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Part 2 - Detailed Report

Section D - Pacific Region

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OVERSEAS COUNTRIES AND TERRITORIES

ENVIRONMENTAL PROFILE

PART 2 - Detailed Report

Section B –
Pacific region

This study was financed by the European Commission and executed by the Joint-Venture of NIRAS PINSISI Consortium partners. The opinions expressed are those of the consultants and do not represent any official view of the European Commission nor the Governments of any of the overseas countries and territories or associated member states of the European Union.

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LIST OF ABBREVIATIONS AND ACRONYMS USED

ACAP	Agreement on Conservation of Albatrosses and Petrels
ACOR	Association Française pour les Récifs Coralliens
ACS	Association of Caribbean States
AEPS	Arctic Environmental Protection Strategy
AFL	Aruba guilders
AI	Ascension Island
AIG	Ascension Island Government
AIWSA	Ascension Island Works & Services Agency
AMAP	Arctic Monitoring and Assessment Programme
ANG	Anguilla
ANRD	Agricultural & Natural Resources Department
AOSIS	Alliance of Small Island States
APEC	Asia–Pacific Economic Cooperation
ARU	Aruba
BAS	British Antarctic Survey
BAT	British Antarctic Territory
BIOT	British Indian Ocean Territory
BRGM	Bureau de Recherches Géologiques et Minières
BVI	British Virgin Islands
CARICOM	Caribbean Community and Common Market
CAFF	Conservation of Arctic Flora and Fauna
CAY	Cayman Islands
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCC	Cod and Climate Change Programme
CDB	Caribbean Development Bank
Caribank	Caribbean Development Bank
CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CDERA	Caribbean Disaster Emergency Response Agency
CDS	Catch Documentation Scheme
CEHI	Caribbean Environmental Health Institute
CESC	Conséil Economique, Social et Culturelle (FP)
CIA	(US) Central Intelligence Agency
CITES	Convention on International Trade in Endangered Species
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CNRS	Centre National de Recherche Scientifique
COLTO	Coalition of Legal Toothfish Operators
CoP	Conference of the Parties
CPA	Country Poverty Assessment
CPACC	Caribbean Planning for Adaptation to Climate Change
CR	critically endangered (IUCN classification)
CRISP	Coral Reefs in the South Pacific
CROP	Council of Regional Organizations of the Pacific
CSD	Commission on Sustainable Development
CSM	Caribbean Single Market
DAF	Direction de l'Agriculture et de la Forêt (Mayotte)
DCNA	Dutch Caribbean Nature Alliance
DEACI	Department of Economic Affairs, Commerce and Industry
DEFRA	(UK) Department of Environment, Food and Rural Affairs
DEPD	Development & Economic Planning Department (St Helena)
DfID	(UK) Department for International Development

DIP	(Aruba) Directorate of Infrastructure and Planning
DK	Denmark
EC	European Community
ECE	Economic Commission for Europe
ECCB	Eastern Caribbean Central Bank
EDF	European Development Fund
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIS	Environmental Impact Statement
EN	endangered (IUCN classification)
ENSO	El Niño Southern Oscillation
EPA	Economic Partnership Agreement
EPD	environment, planning and development
EU	European Union
F	France
FAO	Food and Agriculture Organisation
FCO	(UK) Foreign and Commonwealth Office
FDA	Aruba Development Foundation
FEA	Fonds pour l'Environnement et l'Agriculture
FI	Falkland Islands
FIG	Falkland Islands Government
FP	French Polynesia
GCRMN	Global Coral Reef Monitoring Network
GDP	gross domestic product
GEF	Global Environment Facility
GGF	Good Governance Fund
GHG	greenhouse gas(es)
GIWA	Global International Water Assessment
GoA	Government of Anguilla
GR	Greenland
GSGSSI	Government of South Georgia and South Sandwich Islands
HMS	His Majesty's Ship
IAATO	International Association of Antarctica Tour Operators
IBA	Important Bird Area
ICCAT	International Commission for the conservation of tuna-like fish in the Atlantic
ICES	International Council for the Exploration of the Sea
ICES-CCC	ICES Cod and Climate Change Programme
ICRI	International Coral Reef Initiative
IFRECOR	Initiative Française pour les Récifs Corraliens
IIED	International Institute for Environment and Development (UK)
IMF	International Monetary Fund
IPCC	International Panel on Climate Change
IRD	Institut de Recherche pour le Développement (France)
IUCN	International Union for Conservation of Nature
IUU	illegal, unregulated and unreported (fishing)
JCNB	Joint Commission on Narwhal and Beluga
JNCC	(UK) Joint Nature Conservation Committee
LPO	Ligue pour la Protection des Oiseaux
LSB	Landbased Sources of Marine Pollution (protocol of the Cartagena Convention)
MAB	Man and Biosphere (Reserve)
MACC	Mainstreaming Adaptation to Climate Change
MAHLE	(Montserrat) Ministry of Agriculture, Lands, Housing and Environment
MAY	Mayotte
MDGs	Millennium development goals
MEA	Multilateral environmental agreement

MINA	(NL Antilles) Ministry of Public Health and Social Development
MON	Montserrat
MoU	Memorandum of Understanding
MRAG	Marine Resources Assessment Group
MVO	Montserrat Volcano Observatory
n.a.	not available
NACRI	Netherlands Antilles Coral Reefs Initiative
NAFO	North Atlantic Fisheries Organisation
NAMMCO	North Atlantic Marine Mammal Commission
NC	New Caledonia
NDP	National Development Plan (St Pierre & Miquelon)
NEMS	National Environmental Management Strategy
NGO	non-governmental organisation
NL	Netherlands
NLA	Netherlands Antilles
NNR	National Nature Reserve
NT	National Trust
NZ	New Zealand
NZ$	New Zealand dollars
OECS	Organisation of Eastern Caribbean States
OCT	Overseas Countries and Territories
OCTA	Overseas Countries and Territories Association
OTCC	(UK) Overseas Territories Consultative Council
OTD	Overseas Territories Department (of UK FCO)
OTEF	(UK) Overseas Territories Environment Fund
OTEP	(UK) Overseas Territories Environment Programme
PADD	Plan d'Aménagement et de Développement Durable (Mayotte)
PAME	Protection of the Arctic Marine Environment
PEP	Poverty and Environment Partnership
PGA	Plan Général d'Aménagement
PGEM	Plan de gestion de l'Espace Maritime
PID	Pacific Islands Development Programme
PNG	Papua New Guinea
POP	persistent organic pollutant
PROE	Programme régional océanien de l'environnement
PWSD	Public Works and Services Department
RFMO	Regional Fisheries Management Organisation
RSP	Regional Seas Programme *or* Regional Strategy Paper
RSPB	(UK) Royal Society for the Protection of Birds
SAWG	South Atlantic Working Group (of the UK OTCF)
SCOR	Scientific Committee on Oceanic Research
SCP	Strategic Country Programme
SD	sustainable development
SDP	Sustainable Development Plan
SEA	Strategic Environmental Assessment
SEAFO	South-East Atlantic Fisheries Organization
SEF	Service de l'Environnement et de la Forêt (Mayotte)
SGSSI	South Georgia and South Sandwich Islands
SHI	St Helena Island
SIDS	Small Island Developing States
SIDSNet	Small Island Developing States Information Network
SITAS	Service d'Inspection du Travail et des Affaires Sociales (Wallis & Futuna)
SMOC	(NL Antilles) Stichting Schoon Milieu Curaçao
SOPAC	South Pacific Applied Geoscience Commission
SPA	Specially Protected Area
SPAW	Protocol concerning Specially Protected Areas and Wildlife

SPEM	Service de la Pêche et de l'Environnement Marin (Mayotte)
SPD	Single Programming Document
SP&M	St Pierre & Miquelon
SPREP	South Pacific Regional Environment Programme
SPT	South Pacific Tourism Organisation
STH	St Helena
TAAF	Terres Australes et Antartiques Françaises
TAC	total allowable catch
TCI	Turks & Caicos Islands
TDC	Tristan da Cunha
TEAP	Taxe pour l'environnement, l'agriculture et la pêche
TERV	taxe pour l'enlèvement et le recyclage des véhicules
UK	United Kingdom
UKOTCF	United Kingdom Overseas Territories Conservation Forum
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Social and Cultural Organisation
VMS	Vessel Monitoring System
VROM	Netherlands environment ministry
VU	vulnerable (IUCN classification)
W&F	Wallis & Futuna
WH	World Heritage
WRI	World Resources Institute
WTO	World Trade Organisation
WW2	second world war

Table of Contents

1 Environmental profile of Pacific OCTs - Regional

1.1 Introduction

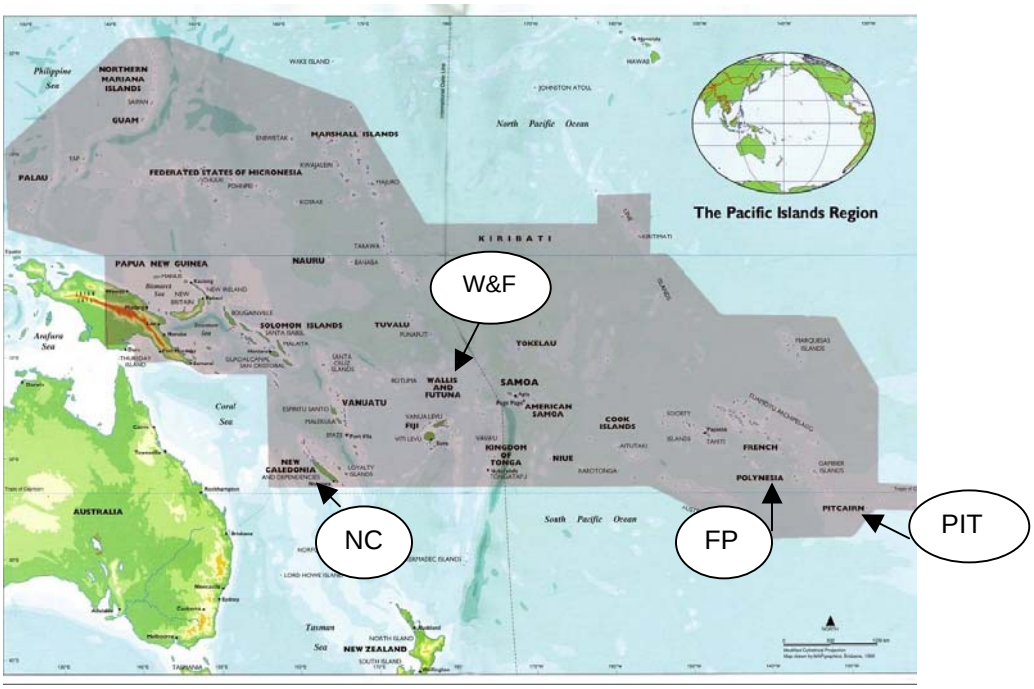
This volume is part of a 6-volume report made at the request of the European Commission. It presents environmental profiles for the four overseas countries and territories (OCTs)[1] in the Pacific region. There are companion volumes for the OCTs in the Caribbean, North Atlantic, South Atlantic and Indian Ocean regions. The purpose of the environmental profiles is to feed discussions on the environment and possible consequences environmental trends may have on OCTs socio-economic development, and more specifically, to assist the EU in programming its EDF assistance to the OCTs.

This volume comprises an overall profile in which the territories are treated in the context of the Pacific Ocean as a whole with the individual profiles for the four OCTs in this region forming Annexes A to D. The regional findings are brought together and consolidated in Part 1 - Main Report.

1.2 Description of the region

We here regard the Pacific region as comprising Micronesia, Melanesia, Polynesia and the South Pacific.

There are 4 OCTs in the Pacific Ocean region, namely:
- Linked to France: French Polynesia (FP), New Caledonia (NC), Wallis and Futuna (W&F)
- Linked to the UK: Pitcairn (PIT)



The Pacific region showing the 4 Pacific OCTs and surrounding environment

Apart from these four OCTs, the Pacific Ocean region comprises:
- 13 independent island nations: Federated States of Micronesia, Fiji, Kiribati, Nauru, Palau, Papua New Guinea, Samoa, Solomon Is, Timor Leste, Tokelau, Tonga, Tuvalu, Vanuatu.
- Other non-sovereign territories: American Samoa, Guam, Howland islands, Jarvis Is, Kingman Reef, Marshall Is, Northern Mariana Is (all USA territories), Niue and Cook Is (self governing but associated with New Zealand).

[1] The term overseas countries and territories refers to the 20 countries and territories which, although falling within the sovereignty of a member state of the European Union are wholly or partly autonomous

- Larger countries in the region: Australia, New Zealand. Japan and Indonesia participate in some of the regional organisations.

1.3 Relevant regional organisations and programmes

There are a number of regional organisations and networks in the Pacific that are important in a technical or financial sense for the purpose of these environmental profiles, with CROP (Council of Regional Organizations of the Pacific) bringing many organisations together.

Name	OCT members	Other members	Remarks
CROP- Council of Regional Organizations of the Pacific		Regional inter-governmental agencies and organisations	**Created** in 1988, it brings together 8 regional inter-governmental agencies incl. SPREP, SOPAC, PIDP, SPU, Pacific Islands Forum, the Pacific Community, fisheries, tourism and educational organisations. **Aim:** to promote harmonisation and collaboration between member programmes and to avoid duplication of effort and resources.
SPREP- South Pacific Regional Environment Programme[2]	FP NC PI W&F	Most Pacific states and territories	**Created** in 1982 but an autonomous organisation since 1991. **Aim:** promote cooperation, environmental protection, sustainable development. **Activities:** SPREP helped the Pacific Island countries to prepare National Environment Management Strategies (NEMS) for UNCED. Assists countries to comply with MEAs such as the Convention on Biological Diversity, the Ramsar Convention on wetlands, the UNFCCC (through the Pacific Islands Climate Change Assistance Programme). Conservation of Coral Reefs in the Pacific Islands Region (1998-2002).
Pacific Islands Forum	Observers: NC, FP	Most Pacific states	**Created** in 1971 **Aim:** address common issues from a regional perspective and give collective views greater weight in the international community. Focuses heavily on regional trade and economic issues, including natural resources. Good governance and security have more recently become part of the Forum's agenda. At a meeting in Oct. 2005 members endorsed a plan to strengthen regional cooperation and integration, and the “Kalibobo Roadmap” to guide the Plan’s implementation. The October 2006 Forum in Fiji will discuss energy issues, trade, economic integration, common approaches to natural resources management.
Pacific Community	FP, NC, PIT, W&F	Pacific territories plus Australia, NZ, F and US	Delivers priority work programmes to member countries on technical assistance, professional, scientific and research support and planning and management capacity building. Headquarters in New Caledonia.
Small Island Developing States Information Network (SIDSNet	Associated: FP, NC plus OCTs in the Caribbean	All the SIDS in the Pacific are associated or members, plus SIDS in the Caribbean	A UN Network, created as follow-up to UNCED. The UN Commission on Sustainable Development (CSD) implements and follows up the commitments made by SIDS: the Barbados Plan of Action (1994), the Mauritius Declaration and Plan of Action (2005) and the MSI (Mauritius Strategy of Implementation).
Regional fisheries management organisations (RFMOs)	FP NC	All in the region	World wide there are 13 RFMOs under the FAO implementing the 1982 UN Convention on the Law of the Sea, the FAO’s Code of Conduct for Responsible Fisheries (1995) and the UN Fish Stocks Agreement (1995). In the Pacific there is a WCPFC- Western and Central Pacific Fisheries Management Commission. A new regional fishery convention and body for the South Pacific is being negotiated. RFMOs also have a duty to conserve all species associated or affected by their fisheries,

[2] In French: PROE- *Programme régional océanien de l’environnement*

Name	OCT members	Other members	Remarks
			including seabirds, turtles, dolphins, sharks and non-target fish. Only five RFMOs (not the WCPFC) have the legal competence to manage most or all fishery resources in their area, including the management of deep sea stocks beyond national jurisdiction.
SOPAC- South Pacific Applied Geoscience Commission	Associated: FP NC	Australia, Cook Is, FS of Micronesia, Fiji, Guam, Kiribati, Marshall is, Nauru, New Zealand, Niue, Palau, P. New Guinea, Samoa, Solomon Is, Tonga, Tuvalu, Vanuatu **Associated:** American Samoa	**Created** in 1972 as a UN Commission sponsored by the UN Economic and Social Committee for Asia and the Pacific (UNESCAP) and the United Nations Development Program (UNDP). **Aim:** research, technical and policy advice on sustainable development. **Headquarters:** Suva, Fiji. **Activities:**The Ocean and Island Programme aims at improving scientific knowledge of ocean and island ecosystems for the sustainable management of natural resources. An integrated programme focuses on research, development and management of non-living resources in ocean and island systems addressing issues relating to seabed resources, energy, maritime boundary delimitation and monitoring of ocean processes.
SPTO- South Pacific Tourism Organisation	NC FP	10 Pacific states (plus China	Mandated inter-governmental body for tourism in the South Pacific. **Aim:** sustainable development of tourism in the South Pacific. **Headquarters**: Suva, Fiji
PIDP- Pacific Islands Development Program		11 island leaders	**Created** in 1980 at the East-West Centre. PIDP began as a forum through which island leaders could discuss critical development issues with interested countries, donors, NGOs and the private sector. **Aim:** equitable social and economic development. **Activities:** research and training based on problems identified.
University of the South Pacific	No	12 island countries	**Created** in 1970 to provide higher education and training. **Headquarters**: Suva, Fiji. Jointly owned by 12 island countries. Australia is largest donor.
AOSIS- Alliance of Small Island States	No	MOST Pacific states	Coalition of small island and low-lying coastal countries with shared development challenges, environmental concerns and vulnerability. Members operate through their UN diplomatic missions. Functions on the basis of consultation and consensus.
UNEP RSP Regional Seas Programme			More than 140 countries participate in 18 RSPs, six of which are directly administered by UNEP: Caribbean, East Asian Seas, Eastern Africa, Mediterranean, **North- West Pacific**, and West and Central Africa.
APEC- Asia – Pacific Economic Cooperation		The more developed countries plus PNG, Peru	

FP and NC work together in a number of regional organisations in which FP and NC and/ or France participate as members or observers. W&F participates less in these fora and Pitcairn usually not, except in the Pacific Community or SPC (Secretariat of the Pacific Community based in NC) in which all 4 OCTs participate.

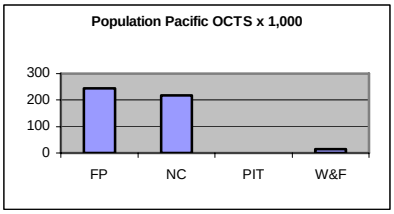
Obstacles to regional cooperation in the Pacific include the physical distance between the countries, their remoteness, great disparities of size and resource endowment (Hugues 2005). Australia and NZ play a leading role in shaping regional policies and financing regional organisations and activities.

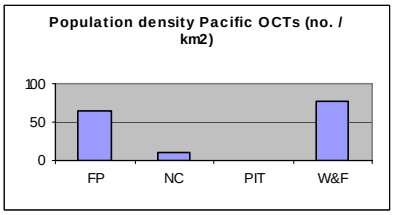
For environmental issues, the most relevant and expert organisation is SPREP. New Caledonia hosted the September 2006 meeting of environment ministers. The ministers reaffirmed that pollution and waste management, biodiversity protection and climate change are the priority areas in the region. Other issues mentioned were information, monitoring, efforts to implement the Montreal and Biodiversity conventions. Ministers also drew attention to the need for the EDF10 Regional Indicative Programme to support environmental work at the national and regional levels.

The most politically influential of the above organisations is the Forum of leaders who agreed an action plan in October 2005. With regard to the EU there is however not a common Regional Strategy Paper (RSP) or a common Regional Indicative Programme (RIP) for funding through the 10th EDF or an EPA (Economic Partnership Agreement) as there is, for example, in the Indian Ocean.

2 The territories: present situation and trends

2.1 Population

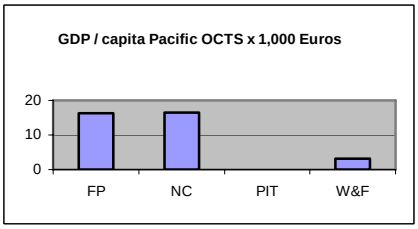


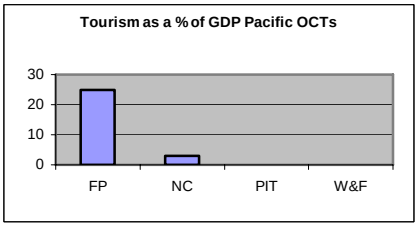


The population of the 4 OCTs ranges from less than 50 (on Pitcairn) to 256,000 in French Polynesia. Wallis and Futuna has more inhabitants living abroad (20,000, mostly in New Caledonia) than at home (16,000). Population density varies from 1 / km^2 (Pitcairn) to 77 / km^2 (Wallis and Futuna).

Most of the islands of the Pacific are inhabited by indigenous peoples who have close links with their past. New Caledonia's populations are said to have come from New Guinea and South East Asia some 5000 years ago and the Kanak traditions are ingrained in agricultural, culinary and ritual practices. The populations of French Polynesia are the product of insularity and of history, discoverers and travellers having left their mark. The Maori culture has been transmitted from generation to generation through sacred oral history. On Wallis and Futuna there are still 3 traditional kingdoms that are part of the territorial government but apply customary law on their lands (in non-criminal cases). The population of Pitcairn are descendants from the mutineers on HMS Bounty and have lived in an isolated condition.

2.2 Economic





The cultural roots of the populations of the 4 OCTs are also reflected in their economic (and spiritual) dependence on their terrestrial and marine environment. Most islands of the Pacific have an economy that is solely based on (limited) natural resources such as fisheries, forestry and agriculture. French Polynesia has developed tourism as an important sector based on its natural beauty and has succeeded in diversifying its economy by developing aquaculture, the cultivation of black pearls and agricultural products like vanilla. New Caledonia has important mineral resources (nickel) that are extracted, processed and exported. These two French territories have a GDP per capita of around €16,000, high in

comparison to other island nations in the region.[3] Wallis and Futuna and Pitcairn are the least developed of the 4 OCTs, with a € 3,000 per capita income on W&F and a barter economy on Pitcairn.

