NGO community and private sector. While insufficient to ensure that the Seychelles' globally significant biodiversity is secured, these activities provide an important foundation in which this project is nested. A sketch of the baseline follows below:

4 <u>Enabling environment</u> The total baseline investment under this component is estimated at US$ 10.3 million. This includes spending by MENR of some US$0.67 million in discharging EIA oversight obligations. Several Government ministries (mainly MLUH) and the office of the Attorney General will allocate some US$3.32 million to revise existing legislation and put in place new legislation and policies for land use planning (LUP), to run the Town and Country Planning Authority, and develop 'District Development Plans in several districts, It will also cover the costs of running the GIS unit. Some investment will be made by the country's education institutions (MEY and Ministry of Manpower and Administration) to continue capacity building programmes aimed at middle and senior-level managers. A

total of US$ 4.73million would be spent on the control on invasive alien species across the landscape, including eradication activities on small islands and port controls (inspection and quarantine services).

5 Artisanal Fisheries: The total baseline investment under this component is estimated at S$7.16 million. This includes investments of some US$5.38 million by SFA, Indian Ocean Tuna Commission (IOTC) and MENR to continue to develop and implement fisheries management systems, regulations, enforcement and M&E systems, to develop a National Plan of Action for Seychelles' shark fishery, to map the shallow marine environments of a number of the southern islands of Seychelles and to develop a satellite-based fishing vessel monitoring system. NGOs and fishers' associations will spend some US$0.20 million to identify critical reef fish spawning aggregation and to continue the monitoring of coral reefs.

6 Tourism: The total baseline investment under this component is estimated at US$6.46 million. This includes investments through the private sector and NGOs to continue development of partnerships for conservation actions including management of eco-tourism (e.g. Banyan Tree resort + MCSS; Cousine Island + Cousin + Nature Seychelles; North Island Resort + ICS). The Seychelles Island Foundation (quasi NGO) will continue to manage Aldabra and Vallée de Mai World Heritage Sites. Estimated funds of some US$1.19million will be spent by STB and DOTT to promote tourism development strategies that both conserve the environment and that aid in marketing Seychelles as a quality tourism destination. The Department of Tourism will work with the University of Zurich to carry studies on visitor carrying capacity, and assess the viability of Environmental Management Systems for the tourism industry[19].

Alternative Strategy

7 The Seychelles Government has limited financial and human resources and the knowledge base to move beyond simple nature conservation paradigms and to ensure that biodiversity is valued, used sustainably and users and other key national stakeholders investments are investing themselves in management. The total cost of the baseline is US$23.96 million. This is not sufficient to ensure that biodiversity conservation objectives are addressed outside of protected areas in production landscapes and integrated into production practices. As these practices drive many of the threats to biodiversity, it stands that the root causes of many threats will be left unattended. This in turn will serve to compromise the efficacy of baseline programmes. The GEF Alternative aims at addressing the unmet need for conservation paradigms that better integrate conservation with production objectives. The aim is to improve implementation capacity, build long term partnerships to foster capital investments in ecosystem protection, and restoration, remove perverse subsidies and other barriers, and create new development practices. The total cost of the Alternative is US$35.254 million, exlusive of preparatory assistance with an incremental cost of US$11.427 million (32% of the Alternative) for which GEF assistance of US$3.7 million is requested (32% of the total increment). The GEF has invested US$ 0.3 million in preparatory assistance.

8 Enabling conditions for the mainstreaming of biodiversity within and across sectors are strengthened: The incremental cost for this component is US$ 3.428 million with requested GEF funding amounting to US$1.74 million to ensure the mainstreaming of biodiversity management concerns into physical and sector planning processes, and install a high quality knowledge management system that indicates biodiversity concerns based on high standard participatory assessments. GOS will commit US$0.59 m for land use planning, and to make necessary legislative revisions. Local stakeholders, including NGOs and private sector will provide some US$0.39 million to undertake biodiversity

[19] The Government would also make associated investments in improving the management of solid wastes and effluents, with funding from the EU, ADB and others. The tourism related investment amounts to US$ 14.2 million, and includes the improvement of solid waste management infrastructure on Mahé and development of a sewage treatment facility on Praslin. The costs will be recovered through a user fee to be levied on hotels. Excluded from the baseline analysis are the investments likely to be made by new establishments in environmentally friendly technology, energy saving devises (solar powered equipment), and sewerage treatment plants.

assessments, and strengthen information management systems. The EU will provide US$0.7 million, mainly for biodiversity assessments, knowledge management, developing coastal zone policies and plans, and related strengthening of capacities.

9 Methods and means for integrating biodiversity conservation and artisanal fishery management are in place: Total incremental costs for this component are US$2.77 million with requested GEF funding of US$0.96 million. The SFA will commit US$1.2 million for demonstration activities, including for artisanal fishery stock assessments, and monitoring and enforcement. The EU, through its Regional Coastal Zone programme will fund local coastal fisheries programmes (US$ 0.4 million), including development of improved management plans for artisanal fisheries management. GEF will provide funding to demonstrate the utility of co-management systems with artisanal fishers, including funding for community mobilization and institution building, technical assistance for monitoring and limited equipment (i.e. buoys, etc.).