In the whole region, the possibilities for modern economic development are limited because of dependency on natural resources, the small size and fragmentation of islands, countries and territories, and geographic isolation.

Importance of fishing to Pacific OCTs			
FP	NC	PIT	W&F
●	◉	◉	●

○ Unimportant
◉ Mainly important for tourists and anglers
◉ Moderate economic activity
● Major economic activity

Fishing is important in all 4 OCTs either for own consumption (NC, W&F), as income from the licensing of fishing rights (W&F, PIT) obtained or for aquaculture (FP).

2.3 Nature of islands, habitats, wildlife

The islands in the Pacific are generally either high islands or lower-lying coral limestone islands or still lower-lying atolls. This geographic and topographic diversity also applies to the 4 Pacific OCTs. New Caledonia is an ancient and rocky island of continental origin. It has low mountains, a very long barrier reef and 40,000 km^2 of lagoons. Tahiti on French Polynesia is an example of a recent basaltic volcanic island, while the Tuamotus islands in French Polynesia are low-lying coral-limestone islands. Wallis and Futuna are of volcanic origin but Wallis is low (highest mountain 150 m) and has a large lagoon around it while Futuna is much higher (765 m) and has sharp slopes. Like Futuna, access to Pitcairn is difficult because of its slopes and lack of natural harbours. Henderson island and Oeno, both part of the Pitcairn group, are an unusual elevated coral atoll and a very low lying undisturbed atoll respectively.

Coral reefs, lagoons, mangroves, sandy beaches and tropical forests are the most common habitats on these OCTs, and they are the home of a large number of species of fish, turtles, mother of pearl molluscs, algae, birds and plants. New Caledonia has also savannah and maquis-type terrestrial ecosystems. There are 2,551 species of plant on New Caledonia and 170 types of coral in French Polynesia. Over 90% of the world's Murphy's petrels (over 200,000 breeding pairs) nest on Ducie island (Pitcairn).

Henderson island (Pitcairn) and the Taiaro atoll (French Polynesia) are strictly protected Unesco World Heritage site and Man and Biosphere reserves respectively. The only other site with such a status on the Pacific islands is East Rennell on Solomon islands. Of all the Pacific islands, New Caledonia and French Polynesia have the largest "strict nature reserves" and "habitat/species protected areas" (60,000 ha in New Caledonia and 20,000 ha in FP).[4] The atoll of Moorea on French Polynesia is probably the best studied atoll in the world, with studies for 70 of its islands in the last 30 years.

The table below shows how widespread coral reefs occur on the territory and an indication of their state.

Coral reefs:	Occurrence	State of reefs	Remarks
FP	●		Relatively good, measures are being taken to stop pollution
NC	●		Locally very degraded due to mining
Pitcairn	◉		Large areas uninhabited and protected
W&F	●		Declining because of pollution

● Extensive
◉ Some
○ None

Relatively good for region
Declining
Degraded

[3] Of the pacific islands, only Guam has higher GDP per capita.
[4] (GIWA regional report 62, 2004), Figure 2.

2.4 Flora and fauna

This table shows the results of a IUCN study on biodiversity in the French OCTs and several studies on the Pitcairn islands. In particular New Caledonia is a biodiversity hot spot.

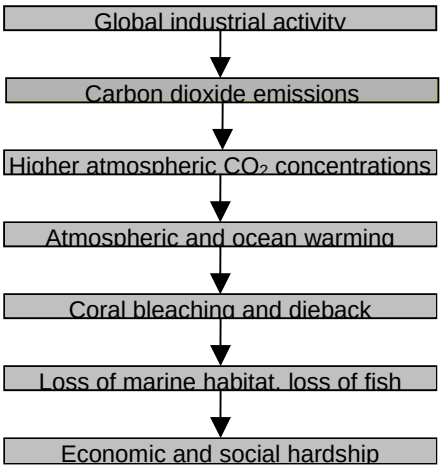
	Biodiversity- Number of native species									
	Corals	Fish-fresh water	Molluscs		Algae	Terr animals	Birds	Insects	Plants	Rept + amph
			marine	terrest						
FP	170	33	1500	320	425	15 mamm	31 + 47 migr	625	900	10
NC		58	81	133		21 9 mamm	112+ 57 migr	4,000	3261	69
PIT				26 snails				20 spiders + 9 isopods	80+63	
W&F	30	330	29			1 mamm		?	350	3

	Biodiversity- Number of Endemic species									
	Corals	Fish fresh water	Molluscs		Algae	Mammals	Birds	Insects	Plants	Rept + amph
			marine	terrest						
FP		14	20% on Marquesas	100%			22	many	570	
NC		21	65	100%		6	23	38% lepidopt	2,551	61
PIT							1+4*	many mites	10 + 9*	
W&F			11						7	3 ?

* For Pitcairn island + Henderson island

Besides these native and endemic species, men have brought other (exotic) species to the territories like rats, cats, goats, and plants that have attacked local species or compete with them. On Pitcairn campaigns to eradicate rodents and rose apple have taken place to protect birds and allow local vegetation to come back. The invasive giant crown-of-thorns starfish Acanthaster that feeds on coral is a threat to biodiversity in FP and NC.

3 Issues and threats



3.1 Introduction

In differing degrees, the 4 OCTs have a number of common environmental issues like sea surface temperature rise affecting coral reefs, pollution of lagoon and coastal areas due to lack of waste water treatment, deforestation, run-off from mines and traditional agricultural practices, high density of population in certain areas, overfishing/ destructive fishing. Also sea level rise poses a major threat: it will cause loss of land and displace populations to higher grounds or to other islands. More extreme weather events (storms, cyclones) are also an issue.

Searching for adequate responses to such events, and in particular at regional level, understanding the long causal chains and the time period involved, is essential. The two following diagrams for **climate change** and for **coral reefs** show the complexity of the processes.

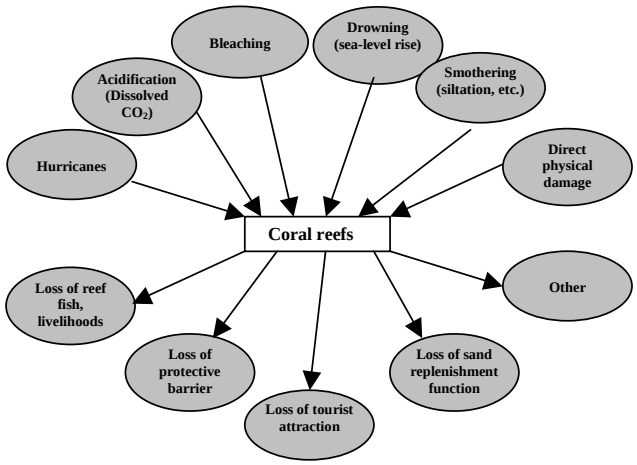
Diagram - The Drivers- Pressure – State - Impacts and Response model

The diagram above shows how industrial activity worldwide uses fossil fuels and therefore emits carbon dioxide into the atmosphere. (Driver).

Over time this process leads to a more elevated concentration of this 'greenhouse gas' in the earth's atmosphere. (Pressure). This results in a warming up of the atmosphere and the oceans. (State). This global warming has many consequences (Impacts). To take just one, coral has a threshold temperature tolerance. Pacific Ocean waters are already close to this threshold. Warming causes distress to coral reefs leading to bleaching and dieback. Coral provides a habitat for many commercial species of fish, so the ill-health or death of coral means a loss of fish, and therefore of fishermen's livelihoods.

The DPSIR (**D**rivers, **P**ressures, **S**tate, **I**mpacts, **R**esponse) model shows how Drivers (human, economic activities) lead to Pressures on the environment, which in turn cause a change in the State of the environment (e.g. CO_2 concentration in air). This then has a whole chain of Impacts on the physical world and ecosystems, and ultimately these have economic impacts. In the diagram grey indicates a driver, yellow a pressure, pink a state and blue the impacts.

Diagram 2- The example of coral reefs



Although the term causal chain is used above, the term causal web would be a better one. This is because each of the boxes in diagram 1 has many causal antecedents and many consequences. To illustrate a causal web, coral reefs are taken as an example in diagram 2. Carbon dioxide is not the only greenhouse gas. Industry is not the only source of carbon dioxide, etc. Warmer seawater is not the only threat with which coral must contend. It is also harmed by hurricanes (probably more intense in the future as a result of climate change), by direct damage by fishermen, ship anchors, tourists and divers, by pollution originating from the island, particularly sewage (which contains nutrients harmful to coral) and suspended particulates (which run off the land as a result of development and from natural sources, [illegible] seawater (the result of increased absorption of carbon dioxide as atmospheric concentrations rise) and by 'drowning' if the sea-level rises more rapidly than the coral's ability to accrete. At the same time, the loss of marine habitat and of fish stocks is not the only impact of coral damage. Coral reefs protect their host island from wave and sea damage during storms, protect the lagoons and seagrass beds behind them which are important fish nurseries, comprise a major tourist attraction and activity (dive tourism) and have a crucial function of the sand balance on beaches. Reef loss means an impairment of all these functions.

3.2 Climate change and energy

The likely/possible main impacts of climate change on the four OCTs in the Pacific Ocean are worked out in their individual environmental profiles (in annex to this regional report).

For the region as a whole the phenomenon of El Niño has been linked to increases in temperature in some places which are greater than the global average (e.g. Rarotonga, Cook Islands) and some regions becoming:

- wetter (e.g. Northern French Polynesia)
- drier (e.g. Tonga)
- warmer and sunnier (e.g. New Caledonia and Fiji)
- cloudier (e.g. Samoa).[5]

[5] Tyndall Centre (2005)

According to the comprehensive regional study by Global International Water Assessment (GIWA) global change will continue to have a major influence on all aspects of the lives and economies of Pacific Island peoples for the indefinite future. Much will depend on the rate and extent of changes, which are unevenly distributed in the region, and on how numerous strategies on the part of the international community will ameliorate the impacts.[6] As examples of such strategies GIWA mentions: regular monitoring of marine and coastal ecosystems, improved prediction of cyclones, tsunamis and ENSO (El Niño Southern Oscillation) events. Such policies help Pacific Island countries prepare for the impacts of global change. Many of these systems are in place, but the results are not always available in language that is understandable by civil society, according to GIWA.

Even in the most optimistic scenarios, climate change will continue well into the present century. If the more extreme predictions occur, then most of the atoll nations will disappear beneath the ocean, and coastal strips and communities around most of the high islands will be inundated within the next 50 years.

Serious socio-economic consequences are inevitable in such situations. Some islands are already disappearing and discussions are ongoing with the New Zealand Government who has offered to accept the Tuvaluan people when they become environmental refugees. The impacts of climate change will occur at every level of society and in every sector, and will require substantial changes in all public and private institutions.

Faced with the climate change threats, there are essentially two types of action possible:
1. actions aimed at reducing the territories' own GHG emissions.
2. actions aimed at adapting their territories to reduce the negative impacts.

Reducing emissions of GHG is not much of an issue for Wallis and Futuna nor Pitcairn, given their low levels of energy consumption. In French Polynesia and New Caledonia, the increased car traffic, the fuel used by the fishers, the transportation to and from the islands, the processing of nickel ore, etc are contributing to GHG emissions. Planning for and reducing the emissions of GHG will make it easier for these OCTs to ask richer countries to do the same.

Adaptation activities will in any case be necessary, given the expected effects of GHG emissions on climate change even in the most optimistic scenarios. Regular monitoring of marine and coastal ecosystems, improved prediction of cyclones and tsunamis will be required to assist Pacific Island countries prepare for the impacts of global change. Many of these systems are in place; however, though ways of making the results accessible in popular language are available in FP, this is not so in all Pacific territories.

3.3 General environmental degradation due to development and tourism

The populations of the four OCTs in the Pacific Ocean have had different impacts on the environment. On New Caledonia the open cast mining of nickel is an important source of income but pollutes rivers and lagoons. On French Polynesia high population density in certain areas, 250,000 tourists in pristine areas and untreated waste water flowing into lagoons were destroying habitats before major investments in water treatment. On Pitcairn and Wallis and Futuna introduced species have reduced the number of breeding birds (predated by rats) or caused the bacteriological contamination of the lagoon by free roaming goats and pigs. Overfishing, unsustainable harvesting of mother of pearl for button making, destructive fishing, deforestation and use of coral materials as building material or as landfill have also had a negative impact on coral reefs and marine ecosystems.

3.4 Waste management

All small island states face special problems in relation to waste management:
- lack of the critical size and therefore ability to benefit from the economies-of-scale needed to make modern waste management techniques (sanitary landfills, safe incinerators) economic;

[6] GIWA report for region 62 (Pacific) (2004).

- lack of facilities, critical size and markets to make recycling and composting feasible;
- lack of public awareness about waste, need for prevention and reduction;
- lack of facilities for dealing with hazardous waste including infectious clinical waste;
- lack of suitable space for and resistance by local residents to new landfills;
- hurricanes can generate large volumes of waste and debris, which may be toxic, e.g. timber treated with preservatives.

All 4 OCTs have waste problems. The situation in the territories is briefly as follows:

Territory	Description
FP	120,000 t per year, 90,000 t on Tahiti. Preliminary study and waste plan, several projects for new installations. Selective collection of household waste in Tahiti and Moorea, eco-stations at beaches and information. Tax for collecting and exporting cars.
NC	Waste from nickel mines and households. Tax on hydrocarbons for recycling and re-use of industrial waste.
PIT	Islanders re-use/recycle or burn most of their waste. One landfill is full. Project proposal being prepared for review of sanitation, waste and water on Pitcairn Island.
W&F	Study made in 2001 and plans for selective collection of waste, two new waste treatment plants, incineration of hospital waste, tax on alcoholic beverages for collection of household waste. Local associations which collect beverage cans can sell them to the administration for € 840 per ton.

3.5 Conserving biodiversity

All Pacific Island countries recognised the need to conserve species and habitats in their National Environment Management Strategies (NEMS), coordinated by SPREP in preparation for the 1992 UNCED Conference in Rio. At this Conference on Environment and Development, 188 nations ratified a number of multilateral environmental agreements (MEAs) which protect the environment and conserve natural resources, in view of a sustainable development of nations. The OCTs cannot sign MEAs in their own right. But OCTs can take on the responsibilities of an MEA if the associated sovereign state (in the case of the Pacific Ocean: France and UK) has signed the MEA and asks, at the request of the OCT, that the MEA is extended to the territory of the MEA.

Most countries of the Polynesia Mana node[7] have ratified the international conventions that have relevance to coral reef conservation, in particular countries associated with France (French Polynesia, Wallis and Futuna) and New Zealand (Cook Islands, Tokelau).[8] The situation with regard to some of the most relevant MEAs is as follows:

OCT	CBD	Ram-sar	CITES	CMS	WH	Remarks
FP	✓	✓	✓	✓	✓	FP has agreed to comply with all MEAs except Climate Change but attended the last Conference of Parties as an observer. Taiaro atoll is MAB biosphere reserve.
NC	✓	✓	✓	✓		NC has agreed to comply with all MEAs signed by France, except Kyoto Protocol Climate Change and Aarhus convention.
PIT		✓	✓	✓	✓	Henderson island is World Heritage site. Ramsar sites proposed
W&F	✓		✓			A biodiversity Action plan has been prepared for 2006-2010, in compliance with the CBD.

CBD = Convention on Biological Diversity
Ramsar = Ramsar Convention on Wetlands
CITES = Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMS = Bonn Convention on the Conservation of Migratory Species of Wild Animals (i.a. birds, whales)
WH= Paris Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage)

[7] Cook Is, French Polynesia, Kiribati, Niue, Tokelau, Tonga, Wallis and Futuna.
[8] Wilkinson (2000).

Several regional conventions have been developed by UNEP and SPREP that are relevant to coral reef conservation. All countries have ratified the following conventions:

Name of convention or agreement	Goal	Means
Apia convention (1976), came into force in 1990	Conservation of nature in the South Pacific	Promotes protected areas to preserve examples of natural environments
Noumea convention (1996)	Protection of natural resources and the environment	Protocols on dumping at sea and control of pollution emergencies
Regional convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean	signed in 2000 and applies to the whole pacific region.	

3.6 Water and seas

In the whole Pacific region a lack of fresh water, overfishing and pollution of lagoons and coastal seas are major issues. The Global International Waters Assessment (GIWA, 2004) assesses the state of the water resources and the sea in this region on a scale between 0 and 3.
(0 = no impact, 1= slight impact, 2= moderate impact, 3= severe impact)

	SCORE	Worsening?
Fresh water shortage	**1.7**	**Yes**
Pollution of existing supplies	2	
Seas Pollution	**2.2**	
Macro biological pollution	2	
Eutrophication	2	
Chemical	2	
Suspended solids	2	
Solid waste	3	
Radionucledi	3	
Habitat and community modification	**2.5**	**Yes**
Loss of ecosystems	2	
Modification of ecosystems	3	
Unsustainable exploitation of fish	**2.3**	**Yes**
Overexploitation	3	
Excessive by-catch and discards	3	
Destructive fishing practices	2	
Impact on biological and genetic diversity	2	
Global Change	**2.6**	**Yes**
Changes in hydrological cycle	2	
Sea level change	3	
Increase in sea surface temperature	3	

A 2006 UNEP study noted that marine litter consisting of plastics, rope, fishing nets and cargo-associated wastes (including whole shipping containers) extend over many kilometers in the Pacific ocean. This waste from land- and sea-based activities has accumulated to such an extent that in central Pacific areas the mass of floating plastic is six times greater than that of plankton. Plastic bags have a particularly lethal effect on turtles and mammals, who mistake them for prey (squid and jellyfish) and eventually die of suffocation or blocked intestines. Radioactive waste is also a problem. Between 1946 and 1970 the US dumped 56,261 drums of low-level radioactive waste at various locations in the Pacific Ocean. French nuclear tests have taken place in French Polynesia on the Tuamoto islands (Muroroa) and scientists are now researching possible environmental consequences of these tests.

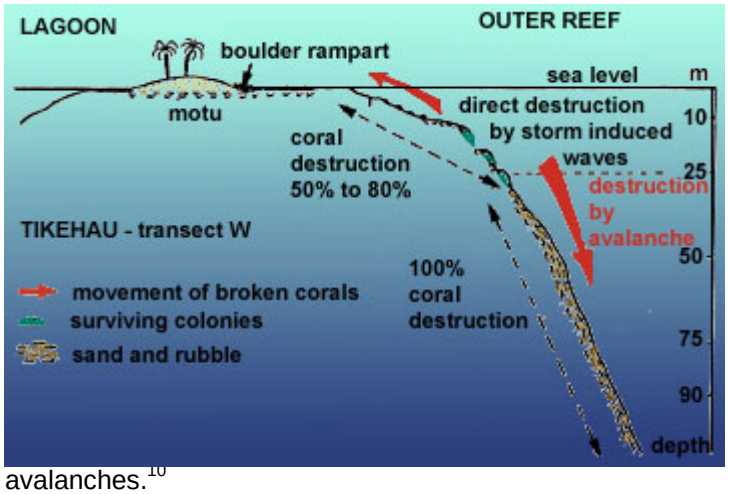
Furthermore this UNEP regional study mentions that overfishing of tuna, marlin and swordfish has reduced the abundance and variety of species in specific hotspot areas in the Pacific by up to 50% in the last 50 years. Of the seventeen main tuna stocks, almost 60% are in need of population rebuilding and/or reduction of fishing pressure. Major tuna stocks are now listed as critically endangered or endangered, such as the Pacific stock of big eye tuna.

3.7 Air pollution

Air pollution is not an important issue in the Pacific OCTs.

3.8 Natural hazards

The World Bank identified the Pacific Island countries as ranking among the most vulnerable in the world to natural disasters. Since 1950, natural disasters have directly affected more than 3.4 million people and led to more than 1700 reported deaths in the region (outside Papua New Guinea). In the 1990s alone, reported natural disasters cost the Pacific Islands region US$2.8 billion in real 2004 value. Between 1950 and 2004 extreme natural disasters such as cyclones, droughts and tsunamis accounted for 65 percent of the total economic impact from disasters on the region's economies. Ten of the 15 most extreme events reported over the past half a century occurred in the last 15 years.[9]



All 4 OCTs are in the region subject to tropical storms. On New Caledonia cyclone Beti (1996) damaged the Recaudy coral reef and cyclone Erica (2003) left 3,5 thousand homeless. Maupiti, Bora Bora and Huahine on French Polynesia were practically devastated by the cyclones Martin and Osea (1997). The Pitcairn Islands have been the least affected.

A study on French Polynesia of the effects of 6 cyclones in 1982-3 on the Tikehau atoll shows how coral reefs are destroyed: 50-80% by waves pounding on them, and deeper down, up to 100% by avalanches.[10]

3.9 Environmental governance

To be able to effectively protect the environment, a number of means are needed:

- human resources dealing specifically with environmental issues
- financial resources
- policy plans (for the environment but also for physical planning/ land use and integration of environmental issues in economic and social development plans)
- action plans (with priorities, timetables, manpower and budgets)
- legislation (among others Environmental Impact Assessments (EIA))
- monitoring, policing, sanctions/ fines
- reporting / information
- participation of stakeholders

The following table summarizes the findings on the four Pacific Ocean OCTs:

[9] WB (2006)
[10] Langlade,

OCT	Policy paper?	Action plan?	Legsilation?	EIA?	Protected areas?	Remarks
FP	✓	✓	✓	**+/- ?**	✓	There is a minister for the environment and a ministry for Sustainable Development (SD). Specific departments/ services have specified environmental tasks and staff. Budgets available and a fund for the Environment, fed by earmarked taxes. Ministry of SD, Ministry of Seas and the Econ, Social and Cultural Council and Research programmes integrate environment in other policy areas. Action plan for Min of SD, Biodiversity Plan, waste plan and several marine management plans. Environment Code, Planning Code and various laws on fisheries, authorisation scheme for all installations that may cause harm to the environment. Attractive educational material. Awareness raising campaigns. There is monitoring and reporting.
NC	**+/-**	**no**	**?**	**no**	✓	No ministry for the Environment. Specific departments/ services have specified environmental tasks, at territorial level, at the level of the 3 provinces and at local level (less clear who does what). There is also a consultative committee on the environment and expert groups on issues. Budgets available. Policy paper on Balanced growth with a section on natural resources. On legislation at provincial level: no information received in questionnaires. There are protected areas. A lot of research is done but popular information material on the environment not found. Many NGOs are active.
PIT	**+/-**	**+/-**	✓	**+/-**	✓	2 part-time officers deal with the environment. No specific budget mentioned in questionnaire. Environmental Management Plan being drafted. Henderson (WH site) has management plan. Laws implementing CITES, for fisheries and protection of wildlife incl certain species. Henderson island is a protected area but can be visited.
W&F	✓	✓	✓	✓		There are specific services that deal with the environment. There are staff and small but specified budgets. There is a Policy Paper for Sustainable Development (not yet an action plan), a Biodiversity Action Plan, a Coral reefs Plan. There are decisions on the protection of the environment, there is EIA legislation. The are environmental taxes and subsidies (for building pigsties). Information material available for schools also. There is monitoring and reporting.

4 Recommendations for cooperation in the environment between the EC and Pacific OCTs

The consultants were asked to make recommendations about possible areas of cooperation between the EC and the OCTs. Recommendations with regard to individual OCTs are made at the end of the individual OCT environmental profiles. Part 1 of this report looks at cooperation at the overall and interregional levels. This section considers areas which might be considered for funding at the level of the Pacific region.

Climate change

Three of the four OCTs in the Pacific region face severe impacts from climate change, in common with other Pacific territories. Aid should aim to support the work of the OCTs within the framework of the Pacific Islands Framework for Action on Climate Change 2006-2015 and other regional initiatives in the fields of:

- improving understanding of climate change: improved data collection, research in those areas in which the OCTs have a comparative advantage, improved monitoring, development of climate change scenarios for the Pacific region;
- adapting to climate change: identifying ways of increasing resilience, development of cyclone-proof building codes, promotion of building set-backs;
- Update relevant legislation accordingly;
- mainstreaming climate change thinking into the main institutional planning procedures of the territories concerned;
- improving public information and awareness;
- support for participation in UNFCCC/Kyoto as a means of increasing credibility and influence in international fora.

Protection of the marine environment

- research, protection and proper management on coral reefs, in particular concerning the impact of pollution and warmer seawater in the future.
- creation, management and enforcement of marine protected areas;
- measures to tackle harmful pollution from sewage, livestock farms, abattoirs;
- measures to address harmful forestry and agricultural practices which result in erosion, siltation

Waste and marine litter

Projects which address specific waste problems shared by insular Pacific states, in particular:

- Sources of waste: what measures can be taken to reduce waste volumes from households, tourists and from ships?
- Efficiency of waste collection system: is selective waste collection possible and for which waste streams is it realistic to attempt re-use or recycling and with which instruments?
- Clean up efforts and costs involved: treatment technologies and devising standards for landfills to ensure they are safe and do not pollute groundwater or coastal waters suited to island states.
- Approaches for difficult waste streams: car wrecks, waste oils, other hazardous or clinical waste.
- Publicising good practice, approaches which have been successful, etc. (e.g. recycling, separation, car wrecks in French Polynesia).

Tourism

Develop and implement standards / codes of practice for sustainable tourism, involving the certification of tourist destinations, or of hotels and other tourist facilities..

Energy

- Implement reliable, affordable, and environmentally sound energy systems;
- Explore scope for introducing renewable energy systems (wind, solar) within the context of existing initiatives.

5 List of references consulted

NON-TERRITORY- OR -REGION SPECIFIC

Bryant, D., Burke, L., McManus, J., and M. Spalding. 1998: Reefs at Risk: A Map Based Indicator of Threats to the World's Coral Reefs. World Resources Institute. Washington D.C.

DFID (UK Department for International Development), 2006: Reducing Poverty in Europe, Central Asia, the Caribbean and the Middle East.

EC (2000): Council Decision 2000/483/EC of 23 June 2000, Official Journal L 317 of 15.12.2000

EC (2006): Halting the loss of biodiversity and beyond: sustaining ecosystem services for human well being. Communication from the Commission of the European Communities. COM(2006) 216 final.

EC (2006a): Council / European Parliament / Commission Statement 2006/C 46/01 Official Journal C 41 of 24.2.2006

French Biodiversity Strategy. http://biodiv.mnhn.fr/convention/cbd_national/Biodiversite_fevrier2004.pdf

Gargominy, O. (ed.), 2003: Biodiversité et conservation dans les collectivités françaises d'outre-mer. Collection Planète Nature. Comité français pour l'UICN, Paris. http://biodiv.mnhn.fr/information/outre_mer/fol088503

Gjerde, K. M., 2006: Ecosystems and Biodiversity in Deep Waters and High Seas. UNEP Regional Seas Reports and Studies No. 178. UNEP/ IUCN, Switzerland. This overview was prepared by the Regional Seas Programme of the United Nations Environment Programme (UNEP), in cooperation with the World Conservation Union (IUCN).

International Panel on Climate Change (IPCC), 2001: Third assessment report 2001.

JNCC (Joint Nature Conservation Committee), 1999: Biodiversity: the UK Overseas Territories. By Procter, D., & Fleming, L.V., Peterborough, UK.

Kaly, U., Pratt, C. and Howorth, R., 2002: Towards managing environmental vulnerability in small island developing states (SIDS), SOPAC, South Pacific Applied Geoscience Commission.

OAD (2001): Council decision on the association of overseas territories within the European Community ('overseas association decision'): 27th November 2001. 2001/822EC.

Pienkowski M.W. (ed.), 2005: Review of existing and potential Ramsar sites in UK Overseas Territories and Crown Dependencies. Final Report on Contract CR0294 UK Overseas Territories Conservation Forum to the UK Department of Environment, Food and Rural Affairs.

Procter, D., & Fleming, L.V., editors, 1999: Biodiversity: the UK Overseas Territories. Global Coral Reef Monitoring Network GCRMN, Australian Institute of Marine Science, Joint Nature Conservation Committee JNCC, Peterborough, UK.

Quantitative Ecosystem Indicators for Fisheries Management - Special Issue of the ICES Journal of Marine Science, Volume 62, Issue 3, Pages 307-614 (May 2005)

Sanders S. (ed) 2006: Important Bird Areas in the United Kingdom Overseas Territories, The Royal Society for the Preservation of Birds, Sandy, UK.

Sear C., M. Hulme, N. Adger and K. Brown, 2001: The Impacts of Global Climate Change on the UK Overseas Territories- Issues and Recommendations. A Summary Report, Natural Resources Institute (UK), Tyndall Centre for Climate Change (UK), A report commissioned by the DFID Overseas Territories Unit.

Tompkins E. L., S.A. Nicholson-Cole, L-A. Hurlston, E. Boyd, G. Brooks Hodge, J. Clarke, G. Gray, N. Trotz and L. Varlack, 2005: Surviving Climate Change in Small Islands- A guidebook, Tyndall Centre for Climate Change Research, Norwich, UK. Funded by the UK Department for International Development and the UK Foreign and Commonwealth Office through the Overseas Territories Environment Programme (OTEP).

UICN, 2003: Biodiversité et conservation dans les collectivités françaises d'outre-mer. Collection Planète Nature. Paris.Author: Gargominy, O. (ed.).

UK Foreign & Commonwealth Office (UKFCO), 2005: UK International Priorities - The FCO Sustainable Development Strategy. March 2005.

UK Government, 1999: Partnership for Progress and Prosperity - Britain and the Overseas Territories. Presented to Parliament by the Secretary of State for Foreign and Commonwealth Affairs, March 1999.

Wilkinson, C, (editor), 2000, Status of Coral Reefs of the World: 2000, Global Coral Reef Monitoring Network (GCRMN) and Australian Institute of Marine Science.

Wilkinson, C. (editor), 2004: Status of Coral Reefs of the World: 2004, Global Coral Reef Monitoring Network GCRMN and Australian Institute of Marine Science.

Organisation	Website address	Remarks
ACOR- French Coral Reefs Association	http://www.univ-perp.fr/ephe/acorweb/francais/menu.html	Association Française pour les Récifs Coralliens
ADEME- French energy conservation Agency	http://www2.ademe.fr/servlet/getDoc?id=11433&m=3&cid=96	Agence de l'Environnement et de la Maîtrise de l'Energie
Caribbean Development Bank	http://www.caribank.org/Publications.nsf/EReview2005_turkscaicos/$File/ECReview2005_turkscaicos.pdf?OpenElement#search=%22pier%20construction%20turks%20caicos%22	
CEDRE- French documentation centre for accidental water pollution	http://oceanprevention.free.fr/cedre2.htm	Centre de documentation, de recherche et d'expérimentations sur les pollutions accidentelles des eaux
CIA	www.cia.gov/cia/publications/factbook/index.html	Info per OCT
CITES or Washington Convention on trade in endangered species (1973)	www.cites.org	
Coalition of legal toothfish operators	http://www.colto.org	Fisheries, particularly Southern Hemisphere
CRED- Centre for Research on the Epidemiology of Disaters	http://www.em-dat.net/disasters/country.php	Interesting database on disasters
EU- Indicative programmes VIII EDF	http://ec.europa.eu/comm/development/oct/ind_prog_en.htm	
EU- on all OCTS	http://ec.europa.eu/comm/development/oct/index_en.htm	
EU- on individual OCTs	http://ec.europa.eu/comm/development/oct_new/oct_en.cfm	
EU- Regional strategy papers:	http://ec.europa.eu/comm/development/body/csp_rsp/rsp_en.cfm	
EU- Single programming documents IX EDF	www.ec.europa.eu/comm/development/body/csp_rsp/spd_en.cfm	
European Commission	http://ec.europa.eu/comm/development/body/development_policy_statement/docs/edp_summary_en.pdf (English) http://ec.europa.eu/comm/development/body/development_policy_statement/docs/edp_summary_fr.pdf (French)	Summary of EDP

Organisation	Website address	Remarks
FAO regional fisheries bodies	http://www.fao.org/fi/body/rfb/index.htm	
French Centre for Biodiversity Convention	http://biodiv.mnhn.fr/	Centre d'Echange français pour la Convention sur la diversité biologique.Portail de la biodiversité en France pour la Convention sur la diversité biologique
French Fund for the global environment	http://www.ffem.net/jahia/Jahia/lang/fr/pid/224	Fonds Francais pour l'environnement mondial
French Ministry Ecology and SD	www.ecologie.gouv.fr general site On overseas: http://www.ecologie.gouv.fr/rubrique.php3?id_rubrique=970	Ministere de l' Ecologie et Développement durable
French National Inventory of Species	www.inpn.mnhn.fr general site http://inpn.mnhn.fr/inpn/fr/inpn/diversity_DT.htm on biodiversity overseas	Inventaire National du patrimoine naturel (INPN)
French Overseas Ministry	http://www.outre-mer.gouv.fr/outremer/front?id=outremer/decouvrir_outre_mer http://www.outre-mer.gouv.fr/outremer/front	Ministère de l'Outre-Mer on Overseas countries and territories and 2007 budget
French Prime minister's office	http://www.premier-ministre.gouv.fr/information/actualites_20/transferts_fonds_europeens_collectivites_57080.html	Transfer of EU funds to French OCTS
Futura Sciences	http://www.futura-sciences.com/comprendre/d/index.php	Dossier on coral reefs
GIWA- Global assessment of international waters	www.giwa.net	A UNEP/ GEF / Kalmar university project
Global Ocean Ecosystem Dynamics	http://www-cger.nies.go.jp/cger-e/db/info-e/InfoDBWeb/prog/globec.htm	Global Ocean Ecosystem Dynamics
ICRI	http://www.icriforum.org	ICRI international coral reef initiative
IFEN- French institute for the environment	http://www.ifen.fr	
IFREMER Institut francais de recherche pour l'exploitation de la mer	http://www.ifremer.fr/francais/index.php http://oceanprevention.free.fr/ifremer2.htm	
Info on cities threatened by hurricanes	http://www.hurricanecity.com	Info on hurricanes by country
Innovation Centre, University of Exeter	http://www.innovation.ex.ac.uk/imm/Disaster_management.htm	Climate change and the poor
Innovation Centre, University of Exeter	http://www.innovation.ex.ac.uk/imm/PovertyAndReefsProgress.htm	Poverty and Reefs
Inventaire National du patrimoine naturel (INPN)	http://www.inpn.mnhn.fr	
IPIECA	www.ipieca.com	On oil spills
IRD- French research institute for development	www.ird.fr	Institut de recherche pour le developpement

Organisation	Website address	Remarks
Island Resources Foundation	http://www.irf.org/	Foundation is dedicated to solving the environmental problems of development in small tropical islands
Island vulnerability	http://www.islandvulnerability.org	Good data on all territories except Greenland
IUCN	www.iucn.org	International Union for the Conservation of Nature
London Convention on prevention of marine pollution by dumping of waste and other matter	http://www.londonconvention.org/	
NOAA	http://www8.nos.noaa.gov/biogeo_public/reef_photos.aspx http://www.oceanservice.noaa.gov/education/kits/corals/coral09_humanthreats.html	Centre for coastal monitoring and assessment of coral reefs
NOAA- National Oceanic and Atmospheric Administration	http://www.noaa.gov	General site
OCTA	www.octassociation.org	Organisation of OCTs
POLMAR	http://oceanprevention.free.fr/polmar2.htm www.polmar.com	French institute and rules for action in case of pollution of seas
Reefbase	On reefs in all countries: http://www.reefbase.org/global_database/default.aspx?section=s1	
Reefbase	http://www.reefbase.org/references/ref_Literature.asp?searchactive=yes&ID=13887	Search facility reefs database
Reefbase	http://www.reefbase.org http://www.reefbase.org/references/ref_Literature.asp?searchactive=yes&ID=13887	Search facility reefs database
Relief Web	www.reliefweb.int	On disasters
RFO	www.rfo.fr	Radio site for French OCTs (Reseau France Outre –mer) with info on OCTs
Scientific Committee on Oceanic Research (SCOR)	http://www.jhu.edu/%7Escor/	
Smithsonian Institute volcano site	http://www.volcano.si.edu	
UK DFID (Department for International Development)	http://www.dfid.gov.uk/countries/allcountries.asp?view=region	Country Profiles
UK FCO (Foreign and Commonwealth Office)	http://www.fco.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1013618138295	On overseas territories
UN Millenium Developmentt Goals	http://mdgs.un.org/unsd/mdg/Data.aspx	Situation per country and territory
UN-ECE	http://www.unece.org/	

Organisation	Website address	Remarks
UNEP	http://www.unep.net/profile/ http://www.un.org/esa/sustdev/natlinfo/natlinfo.htm	Country profiles (not on OCTS)
UNEP	http://www.unep.ch/	Register international environmental conventions secretariats based in Geneva
UNEP on sustainable tourism	http://www.uneptie.org/pc/tourism/policy/about_principles.htm	
UNEP on waste management	http://www.unep.fr/pc/pc/waste/waste.htm	
UNEP World Conservation Monitoring Centre	www.unep-wcmc.org	for instance on coral reefs, mangroves and sea grasses, etc.
World Resources Institute	http://reefsatrisk.wri.org/casestudy.cfm http://earthtrends.wri.org/features/view_feature.php?theme=1&fid=12	On reefs at risk- country reports
World resources institute	http://www.wri.org/	General site
World Resources Institute	http://earthtrends.wri.org/select_action.php?tool=3	Statistical data per country and territory, on biodiversity, energy, coastal and marine ecosystems, economics, population, etc.

PACIFIC REGION

Bettencourt S., Croad R., Freeman P., Hay J., Jones R., King P., Lal P., Mearns A., Miller G., Pswarayi-Riddihough I., Simpson A., Teuatabo N., Trotz U., Aalst M. van, 2006: Not if but when, Adapting to natural hazards in the Pacific Islands Region, Policy Note. World Bank, Washington D.C.

GIWA (Global International Waters Assessment) 2004: Regional assessments nr 62 (Pacific). UNEP/ GEF/ Kalmar University, Kalmar, Sweden. By South et al.

Gjerde, K., 2006: Ecosystems and Biodiversity in Deep Waters and High Seas. UNEP Regional Seas Reports and Studies No. 178. UNEP/ IUCN, Switzerland. This overview was prepared by the Regional Seas Programme of the United Nations Environment Programme (UNEP), in cooperation with the World Conservation Union (IUCN).

Hugues A.V., 2005: Strengthening Regional Management - A Review of the Architecture for Regional Co-operation in the Pacific. Pacific Plan Task Force.

Kaly, U., Pratt, C., and Howorth, R., 2002: Towards managing environmental vulnerability in small island developing states (SIDS). SOPAC, South Pacific Applied Geoscience Commission.

Pacific Forum, 2006: Action Plan, Implementation Strategy: Initiatives for the First Three Years (2006-2008): http://www.pacificplan.org/tiki-page.php?pageName=Pacific+Plan+Initiatives

Rojat, D. , Pacaud, P-A. , Sonnemann, G. 2006: Initiative régionale pour la gestion des déchets solides dans le Pacifique, Rapport d'identification. Agence Française de Développement and UNEP. Financed by the Fonds de Coopération économique, sociale et culturelle pour le Pacifique de la République Française.

Salvat, B., 2000: Status of Southeast and Central Pacific Coral Reefs in "Polynesia Mana Node". Chapter 11 in Wilkinson, C. (editor), 2000: Status of Coral Reefs of the World: 2000, Global Coral Reef Monitoring Network GCRMN and Australian Institute of Marine Science.

SOPAC, 2002: Towards managing environmental vulnerability in small island developing.

South, G.R., Skelton, P., Veitayaki, J., Resture, A., Carpenter, C., Pratt, C. and A. Lawedrau, 2004: Regional Waters Assessment nr 62 (Pacific). GIWA (Global International Waters Assessment) 2004: Regional assessments nr 62 (Pacific). UNEP/ GEF/ Kalmar University, Kalmar, Sweden.

South, R. and P. Skelton, 2000: Status of Coral Reefs in the Southwest Pacific. In: Wilkinson, C. (editor), 2000: Status of Coral Reefs of the World: 2000, Global Coral Reef Monitoring Network GCRMN and Australian Institute of Marine Science.

SPREP, 2002: Action Strategy for Nature Conservation in the Pacific Islands Region 2003 – 2007.

Tompkins E. L., Nicholson-Cole S.A., Hurlston L-A., Boyd E., Brooks Hodge G., Clarke J., Gray G., Trotz N., Varlack L., 2005: Tyndall Centre for Climate Change Research Surviving Climate Change in Small Islands – A guidebook, Norwich, UK. Funded by the UK Department for International Development and the UK Foreign and Commonwealth Office through the Overseas Territories Environment Programme (OTEP).

Tyndall Centre for Climate Change Research, 2005: Surviving Climate Change in Small Islands –A guidebook, by Tompkins et al. Norwich, UK.

UNEP, 2005: Pacific Environment Outlook - Special Edition for the Mauritius International Meeting for the 10-year Review of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States (SIDS), Nairobi.

UNEP and IUCN, 2006: Ecosystems and Biodiversity in Deep Waters and High Seas. UNEP Regional Seas Reports and Studies No. 178. UNEP/ IUCN, Switzerland, by Gjerde, K.

Wilkinson, C. (ed.), 2000: Status of Coral Reefs of the World 2000, Global Coral Reef Monitoring Network GCRMN and Australian Institute of Marine Science.

Wilkinson, C. (ed.) 2004: Status of Coral Reefs of the World 2004, Global Coral Reef Monitoring Network GCRMN and Australian Institute of Marine Science.

World Bank, 2000: Cities, Seas, and Storms: Managing Change in Pacific Island Economies.

World Bank (2006), "Not if but *when,* Adapting to natural hazards in the Pacific Islands Region", Policy Note. Authors: Bettencourt et al.,Washington D.C. http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187511&theSitePK=523679&entityID=000160016_20060209164511&searchMenuPK=64187511&theSitePK=523679

Organisation	Website address	Remarks
AOSIS	http://www.sidsnet.org/aosis/members.html	Alliance of Small Island States
APEC- Asia Pacific Economic Cooperation	http://www.apec.org/	
Asia-Pacific network	http://www.ap-net.org/index.html http://www.ap-net.org/database/library/09.html	
CBDAMPIC	http://www.sprep.org.ws/climate/documents/First_Six_Monthly_Report-CBDAM P.pdf	Capacity Building for the Development of Adaptation Measures in Pacific Island Countries
IUCN regional	http://www.iucn.org/places/oceania/	
PICCAP (Pacific Islands Climate Change Assistance Programme)	http://www.gefweb.org/Outreach/outreach-PUblications/Project_factsheet/Asia_Paci.c-paci-3-cc-undp-eng.pdf	

Organisation	Website address	Remarks
Protocol for the Prevention of Pollution of the South Pacific Region by Dumping	http://sedac.ciesin.columbia.edu/entri/register/reg-146.rrr.html http://sedac.ciesin.columbia.edu/entri/texts/pollution.dumping.south.pacific.protocol.1986.html	
Secretariat Pacific Community	http://www.spc.org.nc/	
SIDS	http://www.sidsnet.org http://www.sidsnet.org/MIM/followup-pacific.html	Small developing island states (Pacific)
SOPAC- South Pacific Applied Geoscience Commission	www.sopac.org	
SPREP	www.sprep.org.ws http://www.sprep.org.ws/climate_change/index.asp	South Pacific Regional Environment Programme
UN- Econonic and Social Commission for Asia and Pacific	http://unescap.org/publications/index.asp http://unescap.org/about/special_pacific.asp	
UNEP	http://www.unep.org/regionalseas/	on regional seas
Western and central pacific fisheries commission	http://www.oceansatlas.org/unatlas_gifs/offsiteframe.jsp?url=http%3A%2F%2Fwww.fao.org%2Ffi%2Fbody%2Fbody.asp&ctn=2014&kot=web-sites http://www.wcpfc.org/pdf/Map.pdf http://www.wcpfc.org/pdf/Rules_of_Procedure.pdf	

French Polynesia

Gargominy, O. (ed.), 2003: Biodiversité et conservation dans les collectivités françaises d'outre-mer. Collection Planète Nature. Comité français pour l'UICN, Paris. Chapter on FP.