10 The tourism industry is addressing biodiversity conservation as part of good practice in business operations: The total incremental cost for this component is US$5.1 million with requested GEF funding of US$0.99 million, or 19% of total increment. GOS, through the Department of Tourism and the STB will contribute US$ 1.0 million for tourism promotion activities and the development of interpretation materials. Local stakeholders, including NGOs and private sector will provide some US$2.6 million, in direct investments for the management of ecologically sensitive areas. The EU will allocate US$ 0.4 million under the COI Regional Coastal Zone Management programme to mitigate threats posed by tourism to biodiversity in coastal zones. GEF funding will support activities to develop and promote appropriate sustainable labels and Environmental Management Systems for tourism operators. It will also support putting in place viable incentives and sustainable financing for mainstreaming biodiversity concerns in the tourism sector, and demonstrate and replicate joint conservation management systems with tourism operators.

Incremental Cost and Benefits

11 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$23.96 million. The cost of the additional activities required to achieve the project outcomes is estimated at US$11,293 million of which the GEF would finance US$3.7 million and co-financiers (local and international) US$7.593 million. PDF B project preparation costs amounted to US$0.33 million with US$0.3 million from GEF. The total cost of the Alternative Strategy, comprising of the total project costs and the baseline, excluding preparatory assistance is US$35.254 million..

Table 19: Incremental Cost Matrix

Outcome	**Cost**	**Cost ('000 US$)**		**National Benefits**	**Global Benefits**
Outcome 1: Enabling conditions for mainstreaming biodiversity management within and across sectors are strengthened	Baseline	Nat Ass	218.0	- Improved environmental governance capacities	- Improved policy and legal foundations for biodiversity conservation creates an enabling environment for integrating BD friendly practices into production
		GOS	9603.3		
		Env NGOs	275.5		
		Private Island Owners	242.5		
		Total	**10339.3**		
	Increment	GEF	*1744.5*		
		Others			
		EU	700.0		
		Nat Ass	6.5		
		GOS	592.0		

Outcome	Cost	Cost ('000 US$)		National Benefits	Global Benefits
		Env NGOs	352.2		
		Private Sector	32.3		
		Total	**3427.5**		
	Alternative	**Total**	**13766.8**	- National and local stakeholders engaged in mainstreaming of biodiversity activities - National biodiversity meta-database making available accurate and transparent information to all stakeholders. - New laws for land use planning - Conservation of ecologically sensitive sites included in the land use plan and process	- Internationally designated sites (World Heritage, IBA, Ramsar Site, ICRAN Demonstration Site, etc.) and biodiversity hot spots secured for the long term through improved and integrated management models - Improved conservation of Ecologically sensitive areas of global importance; - Globally Endangered Species secured by reducing extinction threat levels
Outcome 2: Methods and means for integrating biodiversity conservation and artisanal fisheries management are in place	Baseline			- Sustained productivity for the national fishing sector.	- Overfishing of certain species (sea cucumber, sharks, etc.) mitigated
		Nat Ass	65.4		
		GOS (incl. IOTC)	6895.6		
		Env NGOs	31.2		
		Fishers' Associations	171.5		
	Increment	**Total**	**7163.7**		
		GEF	*965.0*		
		Others			
		EU	400.0		
		Nat Ass	130.8		
		GOS (incl. IOTC)	1222.4		
		Env NGOs	20.8		
		Fishers' Associations	31.2		
		Total	**2770.1**		
	Alternative	**Total**	**9933.8**	- Productivity for the artisanal fisheries around granitic islands and on the Mahé Plateau for high value fish species sustained. Catch per unit effort increased. - Improved governance from co-management systems.	- Improved conservation status of sensitive areas, including fish spawning aggregation sites. - Improved marine ecosystem health. Ecological balance improved. No-take-zones serve as mini-MPA. - Biodiversity conservation is integrated into artisanal fisheries management systems.
Outcome 3: The tourism industry is addressing biodiversity conservation as part of good practice in business	Baseline			- Increased national revenue from tourism. - Environmental concerns addressed by Tourism industry	- Regulations reduce the impacts on globally important biodiversity from pollution, sedimentation and habitat loss.
		Nat Ass	87.2		
		GOS	1005.6		
		Env NGOs	1540.0		
		Private Sector	3825.0		
		Total	**6457.8**		
	Increment				
		GEF	*990.3*		

Outcome	Cost	Cost ('000 US$)		National Benefits	Global Benefits
operations		Others			
		EU	400.0		
		Nat Ass	87.2		
		GOS	1005.6		
		Env NGOs	770.0		
		Private Sector	1842.5		
		Total	**5095.5**		
	Alternative	**Total**	**11,553.3**	- The resource base for Seychelles second largest economic sector is better conserved. - Joint management of conservation areas reduces the costs of management to Government. - Private Tourism Industry contributes to nature conservation	- Area of ecologically sensitive areas under effective conservation management increased. - Biodiversity conservation objectives integrated in a cost-effective manner into day-to-day operations of the tourism industry.