Langlade, M-J., 2002: Effet des cyclones de l'été austral 1982-1983 sur les pentes récifales externes des atolls des Tuamotu, on IRD website on article: Harmelin-Vivien, M.L./ Laboute, P. (1986), Catastrophic impact of hurricanes on atoll outer reef slopes in the Tuamotu (French Polynesia). Coral Reefs 5 : 55-62

Ministère du Développement Durable PF (2006), Stratégie pour la biodiversité de Polynésie Française. On: http://biodiv.mnhn.fr/convention/cbd_national/fol297852/strategie_PF.pdf

Polynésie Française, 2004: Document Unique de Programmation (9eme FED).

Organisation	Website address	Remarks
BRGM, Bureau de Recherches Géologiques et Minières	www.brgm.fr	French Geological Institute
CIA	https://www.cia.gov/cia/publications/factbook/print/fp.html	
FP - CESC Council	http://www.cesc.pf/	Conseil économique, social et culturel
FP Assembly	http://www.assemblee.pf/	Assemblee PF

Organisation	Website address	Remarks
FP Ministry for Economic Affairs	http://www.finances.gov.pf/	
FP Ministry for SD	www.environnement.gov.pf general site with several pages on different issues Page on environment (among others on waste) : http://www.environnement.gov.pf/environnement.php	Ministere du developpement durable PF
FP Presidency	http://www.presidence.pf/	
French Center for Biodiversity Convention	http://biodiv.mnhn.fr/information/outre_mer/fol528725 on FP	Centre d'Echange français pour la Convention sur la diversité biologique
French Ministry Ecology and SD On FP	http://www.ecologie.gouv.fr/rubrique.php3?id_rubrique=342 Bibliography on FP http://www.ecologie.gouv.fr/article.php3?id_article=816	Ministère de l' Ecologie et Développement durable
French Overseas Ministry on FP	http://www.outre-mer.gouv.fr/outremer/front?id=outremer/decouvrir_outre_mer/polynesie_francaise&region=6	Ministère de l'Outre-Mer
IRD- French research institute for development	http://www.com.univ-mrs.fr/IRD/atollpol/irdpoly/acirdpol.htm http://www.com.univ-mrs.fr/IRD/atollpol/irdpoly/progsird.htm#ATOLL%20et%20CYEL http://www.com.univ-mrs.fr/IRD/atollpol/irdpoly/progsird.htm#PGRN http://www.com.univ-mrs.fr/IRD/atollpol/irdpoly/progsird.htm#TYPATOLL	Institut de recherche pour le developpement Research on coral reefs
IUCN	http://biodiv.mnhn.fr/information/outre_mer/fol088503/13_Polynesie_francaise.pdf	On FP
On black pearls	http://www.perle-de-culture-tahiti.com/tahiti.php	on black pearl cultivation
Quid France	http://www.quid.fr/departements.html?mode=detail&dep=987&style=fiche	On FP
Reefbase	http://www.reefbase.org/global_database/default.aspx?section=s1 http://www.reefbase.org/download/reference_image.aspx?filename=StatusCR_FrPolynesia_2004_Table1h.gif	Info on coral reefs in FP
SOPAC- South Pacific Applied Geoscience Commission	http://www.sopac.org/tiki/tiki-index.php?page=French+Polynesia+SOPAC+and+Sustainable+Development http://www.sopac.org/tiki/tiki-browse_categories.php?parentId=7	On FP
UPF-University	http://www.upf.pf/	Universite de la Polynesie

New Caledonia

Gargominy, O. (ed.), 2003: Biodiversité et conservation dans les collectivités françaises d'outre-mer. Collection Planète Nature. Comité français pour l'UICN, Paris. Chapter on NC.

République Française /Nouvelle Calédonie, gouvernement de la Nouvelle-Calédonie , 1999 : Cadre de la coopération Nouvelle-Calédonie – Communauté Européenne, VIIIème fonds Européen de développement.

République Française /Nouvelle Calédonie, gouvernement de la Nouvelle-Calédonie, 2004:, Document unique de programmation pour le 9eme fonds européen de développement.

Organisation	Website address	Remarks
CIA	https://www.cia.gov/cia/publications/factbook/geos/nc.html	On NC
Conservation International	http://www.biodiversityhotspots.org/xp/Hotspots/new_caledonia/index.xml)	Impact of mining etc. on wildlife
French Center for Biodiversity Convention	http://biodiv.mnhn.fr/information/outre_mer/fol250019 on NC	Centre d'Echange français pour la Convention sur la diversité biologique.
French Ministry Ecology and SD	www.ecologie.gouv.fr general site	
French Ministry Ecology and SD	On NC: http://www.ecologie.gouv.fr/rubrique.php3?id_rubrique=337	Ministere de l' Ecologie et Développement durable
French Overseas Ministry on NC	http://www.outre-mer.gouv.fr/outremer/front?id=outremer/decouvrir_outre_mer/nouvelle_caledonie&region=10	Ministère de l'Outre-Mer
IUCN	http://biodiv.mnhn.fr/information/outre_mer/fol088503/11_Nvelle_Caledonie.pdf	On NC
Quid France	http://www.quid.fr/departements.html?mode=detail&dep=988&style=fiche	On NC
Reefbase	http://www.reefbase.org/resources/res_overview.asp?changearea=true&Region=0&country=NCL	On coral reefs in NC
SOPAC- South Pacific Applied Geoscience Commission	http://www.sopac.org/tiki/tiki-index.php?page=New+Caledonia	On NC

Pitcairn

Brooke, M. de, L., Spencer, T. & Benton, T. ,1991: Pitcairn Islands Scientific Expedition: Interim Report, Cambridge: PISE.

Jaques & Associates Limited, 2003: Pitcairn Island Report. Business plan for Pitcairn.

Kingston, N. and Waldren, S., 2003: The Plant Communities and Environmental Gradients of Pitcairn Island: The Significance of Invasive Species and the Need for Conservation Management. In: Annals of Botany 92: 31-40, 2003.

Procter, D., & Fleming, L.V., eds., 1999: Biodiversity: the UK Overseas Territories. Joint Nature Conservation Committee, Peterborough. (Chapter on Pitcairn)

Sanders, S. (ed), 2006: Important Bird Areas in the United Kingdom Overseas Territories, The Royal Society for the Preservation of Birds, Sandy, UK. (Chapter on Pitcairn)

Sear, C., Hulme, M., Adger, N. and Brown, K., 2001: The Impacts of Global Climate Change on the UK Overseas Territories- Issues and Recommendations. A Summary Report, Natural Resources Institute

(UK), Tyndall Center for Climate Change, UK. A report commissioned by the DFID Overseas Territories Unit.

Tompkins, E. L., Nicholson-Cole, S.A., Hurlston, L-A., Boyd, E., Brooks Hodge, G., Clarke, J., Gray, G., Trotz, N. and Varlack, L., 2005: Surviving climate change in small islands- a guidebook, Tyndall Centre for Climate Change Research, UK.

Organisation	Website address	Remarks
CIA	https://www.cia.gov/cia/publications/factbook/print/pc.html	On PIT
CSL- central science laboratory	http://www.csl.gov.uk/sitemap.cfm	
Educational site	http://library.puc.edu/pitcairn/pitcairn/index.shtml	
Island website	http://www.lareau.org/pitc.html	
Pitcairn web site	http://www.government.pn/	
UK DFID	http://www.dfid.gov.uk/countries/caribbean/pitcairn.asp	On Pit
UK Foreign and Commonwealth Office	On PIT: http://www.fco.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1007029394365&a=KCountryProfile&aid=1018965247336	On Pitcairn as an Overseas Territory

Wallis and Futuna

Gargominy, O. (ed.), 2003: Biodiversité et conservation dans les collectivités françaises d'outre-mer. Collection Planète Nature. Comité français pour l'UICN, Paris. Chapter on W&F.

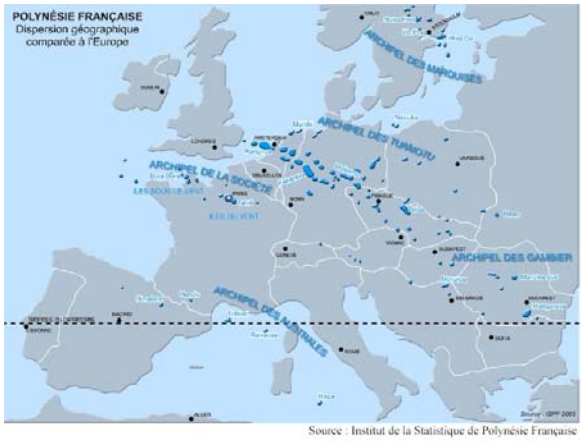
Organisation	Website address	Remarks
CIA	https://www.cia.gov/cia/publications/factbook/geos/wf.html	On W&F
French Centre for Biodiversity Convention	http://biodiv.mnhn.fr/information/outre_mer/fol919404 on W&F	Centre d'Echange français pour la Convention sur la diversité biologique.
French Ministry Ecology and SD	www.ecologie.gouv.fr general site On W&F: http://www.ecologie.gouv.fr/rubrique.php3?id_rubrique=341	Ministere de l' Ecologie et Développement durable
French Overseas Ministry on W&F	http://www.outre-mer.gouv.fr/outremer/front?id=outremer/decouvrir_outre_mer/wallis_futuna&region=5	Ministère de l'Outre-Mer
IUCN	http://biodiv.mnhn.fr/information/outre_mer/fol088503/12_Wallis_et_Futuna.pdf	On W&F
Quid France	http://www.quid.fr/departements.html?mode=detail&dep=986&style=fiche	
Reefbase	http://www.reefbase.org/resources/res_overview.asp?changearea=true&Region=0&country=WLF	On coral reefs W&F

ANNEX A : ENVIRONMENTAL PROFILE -

FRENCH POLYNESIA

0. Summary

French Polynesia is an overseas country in the South Pacific, with a population of 256,200 living on 76 of 121 islands.[11] The five distinct archipelagos would cover the whole of Europe with its surface of 5.5 million km^2 of ocean: from Bucharest to Spain and from the south of Italy to Oslo in Norway.

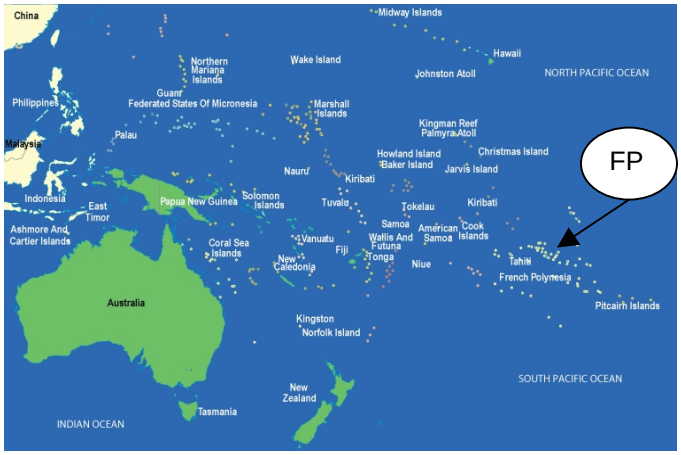


Source : Institut de la Statistique de Polynésie Française

French Polynesia takes the threat of climate change very seriously. Many of the islands are very low lying and are expected to disappear with sea level rise. Senior civil servants use terms such as *forced climatic exile* or *climatic genocide*. French Polynesia has an active policy for the protection of its environment. It participated in the December 2005 Conference of Parties of the UN Convention on Climate Change held in Montreal. Significant efforts have been made for waste water treatment and Bora Bora now has the EU Blue Flag for its swimming water.

The main economic support comes from France. Tourism (20-25% % of GDP), pearl cultivation and deep-sea fishing are important sources of income.

1. Background information



Situated in the Pacific, French Polynesia is the most easterly of the three French territories and countries in the Pacific.[12] Only the British overseas territory of Pitcairn lies further east. French Polynesia obtained the status of French Overseas territory in 1946. In 1984 it gained greater independence with a president chosen by a territorial assembly, its own flag and national anthem. Since 2004 it has been an overseas country, with increased legislative powers and international autonomy.

It is composed of 5 archipelagos with 121 islands in total. Papeete is the capital. The well known islands of Moorea and Bora Bora are also part of the volcanic (higher lying) islands. French Polynesia has the biggest variety of coral reef formations and atolls in the world, and the best studied coral reefs (Moorea). The atoll of Taiaro is a UNESCO man and biosphere (MAB) reserve.

1.1 Key facts and statistics

Name of Territory	French Polynesia
Region	South Pacific
Land area	3,660 km^2
Exclusive economic zone	EEZ: 5.5 million km^2 or 200 nm Territorial sea: 12 nm Continental shelf:

[11] 1/1/2006 Statistical Institute French Polynesia. 1/1/2006 Institut de la statistique de la Polynésie française
[12] The others are New Caledonia (NC) near Australia and Wallis and Futuna between NC and FP.

Population	256,000 (1/1/2006) with a growth rate of 1.8 % p.a.
GNP/capita	€16,300 (est. 2000)
Literacy rate	98% of population 14 and older (CIA)
Unemployment rate	13% (est. 1996, Single Programming Document)
% below poverty line	n.a.

1.2 Constitution

French Polynesia has seen a gradual increase in its political autonomy. It was a protectorate in 1842 and became an "Etablissement" of France in Oceania in 1881, an Overseas Territory in 1946 and then French Polynesia in 1957 with an elected territorial assembly. A law of 1996[13] conferred more powers to FP and in 2004 it became an Overseas Country. The president of French Polynesia is elected by the Assembly and the governor representing France is now called the High Commissioner. The locally elected Assemby has legislative powers but laws must also be approved by the French National Council,[14] Under its Constitution, France is responsible for foreign affairs on behalf of French Polynesia, in particular in the UN system. The government of French Polynesia has official representations in Pacific countries and cooperates with other OCTs such as Wallis and Futuna and New Caledonia. Nevertheless, agreements signed by the government of French Polynesia and foreign States or territories must respect the international commitments made by France.

Government and policy making in French Polynesia therefore takes place at several levels:

- France is represented by a High Commissioner[15] stationed at Papeete. Besides a global amount for co-operation[16], France helps finance the jointly agreed national plan.[17] France maintains responsibility for justice, monetary affairs, defence and multilateral environmental agreements.
- The government of French Polynesia has an assembly which elects the president of the government and an advisory National Council for Economic, Social and Cultural matters[18]. Environmental issues are a national responsibility and there is a Minister and a Ministry for Sustainable Development, the Environment, Physical Planning and Quality of Life.
- At the local level the 48 "communes" are the responsibility of the French state (police, etc).

1.3 Physical geography

Tuamotu and Gambier, the 2 central archipelagos, are composed of very low lying coral islands which form atolls[19]. These islands are not higher than 2-3 meters above the sea level, and are expected to suffer the most with sea level rise. The 3 other archipelagos (Society, Marquesas and Austral) are of volcanic origin and have high rugged mountains: populations live along narrow coastal strips. These are also threatened by sea level rise. The highest peak is Mount Orohena (2,241 m). Tahiti, Bora- Bora and Moorea are part of the Society islands. Tahiti is one of the highest volcanic island in the world.

French Polynesia has the greatest number and arguably the most spectacular coral reef formations in the Pacific, if not the world, with a total surface area of 12,800 km^2.[20] There are barrier reefs, fringing reefs and atolls (open, closed) and platforms. The coral reef formations in the Society archipelago demonstrate the theory of how coral evolves. There are volcanic islands with high peaks, lower volcanic islands with some reefs around them and almost completely submerged volcanic islands with a large lagoon around

[13] *La loi organique* n° 96-312 *du 12 avril 1996*
[14] *Conseil d'Etat de la Republique*
[15] *Délégué du Gouvernement, Haut-Commissaire de la République*
[16] *Fonds de Compensation*
[17] *Contrat de plan*
[18] *Conseil Economique, Social et Culturel*
[19] An atoll is formed on drowned sea mountains and volcanoes. Low-lying coral islands form on the rim of the volcano, and rarely rise more than 3m above sea level.
[20] Data from the French ministry of sustainable development, web page on Ifrecor and French Polynesia. According to the data base of Reefbase, French Polynesia has only 6,000 km2 of coral.

them and a belt of coral reefs. Atolls have a very low island in the middle, surrounding by water (lagoon) and a belt of coral reefs around them.

The archipelago of Tuamoto has 78 atolls and lagoons with spectacular shades of blue water. The geomorphological formations are unique and the Taiaro atoll in the Tuamotu Archipelago is a UNESCO man and biosphere reserve. Rangiroa is the 2nd largest atoll in the world with a lagoon of 80 x30 km.

The Marquesas islands are jagged and have no lagoon around them. Only 6 of the 12 are inhabited. The 5 Austral islands are much colder and more fertile than Tahiti. The Gambier archipelago has one higher island in the middle (Mangareva) surrounded by a belt of 16 smaller islands and the remains of an enormous volcanic crater. Makatea is one of only three phosphate rock islands in the Pacific Ocean. Cobalt is also found in French Polynesia but this resource is not exploited.

Bays are rare on most islands. There are only a few estuaries with mixed fresh and seawater.

The climate is tropical. The islands have suffered from cyclones and 2 boats sank in 1995 after an earthquake in Chile.

1.4 Flora and fauna

FP has a high degree of endemism.

	Biodiversity- Number of recorded species								
	Coral	**Fish**	**Molluscs**		**Algae**	**Mammals**	**Birds**	**Insects**	**Plants**
			marine	**terrest.**					
Total	170	800	1500	320	425	15	57	625	900
Endemic		14 (fresh water)	20% on Marquesas	100%			22	> 160	570
On IUCN Red list							15		142

The Scilly atoll, with a marine surface of 10,400 ha, is an important habitat for turtles in the South Pacific and a large stock of endemic (or genetically uncontaminated) mother of pearl shells.

There are approximately 100,000 ha of natural forest according to the WRI. Arable and permanent crop land is calculated to be around 5% of total area. The rivers, lagoons and the sea are sources of fish for domestic consumption and export.

Two uninhabited atolls (Scilly and Bellinghausen) are nature reserves. The sand key on a reef platform in the Marquesas (Motu One) is also a reserve.

There are no natural mangroves in French Polynesia.

1.5 Demography, socio-economy

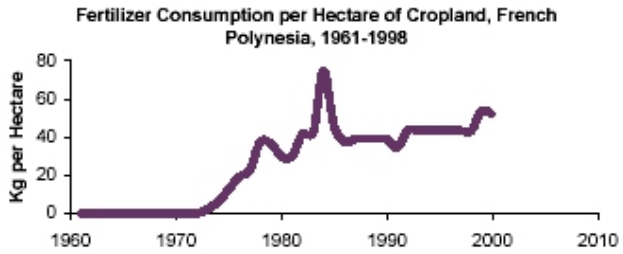
The majority of the population live on Tahiti (160,000) with 100,000 in Papeete. There is a continuing inflow into Tahiti of population from other islands. Between 1988 and 2002 the population of Bora Bora increased by 73% and of Moorea by 61%, due to tourism. On the Tuamotu-

Gamberi archipelagos the increase was of 28%, due to pearl cultivation. The population of FP is 83% Polynesian, 12% European and 5% Asian. Almost half the population is less than 20 years old. The per capita national income, at €16,300) is relatively high for the region. Agriculture accounts for only 4% of GDP.

Aid from France is significant. When nuclear tests were held in FP and the country housed a major military facility in Mururoa[21] it benefited economically from these activities. After the tests stopped in 1996, a temporary fund was created to support (new) economic development in French Polynesia.[22]. Between 1997 and 2001 an amount of €350 million was paid to French Polynesia through this fund. This fund has now become institutionalised and is worth €151 million per year, according to FP's Single Programming Document for the 9th EDF. A new economic development policy has been pursued since 1992, with sustainable development at its core. Two development plans have been agreed with France[23] for the periods of 1994-1999 and 2000-2003, and France contributed a total of €800 million towards these plans.

Tourism is the main economic activity and accounts for 25% of GDP. Around 250,000 tourists visit French Polynesia per year, and their expenditure adds €418 million to the national income or an extra €1790 per inhabitant. There are around 4,000 rooms, and 80 % of tourism is around lagoons. Employment in the sector is about 7,500.

The second most important economic activity is pearl cultivation. The export of pearls and mother of pearl amounted to €176 million in 2000. Black Pearl culture is a rapidly growing industry in the Tuamotu atolls, with a production of 8 tons in 1999.



The rivers, lagoons and the sea are sources of fish for domestic consumption and export. The catch is around 4,000 t per year in the lagoon and 10,000 t in deep sea. Exports have increased from 218 t in 1995 to 2,400 t in 2001, with a value of €11 million. Around 5% of population lives from fishing. An annual catch of 30,000 t would be sustainable according to IFREMER, the French Institute for marine resources.[24]

Arable and permanent crop land is calculated to be around 5% of total area. There were 150 tractors in 1997 and the use of fertilizers has increased (see graph).

There is a large trade deficit. Exports (5% of GDP) include cultured pearls, coconut products, mother-of-pearl, vanilla, and imports (37% of GDP) include fuels, foodstuffs, machinery and equipment.

2. Main environmental challenges

2.1 Overview

The islands of French Polynesia are spread over a large area (4 million km^2 in an EEZ of 5.5 million km^2). On the smaller islands the housing is poor and there is no waste water or waste treatment. The relatively high levels of income and tourism on Tahiti and other islands of the Society group place stress on the environment as untreated waste water flows into the lagoon. Many activities are in progress to improve waste collection and treatment, in particular on Tahiti and Moorea. An overview of the state of the environment is currently being made by the Ministry of the Environment in French Polynesia.

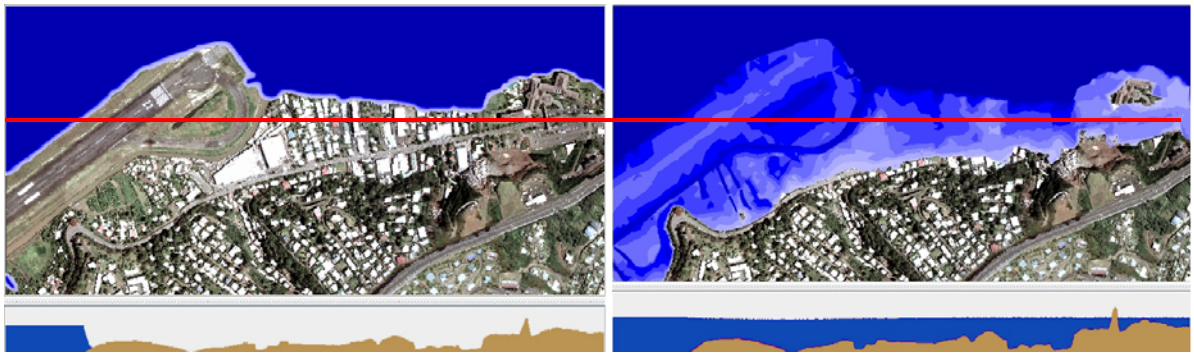
[21] *Centre d'experimentation du Pacifique*.
[22] FREPF= *Fonds pour la reconversion économique de la PF*.
[23] *Contrats de Developpement*
[24] *Institut francais de recherché pour l'exploitation de la mer*. Data from the Single Programming Document.

2.2 Main challenges

Challenge 1 Climate change SEVERE

French Polynesia is among the countries of the Pacific that will suffer most from sea-level rise due to its geomorphology. Much of the country comprises very low-lying coral islands, so a rise in sea-level will have major impacts. Islands and atolls will disappear in the longer term. Even on the mountainous islands there will be severe impacts as the population tends to be concentrated along small coastal strips . The airport of Papeete is built on a coral reef.

Simulations show how populated areas will be submerged as the sea rises due to climate change. The left picture shows Papeete with its airport. The right picture shows the submersion of part of the city, as a consequence of a rise of 88 cm. [25].[26]



Such changes will have an economic impact not only on the country (loss of infrastructure) but also on the inhabitants whose livelihoods depend on the sea (fisheries, pearl cultivation, tourism). Climate change is likely also to have a profound social and psychological impact on the island populations. People may lose their property and be forced to evacuate. On the Bikini islands, in the northern part of the South Pacific, this is already happening.

Results of a public opinion survey on climate change in French Polynesia show:

- a majority of those interviewed were aware of the risks, especially those living on the coast. They asked for more information and constant monitoring;
- a limited number knew of the phenomenon but felt they were not at risk themselves. The population of Punaauia on the west coast near Papeete thought the east coast would be harder hit as it has much less protection from fringing or barrier coral reefs;
- a number of the respondents thought that the sea-level rise and the rise in temperature of the water were the same thing. A small number of respondents did not know what climate change is.

A plan for adaptation to these phenomena was proposed by the Ministry of the Environment of French Polynesia after the participation of French Polynesia at a meeting of contracting parties to the Climate Change Convention in Montreal in December 2005.

[25] The Intergovernmental Panel on Climate Change estimates that the likely increase of sea-level by 2100 will be between 0.10 and 0.88 m.
[26] University of Sorbonne at the PRODIG laboratory of the National Centre for Scientific Research (CNRS) and IRIP institute at the University of FP.

Overview of climate change effects:

Impact	Sev-erity	Comments
Inundation of coastal land	●	The islands are generally low-lying and therefore vulnerable to rising sea-level. As major urban agglomerations are on the coasts, sea level rise will force people to move.
Stressed fisheries	⊙	Fishing is economically important FP. Climate change may affect the fisheries in unpredictable ways.
Coral reefs threatened (bleaching, decreasing pH)	●	Islands ringed by coral reefs, presently still in reasonable condition, but already subject to multiple threats.
Damage to mangroves	○	No mangroves in French Polynesia.
Salinisation of groundwater	⊙	Islands have limited groundwater resources.
Tourist industry	●	Tourist industry accounts for 25% of GDP. Reef tourism and fishing are important attractions.
More frequent and more intense storms	●	This poses a severe threat; FP is subject to tropical storms and cyclones, which already pose a threat to beaches.
○ Nil ⊙ Slight ⊙ Moderate ● Heavy		

Challenge 2 Degradation and destruction of coral reefs and pollution of lagoons SEVERE

The reefs of French Polynesia are considered to be in better shape than those of other islands of the Pacific according to the Coral Reef report 2000. But Reefbase, another global monitoring system, assesses that 29% of the corals are at risk. In these surveys, the main causes for coral reef degradation are identified as being:

- Coral Harvesting
- (Over)fishing (including destructive fishing)
- Acanthaster (giant starfish feeding on the corals)
- Coral bleaching (due to sea water temperature rise)
- Tourism (diving, anchoring on reefs)
- Urbanisation (building on reefs, using reef material for construction or land fill)
- Pollution, including bacteriological contamination and morbidity due to untreated waste water
- Coastal Alteration
- Cyclones (Waves beat on the corals and destroy them)
- Sedimentation (soils run down after rains and cause suffocation of corals and slower growth due to loss of light)
- Oil Spills

The threats and causes of pollution of the lagoons and sea in French Polynesia are:

- the concentration of population in a few areas of the Society islands and in particular in Papeete (the capital) which has seen a rapid increase of (poorly housed) populations migrating from other islands, and in Bora-Bora and Moorea (where many tourist facilities are). There is now a sewage treatment plant in Bora Bora and another planned for Punaauia near Papeete.
- Pollution from free-roaming pigs and from pig breeding in coastal areas.
- There is evidence of eutrophication from sewage and fertiliser nutrients in some lagoon waters around Moorea.
- Black pearl cultivation can release large quantities of faecal pellets, resulting in eutrophication, algal blooms and significant mortality of oysters, fish and invertebrates.

Considerable information on bleaching and mortality of coal reefs caused by warmer waters has been recorded in French Polynesia. There was major mortality in 1991 (20% of colonies died on the outer

slopes of many islands), 1994 (major bleaching, but most colonies recovered), and 1999 (high bleaching and mortality, but with great inter- and intra-island variability).

The number and concentration of high class hotels in Bora-Bora has brought the problem into focus, and a plant for waste water treatment has been built. A new plan for waste water treatment in Punaauia (west coast of Tahiti)[27] has started. Bora Bora now has the EU Blue Flag symbol for clean swimming water.

Extraction of material from the lagoon and reef areas (e.g. coral sand, rubble) to build houses or for roads, walls, and shoreline construction is a major problem in all Pacific islands with significantly increasing populations. Coral and sand mining have been banned on FP and in Kiribati (to the north west of FP) but activities continue.

Other issues
Waste disposal is also a problem, in particular with the relatively high income levels in Tahiti. A total of 120,000 tons of waste is produced every year, with a few complicating factors: concentration on a few islands (90,000 tons on Tahiti), wastes which are difficult to process (plastic bottles, batteries, cars), islands are dispersed so collection for recycling will be costly.[28] In 1997 a waste study was made and a plan was adopted in 1999. There is now a waste tip in Paihoro, selective collection of household waste on Tahiti and Moorea and a plant in Motu Uta for separation, recycling and export of waste. More than 3,000 car wrecks were collected and are now being exported. There are also 'eco-points' on 70 beaches on Tahiti and Moorea and information campaigns.

3. Environmental policies and institutions

3.1 Institutional structure, manpower and budgets

The protection of the environment is the responsibility of the territorial government which has a minister for Sustainable Development (which includes environment, spatial planning, quality of life and prevention of natural hazards)[29]. The Ministry for Sustainable Development is responsible for all these areas. Other ministries are also involved with tasks related to environmental protection.

Ministry/ Directorates/ Services	Responsibilities for environmental issues	Staff	Operating Budget
Ministry for Sustainable Development with 4 'special" central units	Environment, quality of life and natural hazards	8	€1.6 million
With a directorate for the Environment	SD and Environment (pollution prevention, nature conservation and valorization)	38	
With a service for physical planning and urban affairs		5	
Min. of Public Utilities	Renewable energy	2	
Min. of Agriculture	Agriculture, forestry, livestock	4	
With its service for Rural development	Land and area planning , development of agriculture, applied agronomy research, livestock development, forestry and rural areas management, food quality and veterinary measures	430	

[27] Where new commercial activities have developed, among others a megamarket, and the 5 star hotel Meridien is located.
[28] Information from the website of French Polynesia, pages on sustainable development.
[29] *Ministere de Developpement Durable, de l'Environnement, de l'Amenagement et de la Qualite de la vie, charge de la prevention des risques naturels*.

Ministry/ Directorates/ Services	Responsibilities for environmental issues	Staff	Operating Budget
Ministry for the Seas	Seas, fisheries, aquaculture, research	5	
With its services for Fisheries	Fisheries and aquaculture policies (excl pearl culture)	62	
Min Social solidarity and fight against social exclusion		0	

A special department for natural disasters is currently being created at the Ministry for SD. Civil protection (including the police) is the responsibility of France as are the armed forces and the fire-fighting services. The mixed commission France - French Polynesia[30] has a sub-committee empowered to take action in the event of an emergency [31].

Finances for the ministry of SD come partly from a tax for the environment, fisheries and agriculture[32] which generates €14.2 million per year and feeds a fund for the environment and agriculture[33] (half of the revenues go to the ministry of SD). A tax on the removal and recycling of cars[34] generates €2 million, 15% of which goes to the Ministry of SD.

France is responsible for research, and is financing several major environmental studies.

3.2 Mechanisms for integrating environment into development

The vice-presidency of FP is responsible for integrating all policies and making sure they are coherent. It has a planning office[35]. Its task is to bring together all the necessary data for policy making at the local level.

The high level Economic, Social and Cultural Council (CESC) also has an overview of all policy areas.

The Ministry for the Seas is responsible for relations with all islands and its Maritime Area Management Plan[36] is a national one, including concerns for the environment, social and economic conditions.

The Ministry for SD has defined an action plan and is preparing a national Area Management and Sustainable development plan[37]. The national Land Planning Scheme[38] is also an integrating document.

Several institutions work together in research programmes like IFRECOR (*Initiative française pour les récifs coralliens*) and CRISP (Coral Reefs in the South Pacific) that deal with the environment. A special service for coordination of research on fisheries and aquaculture is located at the Ministry for the Seas..[39]

There are many NGOs, list in annex.

3.3 Environmental strategy and policy

There are several national plans dealing with the environment and other related issues:

- The action plan of the Ministry for Sustainable Development

[30] *Commission mixte Etat-Pays*
[31] « *plans d'urgence* »
[32] TEAP : *Taxe pour l'environnement, l'agriculture et la pêche*
[33] FEA (*fonds pour l'environnement et l'agriculture*)
[34] *TERV : taxe pour l'enlèvement et le recyclage des véhicules*
[35] *Service du Plan sous la tutelle de la Vice-Présidence*
[36] *PGEM : Plan de gestion de l'Espace Maritime*
[37] *Schéma d' aménagement et de développement durable (en cours de réalisation)*
[38] *PGA : plan général d'Aménagement*
[39] *Délégation à la recherche.*

- The waste disposal act of 1999[40] (with legally defined obligations and sanctions)
- The Biodiversity plan (Feb 2006) (with legally defined obligations and sanctions)

In preparation are:
- A review of the Waste Management Plan
- The Area Management and Sustainable Development Plan[41]
- The SD Strategy
- The Biodiversity Action Plan (related to the Biodiversity Strategy and Policy Document).
- A State of the Environment Report 2006

The priorities of the biodiversity plan adopted in February 2006 are:
- Create the necessary means and instruments to manage protected areas and habitats
- Determine which natural areas (terrestrial and coastal) are conservation priorities, aiming at protecting 10 % of the territory and lagoons in the coming 5 years
- Continue data collection on biodiversity
- Create an observatory for biodiversity and climate change
- Undertake special actions for the protection of threatened endemic species and for the fight against invasive species
- Continue raising awareness on the protection of biodiversity
- Ensure a sustainable funding for the activities
- Regulation of benefits and conservation and use of biodiversity

3.4 Policy instruments

French Polynesia uses a broad range of policy instruments: it has produced policy documents, enacts its own laws and uses environmental taxes and information to generate income and raise environmental awareness.

3.4.1 Legislation

The legislation most relevant to environmental protection in French Polynesia is indicated in the table below.

Item of legislation	Comments / detail
Nature protection act[42]	First piece of legislation on protection of the environment, in 1995.
Environmental Code[43]	Published in 2004, includes all provisions on environmental protection, pollution and other disturbances and environmental impact assessment. This code is now being reviewed and updated to include the right of public to access to information.
Spatial Planning Code[44]	Published in 2003, includes measures to mitigate major natural disasters, inc. building regulations which incorporate cyclone-proofing.
Fisheries	Various National Assembly decisions and laws on Fisheries and the exploitation and conservation of other marine resources, 1979 onwards.
Pollution from Installations	System of registration, classification and authorisation required to operate an installation which can harm the natural environment. A regulation provides for the authorisation of all activities that pollute (waste, waste water, noise). Some 1800 installations have such an authorisation and are under the control of inspectors.

[40] *Plan de gestion des déchets datant de 99 – réactualisation en cours de lancement*
[41] *Schéma d' aménagement et de développement durable (en cours de réalisation)*
[42] *Délibération relative à la protection de la nature n° 95-257 AT*
[43] *Code de l'environnement de la Polynésie française*
[44] *Code de l'aménagement de la Polynésie française*

Some French legislation applies in Polynesia, for example decrees from the French Code for the environment on the rights of NGOs and on marine pollution from ships. French initiatives like the National Observatory for Climate Change or IFRECOR (coral reefs) apply to Polynesia.

There are also various types of 'marine management plans' now being established for some areas of French Polynesia. These are typically based on key partners reaching consensus on lagoon activities e.g. numbers of fishermen, sharing of facilities, permitted fishing equipment, and hotel activities. This is essentially a bottom-up decision-making process with co-management interventions through government. These marine area plans need to be coordinated with land management plans to form realistic integrated coastal zoning plans.[45] The efforts in Bora-Bora where many hotels which were polluting the lagoon agreed to contribute to the waste water treatment plant is an example.

There are many nature reserves such as the Taiaro atoll in the Tuamotu Archipelago (a UNESCO Man and Biosphere reserve). Two uninhabited atolls, Scilly and Bellinghausen, are designated nature reserves as is a sand key on a reef platform in the Marquesas. There is also a whale sanctuary.

3.4.2 Economic instruments

There is a tax for the environment, fisheries and agriculture[46]. The revenues (€14.2 million/year) go to a fund for the environment and agriculture[47]. There is also a tax on cars to fund the recycling cost[48], with a revenue of €2 million. Revenues are used for collection and preparation for export and recycling.
The main beverage bottler in Tahiti has a system of deposit/return.

3.4.3 Information instruments

Many campaigns take place regularly: the SD week, World Environment, Biodiversity and Marine days, National Tree day and also beach clean up days. A number of educational multilingual brochures have been produced on 100 personal "gestures" for the environment, a code for the Environment, etc.
At least €750,000 has been spent on these activities.

A report on the State of the Environment is currently being prepared by Catherine Gabrié, oceanographer of WWF France with a number of French, Polynesian and international partners.

There is an educational programme for municipal policemen and "gendarmes" on the environmental legislation in force and on the infractions which should be punished. An interministerial working group is dealing with how to introduce environmental issues in schools. The Ministry for Sustainable Development has a good website: www.environnement.gov.pf

The University of FP and the Louis Malardé Institute have developed expertise in the area of health and the environment and make findings public.

3.5 Monitoring

In French Polynesia there are many monitoring programmes for water quality (Tahiti and some Society islands) and scientific monitoring of lagoon reefs all around Tahiti, Moorea (e.g. the Tiahura monitoring programme launched in 1991), and a long term monitoring programme on the outer slope of 14 islands.

Extensive monitoring is done of the state of the coral reefs by IFRECOR and CRISP in cooperation with WWF France and as part of UNEP's SPREP programme (South Pacific Regional Environment

[45] Bernard Salvat in Coral Reefs Report (2000).
[46] *TEAP : Taxe pour l'environnement, l'agriculture et la pêche*
[47] *FEA (fonds pour l'environnement et l'agriculture)*
[48] *TERV : taxe pour l'enlèvement et le recyclage des véhicules*

Programme)[49] and Global Coral Reef Monitoring Network (GCRMN) which produces reports on the state of the coral reefs.

3.6 Enforcement

There are 1800 registered installations that produce waste or waste water or noise pollution and they are supposed to be inspected regularly. Whether this is done effectively and efficiently in such a dispersed country could not be assessed.

3.7 Conclusion on administrative and political setting

French Polynesia not only has a Ministry for SD and the environment (with an action plan and a budget) but also enacts laws and codes for the environment. It has an authorisation scheme for installations that produce waste or might cause water pollution. It also uses environmental taxes and runs many awareness-raising activities aimed at the broader public and produces attractive publications on the environment. An ambitious multi-annual waste management plan is being implemented.

4. International cooperation

4.1 Cooperation with France

The DOMs (Départements Outre-Mer) and the PTOMs (Pays et Territoires Outre-Mer) which have greater autonomy) are treated similarly in terms of development cooperation. In particular in the environment sector, France has been working with its DOMs and PTOMs on coral reef protection. In 1995, after the UN conference in Rio, France and a small number of other countries created ICRI (International Coral Reef Initiative). France later set up IFRECOR, a the French Initiative for Coral Reefs, for its DOMs and PTOMs. IFRECOR works with SPREP in the Pacific.

There is now also the CRISP initiative (Coral Reefs in the South Pacific) initiated by WWF France and WWF Pacific, seeking to identify suitable protected areas.

France finances environmental studies and there are delegations of French institutes (like the statistical office) in FP. A so called Research Delegation at the Ministry of Seas, fisheries and aquaculture, prepares, coordinates, stimulates and monitors research dealing with marine and terrestrial resources and links them to social well being and economic benefits. FP works with French Institutes like IRD (French Institute for Development studies), Ifremer, CRIOBE. In relation to geology, mining and natural hazards, FP wishes to continue cooperating with the French BRGM.[50]

4.2 Cooperation with the EU

The Council Decision on the association of the OCT with the EEC, which governs EU-OCT relations, supports co-operation and development aspects and French Polynesia has been beneficiary.

In the framework of the 9th EDF, French Polynesia has asked the EU to help finance a new plan for waste water treatment in Punaauia near Papeete, on the West coast of Tahiti. It will connect 1,500 households to a second water treatment plant with a capacity of 2,400 m3/ day.

FP has also asked to build social housing for the isolated populations of the Tuamotu atoll, now living in poor and unhygienic conditions. The population is dependent on the production of copra and has been badly affected by cyclones.

[49] *PROE Programme régional Océanien sur l'Environnement*
[50] *Bureau de Recherches Géologiques et Minières.*

4.3 MEAs

France is a signatory and party to various multilateral environmental agreements. French Polynesia has agreed to comply with all the agreements signed by France. In most cases the MEAS have been transcribed into its own laws.

4.4 Funding by international community for environmental projects

None identified.

4.5 Other international cooperation on the environment

Extensive cooperation is taking place concerning the state of the coral reefs by IFRECOR and CRISP in cooperation with WWF France and as part of UNEP's SPREP programme (South Pacific Regional Environment Programme)[51], also with the Global Coral Reef Monitoring Network (GCRMN) which produces bi-annual reports on the state of the coral reefs. The 2006 annual SPREP's meeting took place in New Caledonia and an international forum on the biodiversity of coral reefs in the Pacific was also planned to take place in October-November 2006.

5. Recommendations for areas of cooperation between the EU and French Polynesia

Climate change

- The challenge of climate change is one best tackled in association with other OCTs or other international fora. See recommendations in section 4 of the main section of this volume. Nevertheless many of these actions can also be pursued at the territorial level, particularly in the field of adaptation, public information.

Protection of reefs and lagoons

- Development of instruments for establishing, managing and enforcing protected areas, particularly marine protected areas;
- Support for waste water treatment projects;
- Promote environmental management, auditing and certification schemes in the hotel industry;
- Support agricultural extension work and research to reduce the pollution from pig farming;

[51] *PROE Programme régional Océanien sur l'Environnement*

ANNEX B : ENVIRONMENTAL PROFILE -

NEW CALEDONIA

0. Summary

New Caledonia (NC) is the third largest island in the South Pacific, has the highest number of endemic species in the Pacific, virgin tropical forests, the largest lagoon in the world and the second longest coral barrier reef. It has a nickel processing plant near its capital Nouméa, and open cast hilltop mining of nickel has caused significant pollution and sedimentation in the rivers and lagoon. Traditional agricultural practices have also led to erosion and sedimentation as the island has coastal plains and mountains in its interior. Climate change related increase in sea water temperature has bleached coral reefs and cyclone Erica in 2003 caused extensive damage. The main identified environmental challenges are therefore climate change, erosion, pollution and sedimentation caused by the mining of nickel.

Environmental policies are mostly decided and implemented at regional level. There are three distinct provinces with significant socio-economic differences. Major long term environmental issues have not been identified or tackled. The ongoing development of France's (and NC's) action plan to stop the loss of biodiversity by the year 2010 is positive, as is NC's involvement in regional programmes such as UNEP's SPREP programme (South Pacific Regional Environment Programme)[52]. NC is hosting the next regional meeting on climate change.

External finance is being provided for professional training. Much more needs to be done to monitor and protect rivers, coastal lagoons and coral reefs, and to decrease the energy-intensiveness of the nickel processing plant.

1. Background information

Situated in the Pacific, 1500 km east of Australia, New Caledonia is part of Melanesia. It has been a French territory since 1853, with the status of overseas territory since 1956. A movement for increased independence in the 1980s and 1990s led to the Nouméa Agreement[53] of 1998 which foresees gradual and increased autonomy and sovereignty. It is now a "collectivité territoriale" of the French Republic. A referendum on the issue of independence is planned for 2014.