Summary Incremental Cost Matrix

Grand Totals	Baseline	All Stakeholders	23,960.5
	Increment	GEF	3,700.0
		Non GEF	7,593.4
	Preparation	PDF B	330.0
		Alternative	**35,583.9**

PART VI: Logical Framework Analysis

The LFA with Project Goal, Objectives and Outcomes is presented in Table 20. Annex II gives LFA with the Outputs + indicators.

Table 20. 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: Biodiversity conservation is integrated into key production sectors of the economy.	• Area of terrestrial and marine ecosystems under improved management or heightened conservation status.	No existing joint conservation management plans.	2000 km^2	41,400 km^2	• Geographic Information Systems (GIS) • SFA reports • STB reports • Marine Parks Authority • Departments of Forestry and National Parks • MLUH • Project Progress Reports; • Project Annual reports/PIR	• Government develops clear incentives and criteria for private sector investment in fisheries management, coral reef conservation, PA co-management and for other biodiversity conservation-related investment opportunities. • Tourism and fisheries can survive as vibrant production sector despite changing macro-economic factors such as rising oil prices, probable devaluation of the rupee, etc.
	• Increase in investments from production sectors in collaborative conservation management models	US$295,600 / yr	50% increase	100% increase	• Surveys • STB reports • DOT reports • SHTA reports • SFA reports • Statistics Division • Tourism operators	

Project Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Project Target	Sources of verification	Risks and Assumptions
Outcome 1: Enabling conditions for mainstreaming of biodiversity management within and across sectors are strengthened.	• New legislation is enacted for land use planning	Present legislation is outdated and ineffective	New comprehensive legislation passed	Laws enacted and implemen-ted	New legislation published in GoS official gazette.	• Government, civil society and private sector are able to work together in a participatory, constructive fashion.
	• % of geographic BD conservation priorities whose zoning status has been revised as needed as part of the land use planning process	Zero %	10%	40%	Published biodiversity priorities. MLUH records MENR records MTR and final evaluation	• 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. • MLUH moves forward quickly and efficiently to implement the new land use planning legislation • Key stakeholders are willing to undertake an open, participatory planning process for the Outer Islands
	• % of country covered under LWC use plans that have been approved by government	0%; No LWC plans legally approved	40%	100%	Targeted and published Surveys	
Outcome 2: Methods and means for integrating biodiversity and artisanal fisheries management are in place.	• Area for which fisheries co-management plans exist	0 km^2	2000 km^2 (near-shore fishing grounds for granitic islands)	41,338 km^2 (Mahé Plateau)	SFA-GIS Management Plans SFA Technical Reports Project Progress Reports Regulations	• Fishers will enter into co-management systems with government and will form effective associations for self-policing under collaborative management of near-coastal fisheries.
	• Catch per Unit Effort (CPUE): - inshore Grouper Guild	0.2 kg/man-hour (2003 estimate)	0.25 kg/man-hour	0.3 kg/man-hour	SFA technical Reports Progress Reports	

Project Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Project Target	Sources of verification	Risks and Assumptions
	- inshore Rabbitfish Guild	2 kg/trap/day (2003 estimate)	3 kg/trap/day	4 kg/trap/day	Fisher Surveys	• The need for foreign exchange does not drive fishers into unsustainable overharvest of spp. that they can export.
	• Spawning Stock Biomass (SSB) of *Lutjanus sebae* (Bourgeois; key target species of demersal line fishery)	Fishing effort uncontrolled; no management for SSB. SSB < 20% of unexploited stock.	Fishing effort controlled to attain SSB of > 20 %	Fishing effort controlled to attain SSB of 30 %	Stock assessment SFA technical Reports Progress Reports Surveys	
Outcome 3: The tourism industry is addressing biodiversity conservation as part of good practice in business operations.	• Additional hectares of ecologically sensitive habitats for which joint conservation management plans with tourism operators exist.	Private islands: Frégate, Cousine, D'Arros NGO managed Islands: Cousin, Aride,	+ 2000 ha marine + 2000 ha terrestrial	+ 6000 ha marine + 6000 ha terrestrial	Project monitoring system; Annual reports: MPA, Departments of Forestry and National Parks, STB, Department of Tourism	• Tourism industry is relatively unaffected by external economic considerations, e.g. increases in the price of petroleum, economic recession, etc.
	• % of tourism operators that complete qualifications and receive the sustainable tourism label.	Zero	20	40	Reports: Department of Tourism; STB; SBS	