[52] *PROE Programme régional Océanien sur l'Environnement*
[53] *Accords de Nouméa.*

1.1 Key facts and statistics

Name of Territory	New Caledonia
Region	South Pacific
Land area	18,600 km^2
Maritime claims	EEZ: 1,350,000 km^2 Territorial sea: 12 nm Continental shelf: 46,000 km2
Population	235,200 (2003 est.), i.e. 12.6 i / km^2 with 2% growth p.a.
GDP/capita	16,459 € est 1999 (N.C.) 21,600 US $ est 2000 (WRI)
Literacy rate	94% of population 14 and older
Unemployment rate	14% (CIA) est 2004

1.2 Constitution

Since the Nouméa agreement with France and the ensuing legislation of 19 March 1999[54] government and policy-making in New Caledonia takes place at several levels:

- France is represented by a High Commissioner stationed at Nouméa[55]. Besides a global amount for cooperation[56], France helps to finance the jointly-agreed national plan [57].
- There is a national or territorial government of New Caledonia (with a congress which elects the president of the government) and a Socio-and-Economic Council[58]. Since 2000 many new policy areas have come under the jurisdiction of the national government, such as foreign trade, resources management (fossil fuels, nickel) and management of the EEZ.
- The three provinces (North, South and Loyauté Islands) each have their own assemblies[59], responsible for the environment.
- The local level has many of the same rights and responsibilities as the French Communes i.e. waste management and waste water treatment, civil protection.
- There are 8 areas subdivided into districts [60] governed by tribal chiefs.

1.3 Physical geography

New Caledonia lies in the South Pacific Ocean and is part of Melanesia. The geography of New Caledonia includes the third largest island of the South Pacific (after New Zealand and Papua New Guinea), the largest lagoon in the world and the second longest barrier reef. The weather is tropical, hot and humid, with south east trade winds.

1. The largest island (Grande Terre) has a surface area of 16,890 km^2 with coastal plains and mountains in its interior. In the south there are small isolated islands including the Ile des Pins. In the north lagoon is the archipelago of Belep and there are two atolls: Huon and Surprise.

From the Ile des Pins in the south to the Surprise islands in the north, the western side of the largest island has a barrier of small islands and coral reefs 1600 km long. This is 65 km from the island in places

[54] *loi organique*
[55] *Délégué du Gouvernement, Haut-Commissaire de la République*
[56] *Fonds de Ratrappage*
[57] *contrat de plan*
[58] *Conseil Economique et Social*
[59] *assemblée provinciale*
[60] *aires coutumières*

and the lagoon thus formed is nowhere deeper than 40 m. This reef is the second longest coral reef in the world.

Photo P A Pantz from website of the French Ministry of Ecology and Sustainable development.

Further to the west there are two underwater atolls (Fairway and Lansdowne) and even further west, the Chesterfield plateau with two large atolls (Chesterfield and Bellona).

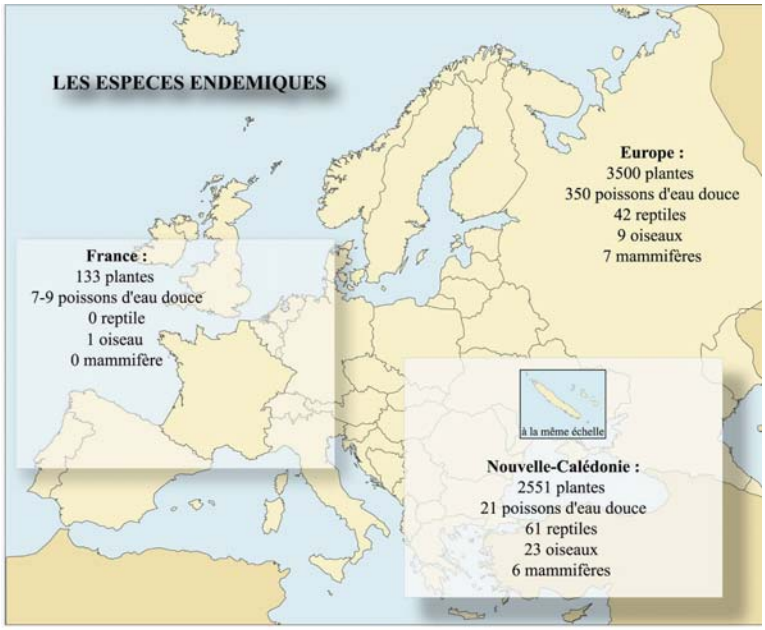
2. The archipelago of the Loyauté islands east of the main island is composed of three flat coral islands (Ouvéa, Lifou and Maré), plus smaller islands and two reefs in the north. In the south the Astrolabe reefs, and in the east the periodically active volcanic islands Matthew and Hunter complete the Loyaute area.

3. The lagoons of New Caledonia have a total surface area of 40,000 km^2.

4. The territory is rich in minerals. The nickel reserves are estimated to be 25% of the world's resources. New Caledonia also has chrome, iron, cobalt, manganese.

1.4 Flora and fauna

As fauna and flora evolved in isolation, New Caledonia has one of the highest rates of endemic species in the world and the highest in the Pacific. The International Union of Nature Conservation (IUCN) describes the importance of biodiversity in New Caledonia as follows:



According to the Directorate for Rural Economy of New Caledonia, there are 3500 plant species (75% endemic), one thousand species of fish, 6500 molluscs and 4300 terrestrial animals in the territory.

Four major terrestrial eco-systems can be distinguished: mangrove (540 km^2), savanna, *maquis* and forests. A large percentage (84%) of the forests that occupy 33% of the land cover is virgin forest. There has been extensive deforestation in the past as a result of logging, mining, uncontrolled fires and agriculture, although there was no significant deforestation between 1990 and 2000, indeed the area of planted forest increased by 2%. 18% of the land is shrubland and savannah and 9% wetland. Subsistence agriculture occupies 40% of the land and is traditional with igname a staple food of the Kanak people. The rivers, lagoons and sea are sources for subsistence fishing and export.

A few national and provincial parks have been established, for example the Blue River Provincial park (Riviere Blue-Yate), 45 km from Nouméa and 9045 ha, between the artificial lake Yate and the Koudorrou mountain. There are other reserves e.g. on Mount Mou and Mount Humboldt. Marine reserves have also been created.

1.5 Demography, socio-economy

Nearly all New Caledonians live along the coasts. The Southern province is the most populated with 68% of the territory's population, most of whom live in Nouméa, the capital. It is also the richest and efforts are made to redress this by diminishing the regional disparity and diversify the economy. Only 21% of the population live in the North province and 11% on the Loyauté islands.

Almost half the population is Melanesian, 34% is European, and there are also immigrants from Wallis and Futuna. The original population of New Caledonia came from New Guinea and South East Asia five

thousand years ago. They brought with them the igname which is still deeply ingrained in the agricultural, culinary and ritual practices of the Kanak people.

A large cultural centre in Nouméa is devoted to the Kanak culture. Nouméa is also called “la petite France du Pacifique” which reflects the large influence of the French co-operation aid, estimated to amount to 25% of GDP.

The most important economic activity is nickel mining and smelting, followed by fishing and tourism. Mining and the associated metal industry represent 90 % of exports and there are several plans for further investment. NC has 40% of the world’s known reserves of nickel. The largest ferronickel plant in the world is situated near Nouméa. The lagoon yields 4500 tons of fish per year. Aquaculture produced 1000 tons of shrimp in 1996.

Tourism is relatively undeveloped: it represents around 3% of GDP (6% of jobs) with around 100,000 visitors per year, 50% from cruise ships stopping at Nouméa. The capital has 1500 hotel rooms(70% of total hotel capacity in New Caledonia).

There is a large trade deficit: exports (13% of GDP) are ferronickel, nickel ore and fish; imports (28% of GDP) comprise mainly food and fuels (among others for the nickel processing industry, machines).

2. Main environmental challenges

2.1 Overview of state of the New Caledonian environment

New Caledonia has a relatively low population density and a relatively high income. Given the importance of the nickel reserves and its geography, with mountains and a large concentration of population in the coastal areas, some specific problems have arisen. The most important is land erosion because of hilltop opencast mining and traditional forms of agriculture and the ensuing pollution and sedimentation of rivers and lagoon. The loss of mangroves and of coral reefs due to road construction and the use of reefs as building material are also mentioned as significant by the French Ministry of Ecology and Sustainable Development. Consumption of fresh water is high and there is no waste water treatment in the capital, Nouméa. Fish stocks in the lagoon are still rich, but in the south of the lagoon leisure activities and deep sea fishing by tourists are having a negative impact. A few species have shown significant decline (bêche de mer, troca) and monitoring is being undertaken in the north. The collection of mother pearl for export and coral for ornamental purposes have damaged reefs. Non-anthropogenic challenges include coral bleaching, the invasion by the acanthaster planci (large starfish that feeds on coral) and cyclones.

2.2 Main environmental challenges

Challenge 1 Climate change SEVERE

The rising sea-level as a result of global warming means that there will be increased coastal erosion, flooding and inundation of land. There will be a loss of land, infrastructure and property. The concentration of the population in the coastal areas makes NC vulnerable to this threat.

Photo: P. Laboute, from IFRECOR site

In 1995 a rise in sea water had a very negative effect on coral reefs in NC. Around Nouméa, coral mortality rates of 80% (90% in shallower parts) were registered . The bleaching of corals has also been detected on the outer shelf of the reef, up to a depth of 80 m. Even the Aquarium in Nouméa was affected. Although this effect was temporary, it provided a foretaste of what may happen as the temperature of seawater rises in the future.

Changes in air and water temperature are expected to have major impacts on ecosystems and habitats (mangroves, lagoon, coral reefs) including, importantly for New Caledonia, fisheries. Changes in ocean currents will affect the availability of nutrients and the disposition of larval and juvenile organisms, thereby influencing fish stocks. Projected climate change could favour some fish species, decimate others; some fisheries may disappear, and other new ones may develop.

Another impact of climate change is likely to be an increase in the frequency and severity of cyclones and tropical storms, resulting in injury to people and economic damage. New Caledonia already suffers badly from cyclones, two recent examples being Beti (1996, extensive damage to Recaudy reef) and Erica (2003, extensive damage, 3500 homeless, 2 deaths, 100 injured).

Challenge 2 Pollution and sedimentation of rivers and lagoon SEVERE

Opencast mining produces 160,000 tons of nickel per year. Approximately 30 million m^3 of earth is moved for this purpose. These unstable heaps of soil are washed down by heavy tropical rains. This mining activity has severely affected the rivers and ecology of New Caledonia, with considerable impacts on hill slopes, valley floors, river channels, deltas and coastal areas. Around 40 rivers and estuaries are affected by the mining activity. The impact at river mouths around New Caledonia is severe in a number of places on the west and east coasts. On a number of other rivers[61], the effects are so far slight or moderate but may become more severe as waste from existing mines is added to the river system and as existing augmented channel loads move downstream.

Studies are being made of the accumulation of toxic substances (metals, biofuels) in plants and animals in the lagoon.

Since 2003 the production of nickel has increased significantly due to an increased demand from China.

The sedimentation in the lagoon and its impacts have been compounded by cyclones which have led to clogging of the mouths of rivers from mining catchments, especially on the east coast, and by traditional agricultural practices using periodic burning (*feux de brousse*).

Challenge 3 Threats to the rich biodiversity SEVERE

New Caledonia's rich wildlife includes large numbers of endemic species. For example out of more than 100 birds found in New Caledonia, more than 20 are endemic. But of these 20 species, 7 are classified as threatened by the IUCN. The kagu (*Rhynochetos jubatus*, EN) is gravely threatened by forest destruction and feral dogs and only a few hundred individuals survive. Other distinctive bird species include the endemic New Caledonia imperial-pigeon (*Ducula goliath*), which is the world's largest arboreal pigeon, the endemic cloven-feathered dove (*Drepanoptila holosericea*), the New Caledonian owlet-nightjar (*Aegotheles savesi*, CR) known from only a few specimens, and most recently from an individual seen in 1998. Two species from New Caledonia that have not been recorded reliably for many years, include the New Caledonian lorikeet (*Charmosyna diadema*, CR), last recorded in 1913, and the New Caledonia rail (*Gallirallus lafresnayanus*, CR), not reliably reported since the early 20th century.

The nickel mining industry has had a considerable impact on wildlife. Open-cast mining has led to deforestation and habitat destruction. Although the industry is now better managed and more localised than in the past new large-scale nickel mining and processing sites are threatening the very localised plant and animal species. Even though environmental impact studies have been undertaken and mitigation measures implemented, some very highly adapted species will probably disappear (Conservation International, http://www.biodiversityhotspots.org/xp/Hotspots/new_caledonia/index.xml).

[61] notably the Pouembout, the Ouha, the Moindah, the Rivière du Cap, the Ouenghi, the Tontouta, the Dumbéa, and on the east coast the Ouinné, the Ngoye, the Thio, the Nakéty, the Canala, the Kouaoua, the Koua, and the Houaïlou.

Alien species, introduced intentionally and accidentally for food or recreational purposes, are having a major impact. There are nearly 800 alien plant species, more than 400 alien invertebrates, and some 35 alien vertebrates established on the islands out-competing and replacing much of the original vegetation and faunal species. The most problematic of these introductions have probably been ship rats, cats, Indonesian deer and fire ants. These species have had a destructive effect on species and ecosystems.

Other pressures on New Caledonia's biodiversity now include bush fires, logging, hunting and selective illegal collection of animals. The most valuable timber species are already gone, but even limited logging threatens the habitats of species with highly restricted ranges. Like other islands in the Pacific, hunting and habitat modification since the arrival of the first humans has led to a number of extinctions, including 11 species of non-passerine birds, and continues to pose a threat to the New Caledonian imperial-pigeon and to flying foxes. International demand for rare species of birds and marine animals, such as the Uvéa parakeet (Eunymphicus uvaeensis, EN), the horned parakeet (Eunymphicus cornutus, EN), and an endemic "living fossil" cephalopod (Nautilus macromphalus), threatens the already sparse populations of these species.

3. Environmental policies and institutions

3.1 Institutional structure, manpower and budgets

The protection of the environment is mainly the responsibility of the provinces, but the national government has greater powers in strategic areas such as water resources, renewable energy, management and conservation of biological, mineral and fossil resources of the EEZ and phyto-sanitary measures. France has responsibility for civil protection, international relations, scientific research and a number of issues concerning sea transport in the area (e.g. dangerous substances). See also section 1.2.

3.1.1. National level:

1. Water resources. Responsibility for surface and ground water resources falls to DAVAR (Rural, Food and Animal Directorate) with SESER (*Service de l'eau, des statistiques et des études rurales*) and its Observatory of Water Resources (ORE) as the main actor. ORE has a staff of 14 with an operational budget of €2.35 million (salaries excluded) of which €1.7 million is for watercourse maintenance (delegated to the provinces).

2.Biosecurity- Phytosanitary and zoosanitary measures. Also DAVAR, with an inspection service (SIVAP-*Service d'Inspection Vétérinaire, Alimentaire Et Phytosanitaire*) which has a staff of 46 with an operating budget of €1.1 m.

3. Conservation and management of biological resources in the EEZ is the responsibility of the Merchant Marine and Marine Fisheries services (SMMPM- Service de la Marine Marchande et des Pêches Maritimes), with a staff of 17 and an operating budget of €134,000.

4. Mineral and fossil resources of the EEZ. No data.

5. Energy, incl. renewable energies.

3.1.2. Provincial level:

NORTHERN PROVINCE: No data received in questionnaire.

Directorate for Economic and Environmental Development DDE-E (*Direction du Développement Economique et de l'Environnement*) with a staff of 110.

Directorate for territorial planning and infrastructures DAF (*Direction de l'Aménagement et du Foncier*) with a staff of 120.

SOUTHERN PROVINCE:
Directorate for Natural Resources DRN (*Direction des Ressources Naturelles*). Staff : 90, operational budget €15.9 m. Responsibility for nature conservation and management, integrated water management, industrial environment, waste, natural parks, etc.

Directorate for rural development DDR (*Direction du développement rural*) with several services such as SATEG, SEDL and SAA . [62] Staff : 125, €10,1 m.

LOYAUTE Islands:
Directorate for Economic Development DDE (*Direction du développement économique*), 40 staff (one per island, one per sector, incl tourism, fisheries. €8.4 m.

Directorate for territorial planning and infrastructures, 60 staff, €2.5 m.

Directorate for cultural and property matters, 15 staff, €1.7 m.

3.1.3. Local level

Responsibility for solid waste, wastewater, urban matters and civil protection (with France)

3.2 Mechanisms for integrating environment into development

There is a Consultative Committee on the Environment for study, advice, coordination, information and proposals on sustainable development and environmental protection. It has to be consulted about major projects. It has 15 permanent members plus high-level personnel such as the High Commissioner and the presidents of New Caledonia, the congress, the 3 provinces, the president of the association of mayors, 4 representatives of NGOs, etc.

There are also other advisory and consultative bodies for mining and research. Several levels and institutions cooperate on research programmes such as IFRECOR (*Initiative Francaise pour les Recifs Corraliens*) and ZONECO (*programme d'études des ressources naturelles, lagonaires et maritimes de la Zone Economique Exclusive de la Nouvelle-Calédonie*).

There is a group of technical experts from the different governing levels on issues such as wildlife, invasive species and a proposal for world heritage status for the coral reefs of New Caledonia.

A great many NGOs are active in the area of environmental protection (see annexed list).

There is a rapid response group (*cellule d'urgence*) composed of several services like ORE (water), meteorological and geology services and the French civil protection services for quick reaction in case of natural disasters.

3.3 Environmental strategy and policy

Each province makes its own plans for economic development and for environmental protection. The national government is responsible for making (with the provinces) a national development plan and for the use of natural resources.

Policy documents/ Plans:
- General political declaration of the presidency (10 august 2004). Section II is devoted to the balanced growth of the country[63] with a section on Natural Resources[64] with separate sections on Mining, Local

[62] *Service des appuis techniques et du conseil de gestion, Service des études et du développement local, Service de l'administration et des aides*.
[63] *Le développement equilibré du pays*

industries, Tourism, Agriculture and Aquaculture. The provinces use this as a framework for their own plans.
- Water quality plan, with an annual report/ review.
- Plans for coping with disasters such as marine pollution, fires, avian flu, etc.
- New Caledonia's contribution to the French national programme for the conservation of Biodiversity by the year 2010.
- In preparation: policies and protocols on flooding, landslides and earthquakes.

3.4 Policy instruments

3.4.1. Legislation, regulations and other regulatory instruments

- EIA- There is currently no detailed EIA legislation in New Caledonia.
- Protected areas: a number of areas are protected; these areas are managed and controlled at provincial level.

3.4.2. Economic instruments

- A tax on fossil fuels (hydrocarbons) the revenue of which will be used in schemes to improve the recycling and re- use of industrial waste.
- Return system for gas bottles.

3.4.3. Voluntary instruments

- Voluntary recycling at the largest bottler in New Caledonia.

3.4.4. Information instruments

Several information centres and budget lines are available for environmental education in schools, in the public administration.

3.5 Monitoring

Water quality is monitored and there is an annual report. Many research projects monitor the state of the coral reefs, sedimentation and toxicity in the lagoon.

3.6 Conclusion on the administrative and political setting

There are well-defined institutions and services that have specific tasks, staff and budgets for environmental protection, in particular for the protection of fresh water resources. There has also been quite a lot of research in e.g. on pollution and sedimentation caused by mining activity and techniques.

The strong regional geopolitical context makes it impossible to fully assess environmental policies and their effects here, but this division into regions is not effective for policy making and decisive action on major environmental and long term issues. As in many other countries with a federal structure, the common environmental issues are more difficult to identify and tackle.

There appears to be very little environmental legislation and no separate services for nature, environmental issues or sustainable development.

The Creation of a Consultative Committee for the environment is positive but its wide-ranging membership may make it difficult to reach consensus on priorities. The many NGOs that are active in the country demonstrate an interest by civil society in environmental issues.

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[64] *les sources du développement*

The preparation of a policy document with France on Biodiversity is a positive step.

4. International cooperation

4.1 Cooperation with France

The DOMs (Départements Outre-Mer) and the PTOMs (Pays et Territoires Outre-Mer) which have greater autonomy) are treated similarly in terms of development cooperation. France has been working with its DOMs and PTOMs on coral reef protection. In 1995, after the UN conference in Rio, France and a small number of other countries created ICRI (International Coral Reef Initiative). France later set up IFRECOR (Initiative for coral reefs) for its DOMs and PTOMs. IFRECOR works with SPREP in the Pacific.

Much research has been done in cooperation with France, eg. for example the PNEC *Programme National sur l'Environnement Côtier*. New Caledonia is one of six research sites. www.ird.nc

4.2 Cooperation with the EU

The Council Decision on the association of the OCT with the EEC, which governs EU-OCT relations, supports co-operation and development aspects and New Caledonia has been a beneficiary.

In the 9th EDF, New Caledonia asked the EU to help to finance professional training, partly related to the expanding nickel industry, but also for economic diversification. Training is also seen as a way of diminishing the regional and social differences in New Caledonia.

4.3 Other international cooperation and Multilateral Environmental Agreements (MEAs)

France is signatory and party to various MEAs. New Caledonia has agreed to comply with all the agreements signed by France except the UNFCCC and the Aarhus Convention. However work remains to be done to by New Caledonia to implement and fully comply with its obligations under these MEAs.

4.4 Other funding by international community for environmental and environment-related projects

None identified

4.5 Other international cooperation on the environment (or environmentally sensitive sectors)

SPREP / PROE.

New Caledonia collaborates coastal research with:

- The Australian Nuclear Science and Technology Organisation on bioaccumulation of metals.
- The International Atomic Energy Agency (IAEA) in Monaco: on metal in living organisms.
- James Cook University, Townsville, Australia on the transport of particulates in rivers and on sedimentation.
- University of the South Pacific (USP) Fiji, on marine biology, chemistry and physics.

5. Recommendations for areas of cooperation between the EU and New Caledonia

The challenge of climate change is one best tackled in association with other OCTs or other international fora. See recommendations in section 4 of the main section of this volume. Nevertheless many of these actions can also be pursued at the territorial level, particularly in the field of adaptation and public awareness.

The damage being caused by nickel mining on the other hand is a problem which is very specific to New Caledonia and needs to be addressed urgently. Attention is also needed for the protection of biodiversity - the territory's greatest treasure besides nickel.

Recommendations

- Technical assistance for an updated assessment of the environmental impact the nickel mining industry and introduction of new (cleaner) technologies.
- Reduction in fossil fuel usage in the nickel processing plant (energy conservation and/or increased renewables).
- Protection of biodiversity
    - programmes to strengthen protected areas system, protection of species, help NC to comply fully with its obligations under the MEAs, including legislative and organisational requirements;
    - programmes to address problems of invasive species: diagnostic, prioritisation and effective eradication;
- Support for agricultural extension work and research to reduce the use of fire in agriculture.
- Damage control and rehabilitation where slopes have been eroded by mining and agriculture.

ANNEX C : ENVIRONMENTAL PROFILE -

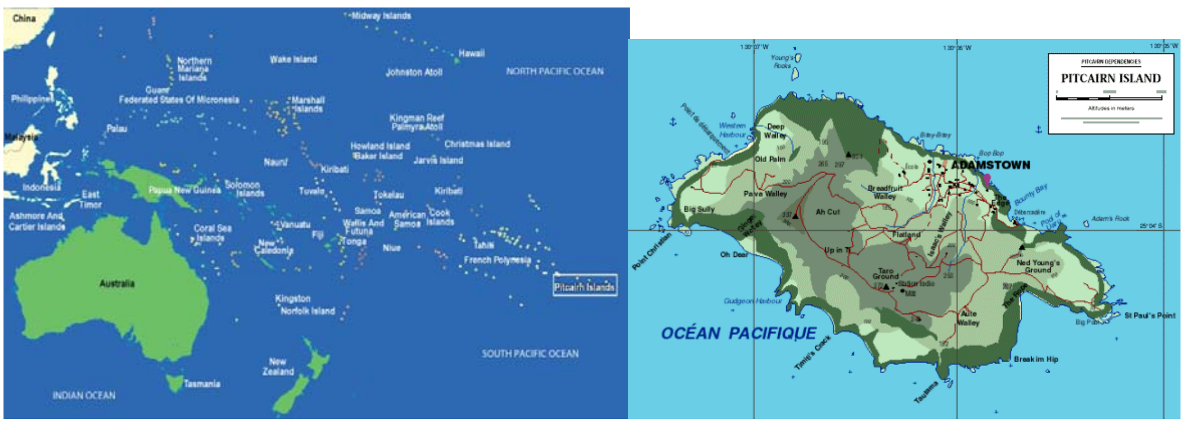
PITCAIRN ISLAND

0. Summary

Pitcairn is an extremely remote, small British territory in the South Pacific comprising four islands, only one of which, Pitcairn Island, is inhabited. Henderson island is a UNESCO World Heritage site and proposals have been made for the three smaller islands as well as two sites on Pitcairn Island to become Ramsar (Wetlands) sites. Improved access by air and sea could increase the flow of eco-tourists. This would require careful control to avoid the accidental introduction of invasive species which can irreversibly harm local flora and fauna. Maintaining Pitcairn's pristine environment whilst creating improvements in living standards for its inhabitants requires a delicate balance.

1. Background information

Pitcairn is a British overseas territory, situated in the South Pacific, south-east of French Polynesia and half way between New Zealand and South America. Pitcairn has less than 50 inhabitants. It was settled by the mutineers of the HMS Bounty some 200 years ago. The other 3 islands which are part of Pitcairn territory are uninhabited: Henderson Island is a World Heritage Site and there are two smaller low-lying atolls (Oeno and Ducie).



Left: Oceania with Pitcairn islands in the south east. Right: Pitcairn island, from Wikipedia.

1.1 Key facts and statistics

Name of Territory	Pitcairn
Region	South Pacific
Land area	47 km^2
Maritime claims	Territorial sea: 3 nm EEZ: 200 nm
Population	47
GDP/capita	Barter economy
Literacy rate	100% of population 14 and older
Unemployment rate	Not applicable

1.2 Constitution

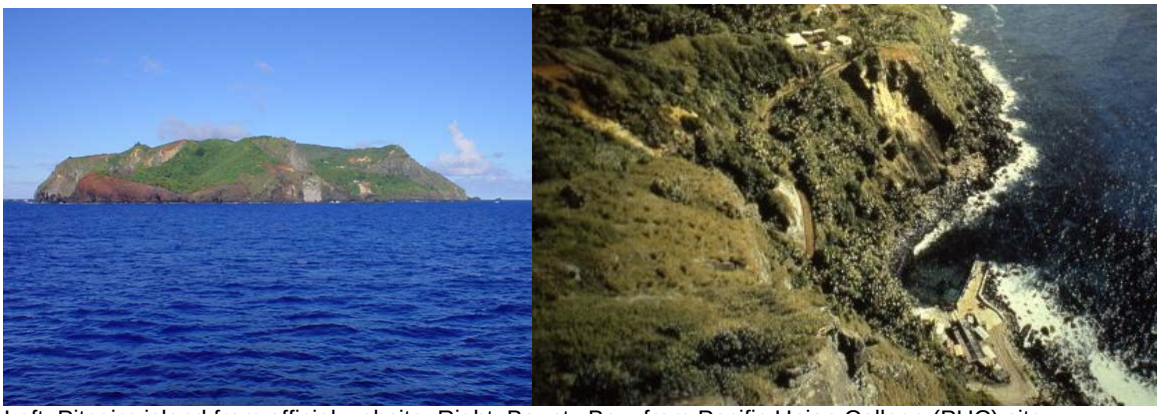
The present status and political setup of Pitcairn was laid down in two laws from 1970[65]. The (non-resident) governor is appointed by the Queen and this function was assigned to the British High

[65] Pitcairn Order and Pitcairn Royal Instructions

Commissioner in Wellington (New Zealand). The governor has legislative powers[66] with the mayor and Island Council managing the Islands internal affairs. The Pitcairn Council is elected annually and the mayor is elected every three years. The Pitcairn Government is administered by the Pitcairn Islands Office (based in Auckland) and the Pitcairn Commissioner.

1.3 Physical geography

Pitcairn Island is 7.5 km^2 and of volcanic origin. It has a rocky coastline with cliffs and no natural harbours. Its climate is tropical but mild, with easterly winds. The average temperature is 21°C with about a 10° difference between the warmest and coldest months. Typhoons occur between November and March. The highest point on the island is Pawala Valley Ridge at 347 m.



Left: Pitcairn island from official website. Right: Bounty Bay, from Pacific Union College (PUC) site.

Henderson is 37 km^2 and a very unusual elevated coral atoll. The old lagoon floor of the island is now raised to an elevation of about 30m. There is a fringing reef 200m wide on the north, north-west and north-east sides of the island, backed by a wide beach.

Oeno is a low-lying undisturbed atoll to the north of Pitcairn, consisting of a small central island surrounded by a lagoon with a fringing reef. The lagoon is 4 km in diameter and uniformly shallow (3m) with scattered coral reefs separated by sand. To the north there is a passage where the Pitcairners' longboats can enter the lagoon. Ducie Atoll, to the East of Pitcairn, is the southernmost atoll in the world. It is 1.6 km in diameter and consists of four islands surrounding the largest part of the lagoon. Acadia, the largest island of the atoll is 2.5 km long and 250 m wide, with a maximum elevation of 3 m.

Of the four islands, only Pitcairn has freshwater.

1.4 Flora and fauna

Pitcairn's soils are volcanic and fertile. Both tropical and temperate fruits and vegetables are cultivated, such as citrus, sugarcane, watermelons, bananas, yams, and beans, mostly for local consumption. The island has suffered intense deforestation and the only natural forests remaining are on the ridge of the central mountain. The island has 80 species of native vascular plant, of which 10 are endemic. 26 species of land snail were identified. Seven of these species are thought to be prehistoric adventives and a further three are likely to be prehistoric introductions. Pitcairn has one endemic bird species, the Pitcairn Reed-warbler. This bird appears to be distributed throughout the island in all habitats.[67]

Recent botanical research on Pitcairn island identified 14 plant communities: four coastal, six forest, two fernland and two scrub communities. Less than 30 % of the island is covered by native forest. Fernlands

[66] But approval of the Foreign Secretary must be sought for the enactment of certain classes of law.

[67] Procter and Fleming (1999).

also cover large areas, including both eroding areas and ridge tops. Coastal vegetation comprises rock and cliff communities with limited strand vegetation.[68]

Henderson Island is a unique elevated atoll, and a UNESCO World Heritage Site. Its plateau is protected from the periodic inundation of the sea during cyclones. As a result, a diverse fauna and flora has developed with many endemic species. Growing on this terrain are 63 native species including nine endemic. The island also has four endemic bird species: the Henderson Crake, the Henderson Fruit-dove, the Henderson Lorikeet and the Henderson Reed-warbler. There is a large variety of mite fauna on Henderson and many are apparently endemic. There are 26 species of spider and nine species of isopod, with three endemic to Henderson. Green turtles nest on Henderson Island.

Oeno and Ducie are pristine atolls, and have been proposed as Ramsar sites. The central lagoon at Ducie shows well-preserved dead corals, encrusted by a live coral assemblage. Presumably the formerly-abundant corals have been killed by influxes of cold water to this island, which is towards the southern limit of coral growth.

Oeno, Ducie and Henderson are all important areas for seabirds, hosting more than 10,000 pairs on a regular basis. Over 90% of the world's Murphy's Petrels (over 200,000 breeding pairs) nest on Ducie, making the atoll of supreme importance for this species. It is also important for two other surface-nesting petrels: the Herald and the Kermadec.[69]

A few species are exotic and were introduced from elsewhere: hardwoods (miro and toa) on Henderson (used for handicrafts), rose apple. There are also goats, cats and rats. The rose apple is being eradicated in places to allow the original vegetation to come back. A successful campaign has eradicated rodents from the two low-lying atolls, while on the other islands globally important seabird populations (petrels) are threatened by Pacific rats.

1.5 Demography, socio-economy

Pitcairn has no airport or harbour and has a predominantly barter economy. Wooden carvings, baskets and other local produce are sold to tourists who are transported by longboat from cruise ships anchored offshore. 6-10 cruise ships and 2500-3000 passengers visit the island per year.



Loading and goods and passengers from ships off shore to longboats. From PUC site.

Another source of income is the sale of the island's postage stamps and coins, the registration of internet domains and the sale of honey. There is no taxation, and the government is the only employer. There is a school, a health centre, police, a courthouse, a church and a cooperative store. The Islanders are mainly self-employed, though small allowances are paid by the Pitcairn Administration Office for performing maintenance and other tasks as required. Goods have to be lowered from larger ships, taken ashore and transported uphill to Adamstown by quadbike from Bounty Bay.

[68] Kingston and Waldren (2003).
[69] Sanders (2006).

At the end of 2002 regular shipping services to the island provided by P&O ships plying between Auckland and the Panama Canal were suspended. Boats now come only sporadically.

The languages are English and Pitcairnese, a mixture of 18th century English and a Tahitian dialect of the first inhabitants.

Imports include: fuel oil, machinery, building materials, foodstuffs. There is a budget deficit.

2. Main environmental challenges

2.1 Overview of state of Pitcairn's environment

The islands, in particular Henderson and the two low lying atolls are important for their bird populations.

All islands have suffered from invasive species (plants, trees, animals) but there are still many unique species of scrub, tree, fern, snails and birds: 24 plant, 170 terrestrial invertebrate and 4 bird species on only 47 km^2.[70] More than half the flora of Pitcairn Island are either threatened or likely to become so. On Henderson less than 20% of the flora are threatened.

Henderson has been accorded the status of UNESCO World Heritage Site and the two low-lying atolls are being considered for protection under the Ramsar Treaty.

The islanders re-use or burn most of their waste. One landfill is full.

2.2 Main environmental challenges

Challenge 1 Invasive species and other threats to flora and fauna URGENT

The islands' small size and remoteness create special difficulties. The necessary conservation and monitoring activities require scarce manpower and finance. The island's economy is very basic, and new opportunities are sought for improving air and sea access, as reflected in applications for EU funding. The island is seeking to develop ecotourism. However, an increase in visitors will mean a greater risk of introducing exotic and invasive species to the islands, and reducing biodiversity. A study has been commissioned on these risks. An Environment Management Plan is currently being drafted by external consultants.

Henderson already has a nature management plan for the period 2004-2009 but it is not yet implemented. The Henderson plan seeks to:

- create an administrative structure to ensure implementation;
- tackle the threat of alien fauna and flora;
- prevent the removal of biological, geological and Polynesian archaeological material;
- control tourism and associated visitor impact, excluding visitors from the plateau;
- prevent reef damage;
- reduce the exploitation of miro and toa timber to sustainable levels;
- continue monitoring and research.

[70] Procter & Fleming (1999).

3. Environmental policies and institutions

3.1 Institutional structure, manpower and budgets

The government of Pitcairn comprises a staff of 9: there is a Governor's representative on Pitcairn and a dedicated staff of three in the Governors Office in Wellington. There is a staff of four in the Pitcairn Islands Office in Auckland, headed by the Commissioner. None of these is specifically assigned to environmental issues. There are no regular budgets for the environment, though project funds can be sought from the UK for specific initiatives.

The Pitcairn Island Council is the elected body responsible for the day-to-day affairs of the islands and has limited legislative powers (see section 3.4.2.). There are two part-time officers who deal with the environment: a Director of Biosecurity and a Quarantine Officer. The former takes responsibility for biosecurity on Pitcairn and has been instrumental in setting up a nursery which is used for propagating endemic plants.[71] This officer also takes the lead in addressing pest problems (e.g. fruit fly) on the island. Along with other islanders he visits Henderson and Oeno about once a year, Ducie more rarely. The visits are usually too brief to permit active conservation management, but at least mean that any major conservation problems will not go unnoticed for extended periods. These two part-time officers are paid by the UK Government out of the island's budgetary aid. All other environmental initiatives are funded as individual projects with Foreign and Commonwealth Office funding (see 4.1).

3.2 Mechanisms for integrating environment into development

The Governor, High Commissioner and island council discuss all relevant areas of concern together.

There are no specific mechanisms for integrating environmental and nature conservation issues into the laws and plans for social and economic development of the territory.

3.3 Environmental strategy and policy

The framework for the development of Pitcairn is set forth in a UK government white paper (UK Government, 1999). The section on Pitcairn makes brief mention of promoting environmental protection. The main policy objectives for Pitcairn are to reduce isolation through improved transport links and to maximise economic growth and self-sufficiency through sensible economic and financial management.

The Single Programming Document (SPD) with attached business plan (made by consultants in 2003) prepared to appow Pitcairn to request EDF funds from the EU, and policy documents drafted to access budgetary aid from the UK are also relevant.

The previously mentioned Henderson Island Management Plan 2004-2009 is an important policy plan, an obligation under the World Heritage status. It has not yet been implemented.

Various reviews have taken place on environment-related issues such as fisheries, access, shipping and tourism, designed to inform decision-making in these fields as Pitcairn develops facilities on and for the island. Other relevant policy papers related to nature and the environment are:

- Foreign and Commonwealth Office (FCO) disaster management manual for Overseas Territories (currently undergoing amendment).
- Pitcairn Environment Management Plan, currently being drafted by consultants. It will incorporate the Henderson Island Management Plan (see below) and recommend strategies for environmental conservation on all four islands in the group.
- Project proposal being prepared for review of sanitation, waste and water on Pitcairn Island.

[71] Brooke's chapter on Pitcairn in Sanders (2006)

• Land survey recently undertaken will determine appropriate land use - ongoing project.

3.4 Policy instruments

The following items of legislation exist for Pitcairn.

Item of legislation	Comments or details
Apiaries Ordinance	Beekeeping regulations, including disease prevention and importation
Endangered Species Protection Ordinance	Largely designed to implement CITES
Fisheries Zone Ordinance	This provides the legislative basis for fisheries management. The ordinance establishes and regulates fishing within Pitcairn's EEZ, and provides for the issue of licences.
Local Government Ordinance	Authorises the Island Council to make regulations in areas such as quarantine, fisheries, planning and conservation.
Local Government Regulations 1971 (Part IV):	This covers animals and wildlife. Section C deals specifically with wildlife and is concerned primarily with species protection. The legislation generally prohibits the killing or taking of eggs of wild birds and, subject to the authority of the Wild Bird Protection Committee, controls the extent to which certain prescribed species may be exploited. An amendment in 1982 protects species (three whales, three seabirds and two turtles) restricting their capture, killing or harassment, and protects migratory species as a means of implementing the Bonn Convention on Migratory Species. There are no permits or quotas, but fines can be imposed for breaches of the regulations.
Local Government Regulations, other parts	Rules covering such issues as rubbish disposal, digging of cesspits. There are no permits or quotas, but fines can be imposed for breaches.

Environmental impact assessment (EIA) is not mandatory, but an EIA was carried out for the introduction of a new shipping route, to address risks from the import of produce from the tropics. EIAs are also planned for the construction of a new breakwater and the introduction of wind turbines.

3.5 Monitoring

No monitoring of air emissions, water quality etc. takes place. Pitcairn has one small spring which is not used for drinking water. Water is supplied from rain collected by individuals.

There is no specific process for monitoring wildlife, but the island has a Director of Biosecurity. Studies are also conducted at various times by visiting scientists. Monitoring changes in the island's fauna and flora is difficult because of the island's exceptional remoteness and ruggedness – the very features that have contributed to preserving it thus far. Pitcairn is included in the Pacific tsunami monitoring system.

3.6 Enforcement

There are no permits, requirements or quotas laid down in the local Regulations but fines can be imposed for breaches. Regulations are enforceable by the Island Council and the government. There are no agencies except the local police, the Director of Biosecurity and the Quarantine Officer.

3.7 Conclusion on the administrative and political setting

Pitcairn is very small, remote and inaccessible. With a population of 47 and a small administration 4500 km away in New Zealand, implementing and managing nature-friendly socio-economic plans is a challenge.

4. International cooperation

4.1 Cooperation with the UK

All environmental initiatives like pest control (fruit fly), the rat eradication project on the two atolls etc. have been funded as individual projects with British Foreign and Commonwealth Office (FCO) funding. Funding for environmental projects in the last 3 years has been approximately € 160,000.

The two environmental officers are paid from the budgetary aid received from the UK.

The FCO Good Government Fund has been used to support a number of projects on Pitcairn. The current average annual spend on Pitcairn from this fund is € 38,000. This remains an ongoing process.

4.2 Cooperation with the EU

The Council Decision on the association of OCTs with the EU, which governs EU-OCT relations, supports co-operation and development projects. Pitcairn asked for funds from the 8th EDF but some € 300,000 has not yet been spent.

In the framework of the 9th EDF, the Single Programming Document on Pitcairn asks for € 2 million to be spent on transport and communications infrastructure, to allow better links with French Polynesia:

- a breakwater and improved jetty;
- a road from the jetty to the township;
- the development of an airstrip;
- upgrading of public buildings; and
- easier access to modern communications.

4.3 Other international cooperation and Multilateral Environmental Agreements (MEAs)

Pitcairn participates in the following MEAs:

MEA	Extended	Effective	Comments
Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES)	August 1976	October 1976	
Bonn Convention on the Conservation of Migratory Species of Wild Animals	July 1985	October 1985	
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter	November 1975	December 1975	
Convention on Wetlands of International Importance (Ramsar)	January 1976	May 1976	No sites yet listed, but 2 sites on Pitcairn Is. and the other 3 islands have been proposed.
Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage)	?		
Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP)	July 1987	Not yet	Signed in respect of Pitcairn, Henderson, Ducie and Oeno Islands (Ratification has not taken place)

4.4 Other funding by international community for environmental and environment-related projects

None.

4.5 Other international cooperation on the environment (or environmentally sensitive sectors)

Several scientific expeditions have taken place on the Pitcairn islands, among them the Trinity College, Dublin, botanical expedition in 1997 and the Sir Peter Scott Commemorative Expedition in 1991-2, which documented the land flora and fauna of Henderson Island.

5. Recommendations for areas of cooperation between the EU and Pitcairn

1. Finish drafting the environmental management plan for Pitcairn

2. Support the work being done by the nursery on Pitcairn.

3. Implement Henderson's management plan:
- Create an administrative structure to make sure the plan is implemented,
- Tackle alien fauna and flora
- Prevent the removal of biological, geological and Polynesian archaeological material,
- Control tourism and associated visitor impact, excluding visitors to the plateau
- Prevent reef damage
- Reduce the exploitation of Miro and Toa timber to sustainable levels.

4. Continued monitoring and research

ANNEX D : ENVIRONMENTAL PROFILE -

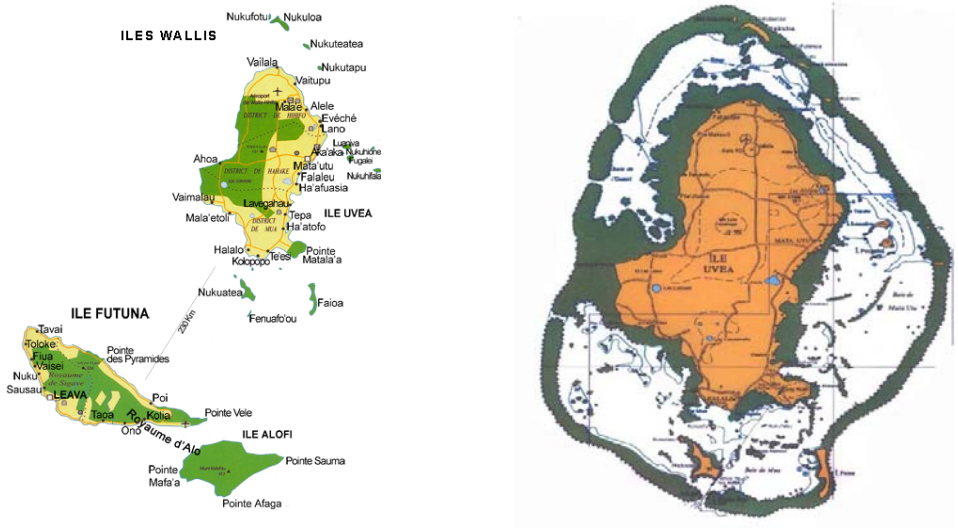
WALLIS & FUTUNA

0. Summary

Wallis & Futuna is the least developed overseas territory linked to France. The islands in the South Pacific are small and remote and the natural environment is threatened not only by traditions of subsistence farming and fishing which are not sustainable, but also by its geophysical position in a region with cyclones and rising sea temperature and sea level. France, the local administration and the three traditional chiefdoms have agreed on a sustainable development plan. Many projects, staff and funds are being used for waste collection and management, water treatment, reforestation and nature protection (starting with a few areas for which management plans are being made). Monitoring has also started. The territory has been able to obtain funds and implement environmental projects.

1. Background information

Wallis and Futuna are two islands in the South Pacific, more or less half way between French Polynesia and French New Caledonia and near to Fiji and Samoa. They were a French Protectorate for more than 70 years and became an overseas territory in 1961. The territory has a largely subsistence economy, and produces fish, pigs, poultry, vegetables, coconuts and mother of pearl. More Wallisians and Futunians live abroad (mostly on New Caledonia) than on their own islands. The administration is mostly French but there is an elected Territorial Assembly and three traditional chiefdoms at local level.



Left: the two main islands Wallis & Futuna, separated by 240 km sea.
Right: Wallis and its fringing coral reefs and islands (source: DOCUP)

1.1 Key facts and statistics

Name of Territory	Wallis & Futuna
Region	South Pacific
Land area	215 km^2
Maritime claims	EEZ: 266,000 km^2 Territorial sea: 12 nm
Population	16,000 (est. 2006); density 77 / km^2
GDP/capita	3,200 (2004)
Literacy rate	n.a.
Unemployment rate	400 seek work (2000)
% below poverty line	N.a.

1.2 Constitution

The islands became a French Overseas Territory in 1961. The locally-elected members of the Territorial Assembly appoint a President who is head of state. The French state nominates a Prefect (or High Administrator). In three regions there are local chiefdoms: Uvea, Sigave (on the western part of the island of Futuna) and Alo (on the island of Alofi and on the eastern part of the island of Futuna). A Territorial Council is composed of the 3 chiefs and of three members of the Assembly.

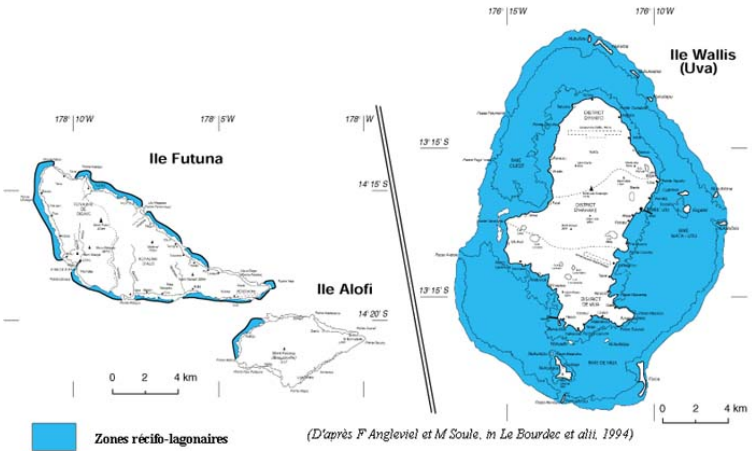
Justice is generally administered under French law by a tribunal in Mata-Utu (the capital) but the three traditional chiefdoms administer justice according to customary law for non-criminal cases. The court of appeal is in Nouméa, New Caledonia.

1.3 Physical geography

The Territory of Wallis & Futuna is composed of three larger islands (Wallis, Futuna and Alofi) and many small ones, but only Wallis and Futuna are inhabited.

Both Wallis and Futuna are of volcanic origin, Wallis is low with one hill (Lulu 151m). It has fringing reefs and a large ring of coral reefs and small islands around it, forming a lagoon. Futuna on the other hand has steep slopes and high mountains (Singavi 765 m and Puke 524 m). It is wave-beaten, has fewer coral reefs and is difficult to access by sea.

Both are in a geologically sensitive area with earthquakes and tsunamis. Average temperature is 26°C, humidity 80%, but November to March is the hurricane season, hotter with torrential rains.



Right: The islands with their lagoons and coral reefs (site French Min Environment)

1.4 Flora and fauna

While the coral reefs and the colourful fish living in them are spectacular, in particular around Wallis, terrestrial fauna on the islands are less interesting. Apart from the snakes, lizards and pigeons, most animals were imported for domestic and farm purposes (cats, dogs, pigs, goats). As well as fish (also ray), the seas of Wallis and Alofi are home to turtles and dolphins. The EEZ area has barely been explored and is rich in many species of commercial fish.

Wallis & Futuna has 940 km^2 of coral reef, with 30 coral types, 330 fish species and 310 mollusc species.

The territory has extensive mangrove stands, but these have been subjected to considerable pressures.

1.5 Demography, socio-economy

The islands have a population of around 16,000 but many (20,000) have emigrated to New Caledonia. The islands are remote: Wallis can be reached by air twice a week from New Caledonia (a 3 hour trip).

A large part of the economy is not money-based: two thirds of the active adult population have no income and live from fishing and subsistence farming. Of those who do earn, 70% are in public employment. There are no national accounts, but indicators show the island is poor: exports of copra, handicrafts, vegetables such as breadfruit, yams, bananas, livestock (pigs, goats) and construction materials were worth €300,000 in 1995 while €11,5 million was imported (foodstuffs, manufactured goods, transportation equipment, fuel, clothing). By 2002 imports had risen to €36,5 million (Single Programming Document for the territory. Transfers from France to the territory in that year were €66.5 million. Revenues also come from the issue of fishing licences to Japan and South Korea, import taxes and remittances from expatriate workers in New Caledonia.

The lagoon in Wallis cannot provide enough fish to meet local needs, and the large EEZ zone is not being exploited yet due to a lack of larger boats and ports. Agriculture is difficult, particularly in Futuna because of steep slopes and reduced fertility due to traditional agricultural practices (burning) and deforestation.

2. Main environmental challenges

2.1 Overview of state of the environment of Wallis and Futuna

In their Sustainable Development Plan, the authorities of Wallis & Futuna recognise that the local environment is being subjected to multiple threats and this is leading to a degradation of ecosystems. Among the problems are deforestation, degradation of agricultural land, pollution of (particularly the Wallis) lagoon and degradation of the coral reefs. As will be seen, many of these problems are interrelated. Quite apart from this, climate change with its rises in temperature and sea-level will constitute a major new challenge, and will compound many of the problems already being encountered.

2.2 Main environmental challenges

Challenge 1 Soil erosion and loss of fertility due to poor agricultural practices SEVERE

Deforestation and traditional agricultural methods involving stubble-burning (farmers on small plots of land burn their fields after harvesting) are removing surface cover. Given the rugged, steep terrain on the islands (particularly Futuna), this causes soil erosion and loss of fertility as the nutrients and organic matter are flushed downhill into the sea.

Challenge 2 Pollution and sedimentation of the lagoon at Wallis SEVERE

The run-off of soil from land into the sea leads to turbidity and sedimentation in the lagoon. However run-off from arable land is not the only problem. Excrement from pigs and goats which roam freely on the island (on Futuna pigs can be seen searching for food on the coral reefs at low tide) also gets washed into the lagoons, causing bacteriological contamination and eutrophication. Pollution and sedimentation in the lagoon of Wallis is serious.

Challenge 3 Degradation of coral reefs SEVERE

Some coral reefs in Wallis and Futuna are still in a relatively good state, but are subject to a range of pressures and are degrading rapidly (GCRMN, 2004, Reefbase database[72]).

[72] http://www.reefbase.org/resources/res_overview.asp?changearea=true&Region=24&country=WLF

Reefbase estimates that 25% of the coral reefs in Wallis & Futuna are threatened. IFRECOR, the French initiative for Coral reefs, argues that coral reefs of Futuna are very degraded and those in Wallis are not well monitored yet (monitoring at 5 sites only, since 1999).

Amongst the pressures causing this degradation are the turbidity and eutrophication referred to in the previous section (challenge 2). Coral is intolerant of both of these phenomena. Turbidity means loss of light needed by the corals and smothering. Eutrophication leads to overabundance of algae. Other activities which are damaging it are overfishing and deliberate destruction: coral reef material is being removed to be used as stone in construction work.

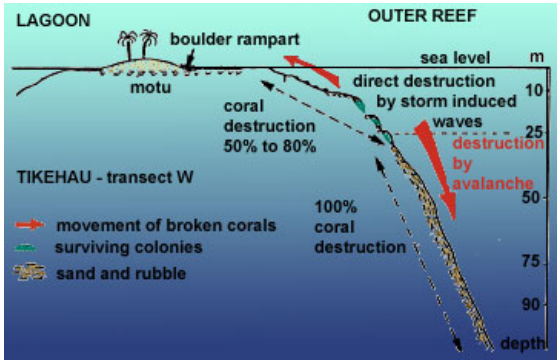
Challenge 4 Climate change SEVERE

Climate change will pose new threats to the islands, and indeed some impacts are already evident. Climate change poses three main threats to Wallis and Futuna, i.e. the rise in sea-level, the rise in water temperature and increased incidence and intensity of cyclones.

Rising sea-level means that the low-lying coastal areas of the territory will suffer increasing erosion, temporary flooding, and in some cases permanent inundation. This will lead to damage to property and infrastructure and economic loss. In the longer term there will be major social upheavals, with people having to retreat from areas close to the shore.

Sea-level rise is not a major threat in itself to coral reefs, but in combination with increases in atmospheric CO_2 it may become a problem, causing a reduction in the rate of calcification of coral skeletons, and could therefore seriously threaten coral reef ecosystems. If predicted increases in sea level (15 - 95 cm by 2100) occur in combination with increased CO_2 levels, coral reef growth may not be able to keep pace with sea level rise.

Rising sea temperature will cause bleaching and death of coral reefs. There has been no evidence of this effect yet in Wallis & Futuna, but the reefs have been monitored only since 1999. Bleaching will add to the stresses already being suffered by the reefs from the threats mentioned above under challenge 3.



Cyclones are the major factor determining the geomorphology of most coral reefs; they build up rubble and sediments and create new habitats and islands, but they also remove/ destroy coral cover as the waves pound the coral reef. The coral breaks and crumbles and there is a subsequent avalanche effect further down the reef. The illustration alongside shows the destructive effect of a cyclone on the reefs of Tiketau in French Polynesia.

But cyclones also affect people and property in particular when coasts are already damaged or receding as is the case of Wallis & Futuna.

Other environmental problems on Wallis & Futuna

- Deforestation: only 15% of the trees are still standing in Wallis, 30% in Futuna. Timber is used for fuel, construction and export.
- Sand extraction: the quarrying of sand on beaches for use as building materials is damaging the shoreline and beaches, which have receded 15-20 m in Wallis as a result of sand extraction. This increases the risk of damage when cyclones or tsunamis hit the coasts.
- Over-fishing and destructive fishing. Subsistence fishing is causing depletion of the resources. The means used are sometimes also detrimental to the environment: explosives, poisonous plants and throwing rocks (Salvat, 2000).
- The fresh water resources of Wallis are diminishing.

3. Environmental institutions and policies

3.1 Institutional structure, manpower and budgets

Wallis & Futuna has several departments that deal with the environment:

The Environmental Service[73] has a staff of 11 and a budget of €227,000 (salaries), €13,000 (investment) and €36,000 (operational budget) for 2006. It is the direct responsibility of the Prefect. The tasks of the Service are to:

- define the environmental criteria and constraints applying in all plans for the Territory;
- propose legislation and other policy instruments to promote the sustainable use and preservation of natural resources;
- combat pollution, environmental risks and nuisance;
- raise awareness, disseminate information, educate.

The Service for Rural Affairs and Fisheries[74] is also the responsibility of the Prefect. It has one staff member and a total annual budget of €25,000, and its responsibilities include regulating fisheries and protecting resources, sanitary control of livestock and food and the development of the rural economy and fisheries. The sole employee inspects and safeguards phytosanitary conditions at the airport and harbour.

Other services or directorates have tasks that are directly linked to the environment, such as SITAS, the Inspection Service for Labour and Social affairs[75]. It plays a strategic role on the environment because of its responsibility for professional training. Many professionals such as fishermen, farmers, marine biologists, veterinary and health service workers have received training from SITAS. The awareness and knowledge of conservation issues and sustainability concepts and practices of these people are crucial. The service is also responsible for job-creating initiatives at local level with projects which deal with coastal works and management, projects that enhance the environment, etc.

With regard to natural risks and disasters, the Director of the Prefect's Cabinet is responsible for planning and liaising at all levels of administration (including the traditional chiefdoms). He can initiate and coordinate emergency plans for epidemics (avian flu, dengue fever, etc.) and rapid reaction plans for marine pollution, hurricanes and other emergencies.

The total budget for 2006 of the Territory for environmental matters is:

- conservation of coral reefs: €25,140
- waste management: €37,710
- pest control (rats, mosquitoes): €9,260
- surveillance of water and water bodies: €8,380
- others €8,380

3.2 Mechanisms for integrating environment into development

Most of the larger infrastructure projects have had an EIA since 2003, but due to lack of qualified personnel on Wallis & Futuna, some studies took place after the project had already started (e.g. the airport on Futuna, part of the harbour at Halalo (Wallis)).

[73] *Service de l'Environnement*
[74] *Service des Affaires Rurales et de la Pêche*
[75] "*Service d'Inspection du Travail et des Affaires Sociales*

3.3 Environmental strategy and policy

Policy documents/ Plans

All political levels of the territory signed a policy document on sustainable development[76] in 2002. This looks 15 years ahead and aims at balanced development. According to this plan, the territory needs :

- modernisation of infrastructures: airports, harbours, schools, etc.;
- telecommunications, information technology;
- support for fisheries, agriculture, public works, construction, crafts, tourism;
- environmental protection;
- affirmation of the cultural identity;
- improvement of the living environment (sanitation, housing);
- regional integration.

This policy document has not led to a concrete action plan, but has served as guidance for other plans.

A number of environment-related studies, plans and proposals have been or are being made:

- Biodiversity: Action plan 2006-2010, made at the request of the French government as it is party to the Biodiversity Convention, whose objectives also apply to Wallis & Futuna.
- Coral reefs: Plans for action and protection in the framework of IFRECOR, the French Initiative for Coral Reefs.[77] The plan for 2006-2010 sets quantitative targets, for instance the percentage of coral reef to be safeguarded. The plan also deals with information and awareness-raising.
- Waste: a study was prepared in 2001 proposing a system of collection and treatment of waste on the islands, at the request of the local government. The recommendations have been included in an action plan which has been adopted. It is being implemented with aid from the French government as laid down in several cooperation agreements.[78] The plan has quantified objectives.
- Disasters and other natural risks and emergencies: There are plans for combating epidemics (avian flu, dengue fever, leptospirosis), marine pollution, hurricanes and disasters (ORSEC, air crashes).

A Decision of the territorial assembly (n°15/AT/97) lays down environmental protection priorities:

- protection of fresh water resources and improvement of the quality of surface and coastal waters.
- provision of alternative building materials (not sand from beaches or stone from reefs).
- protection of fish resources in the lagoon of Wallis and the coasts of Futuna,
- waste management (households and industry),
- protection of conservation areas.

The following plans are in preparation:

- water management plan;
- management plan for the marine environment.

3.4 Policy Instruments

3.4.1. Legislation, regulations and other regulatory instruments

There are three relevant legal instruments:

[76] *Document de Stratégie de développement durable de Wallis et Futuna*;
[77] *Initiative française pour les récifs coralliens*
[78] *Contrat de développement, Convention de développement*

Legal instrument	Comments
Délibération n°35/AT/2003 on environmental impact studies (EIA).	EIA required when planning and building infrastructure. Several EIAs have been made already: for the commercial harbour in Mata'Utu, the fishing harbour Halalo, airport on Futuna, etc.
Délibération n°31/AT/2003 on rules for extraction of marine or terrestrial organisms used for research or export.	This legal text sets quotas for certain overexploited resources (for example shells) and is stricter than CITES.
Arrêté n°95-244 on imports and Arrêté n°95-245 defining a list of forbidden imports (or needing authorisation).	This text aims at avoiding the import of pests and disease to plants and animals. If goods are not safe, they can be destroyed on arrival, or imports may be banned.

3.4.2. Economic instruments

Tax/sub.	Reven/cost	Application
Toxic products tax	€41,900	Used for collecting, exporting and recycling of toxic products (oil, pesticides, batteries, etc.)
Waste tax	€64,000	Tax on alcoholic beverages sold in shops, used for the collection of household waste.
Subsidies for pig sties	€55,000	Subsidies given to owners of pigs to avoid free roaming and pollution of soils

To encourage recycling of aluminium beverage cans, the Environment Service pays local associations which collect these cans. The cans are weighed and bought by the administration for €838/ton.

3.4.3. Information instruments

Much action has been undertaken in this field:
- articles in the local media on preservation of coral reefs and mangroves;
- agricultural extension activities to promote alternatives to pesticides;
- two books on the environment for secondary schools;
- a website is being designed with all available environmental information.

At meetings where elected members of the Territorial Assembly and representatives of the traditional chiefdoms work together, there is always information on the environment available.

There are no environmental NGOs on the islands.

3.5 Monitoring

The following periodic measurements are made:
- discharges[79] to the lagoon;
- quality of surface and coastal waters: since 2001 analyses have been made by the Environment Service and others of quantity, colour, turbidity, conductivity, oxygen, coliform and other bacteriological contamination, pesticides, heavy metals and hydrocarbons;
- groundwater: since 2001 3-monthly measurements have been made by the Environment Service of pressure, quantity and quality on Wallis;
- biodiversity: baseline measurements have been made, and trends are being estimated for coral reefs and inland waters;
- coral reefs: In Wallis & Futuna a monitoring programme started in 1999 focusing on the outer slopes of the 3 islands and the lagoon of Wallis, the main island.[80] The reefs that have been monitored have improved, mangroves are in less good shape.

[79] *exutoires*
[80] Coral Reefs Report 2000.

Inspectors lack sufficient transport means in some cases to do their job adequately.

3.6 Enforcement

- EIA: The Prefect can in theory stop building activities if an EIA was required but not done (no inspectors).
- Phytosanitary rules: 1 inspector, 2 cases in the last 2 years.

3.7 Conclusion on the administrative and political setting

Although there are no protected natural areas and only two species are partially protected, and although there are very few laws and penalties for damaging the environment, Wallis & Futuna has many plans, people and projects working for the environment. There is a sustainable development plan, a team of 11 directly under the Prefect, and a clear overview of budgets and grants, which shows there is administrative capability. There is a clear awareness of the urgency of the matter and of what is still needed. This will probably help secure future funds.

The way beverage cans are collected is innovative: cans collected by associations are weighed and paid for by the administrator.

4. International cooperation

4.1 Cooperation with France

Annual transfers from France totalled €66 million in 2002. More specifically, France supports a large number of environmental initiatives and projects:

Waste and water
France is helping the territory to implement the waste management plan. France also helps finance waste water treatment. The programme, with a budget for 2000-2006 €1.82 million, allowed the following:

- creation of two small-scale waste treatment facilities,
- selective collection of toxic waste, organic waste and recyclable waste,
- treatment of septic tank sludge (by using drying beds),
- incineration of hospital waste.

Coral reefs
The IFRECOR programme agreed with Wallis & Futuna aims at the sustainable management of coral reefs. Many projects have taken or are taking place:

- marine biodiversity surveys,
- awareness-raising activities,
- coral protection activities,
- management plans for marine protected areas.
-

The budget for these activities is €580,000 from the *Contrat de plan* for 2000-2006 and Development Convention 2003-2007[81] plus € 280,000 other funds.
Two new requests for extra funding have been addressed to the *Agence Française de Développement* (AFD) and the *Fonds français pour l'environnement mondial* (FFEM):

- purchase of equipment for waste treatment in Wallis and improve the access to the waste burial facility[82] in Futuna;
- creation of a small waste treatment plant at Sia hospital on Wallis.

[81] *Convention de développement*
[82] *Centre d'enfouissement technique* (CET)

4.2 Cooperation with the EU

The Council Decision on the association of OCTs with the EU, which governs EU-OCT relations, supports co-operation and development projects. Wallis & Futuna has been beneficiaries of the 8th EDF onwards. The 8th EDF awarded €730,000 for reforestation projects.

In the framework of the 9th EDF funds have been requested for projects related to harbour infrastructure, education. and the creation of a GIS (Geographic Information System) system for the Territory, that could monitor sectoral progress (agriculture, forestry, etc) and could later be used for physical planning. €5 million has also been allocated to the 3 French Pacific OCTs to promote solar and wind energy.

4.3 Other international cooperation and Multilateral Environmental Agreements (MEAs)

Wallis & Futuna "follows" France concerning multilateral environmental agreements. The Territory has prepared a Biodiversity Action plan 2006-2010, at the request of the French government, and in compliance with the Biodiversity Convention.

4.4 Other funding by international community for environmental and environment-related projects

The CRISP programme (coral reef initiative for the south Pacific) complements the work of IFRECOR in Wallis & Futuna. An amount of €30,000 is available for a plan for managing the marine environment in Alofi.

5. Recommendations for areas of cooperation between the EU and Wallis & Futuna

Wallis & Futuna is the least developed overseas territory of France. Partly because of geophysical factors and partly because of local customs and practices, the environment is suffering degradation: loss of forests, over-fishing and pollution in the lagoon of Wallis and destruction of coral reefs and beaches. The territories are clearly tackling these problems and have set up administrative structures staffed by competent people, budgets are allocated and some legislation (e.g. EIA) has been adopted. In particular the adoption of a Sustainable Development Plan by all administrative levels is an achievement given the complexity of the political setting: i) the French state prominently present with a Prefect and various services, ii) the territorial national assembly and government, and iii) the traditional chiefdoms in three regions.

The main challenges are solid and liquid waste, nature conservation (these are being tackled) and climate change, as coastal areas are receding through erosion and shoreline modification by the population. As there is a clear overview of funds and plans for new projects, it is expected that Wallis & Futuna will be able to access more funds.

Recommendations for areas of cooperation between the EU and Wallis & Futuna:
There is not at present funding for the following to assist with monitoring and enforcement:

- a boat for surveillance of the few protected areas that are being monitored and for which management plans are being made;
- diving equipment for monitoring the state of coral reefs and mangroves.
- 2 Motor vehicles for terrestrial monitoring

There is scope for promoting solar and wind energy (individual and semi-collective installations). On hydro-electricity: rehabilitation and re-enforcement of the small Vainifao dam on Futuna.