



# Government of the Cook Islands

## Second National Report (2002-2006)



### On the Implementation of the United Nations Convention to Combat Desertification (*Land Degradation*) (UNCCD)



July 2006

## ACKNOWLEDGEMENT

---

The National Environment Service gratefully expressed our gratitude to the following institutions who kindly gave valuable assistance, information and data during the consultations and compilation of this report.

1. Aid Management Division of the Ministry of Finance and Economic Management
2. ADB Project Office of the Ministry of Finance and Economic Management
3. Bio-Pac Ltd
4. Building Standards and Control of the Ministry of Works
5. Cook Island Meteorological Service
6. Cook Islands Statistics of the Ministry of Finance and Economic Management
7. Energy Division (Te Uko Natura) of the Ministry of Works
8. GIS Centre of the Ministry of Works
9. Lands Survey Department of the Ministry of Works
10. Ministry of Marine Resources
11. Ministry of Agriculture
12. National Environment Service
13. Office of the Minister for Islands Administration
14. Te Aponga Uira
15. Waste Management Division of the Ministry of Works

**Cover Photo by:** National Disaster Management Committee: Cyclone Assessment Team  
Pukapuka women recovering and harvesting “*taro*” in sea water flooded wetland area on Pukapuka Atoll, Northern Cook Islands, during aftermath of Cyclone Meena in 2005.

This report was prepared by Tuae Tangianau Upoko  
UPOKO Solutions Ltd, Cook Islands

Edited and compiled with the assistance of Tania Temata, Pasha Carruthers, June Harry and  
Cameron Scott

---

---

Prepared for the  
National Reporting Process for the Implementation of UNCCD Project,  
National Environment Service

## EXECUTIVE SUMMARY

---

In 2004, the National Environment Service produced the National Environment Strategic Action Framework (NESAF) 2005-2009 to support the National Sustainable Development Plan (NSDP). The NESAF continues to provide and guide activities and strategies related to land degradation programmes.

The Cook Islands does not have a national CCD programme and coordinator. However, strong sectoral programmes on land degradation and drought related programmes are being implemented which fall within and address concerns of the UNCCD.

To further progress implementation of the UNCCD, government will need assistance to establish a National Land Degradation Programme with dedicated resources to effectively implement across all sectors.

The National Environment Service is preparing to formulate its National Action Plan (NAP). Having a NAP will further strengthen land degradation activities already suggested under the NESAF. The NAP will address priority areas such as biodiversity, climate change impacts and adaptation, agricultural land use, wetlands and drainages, coastal and foreshore development and protection, housing development, water catchment areas and streams, inland, makatea, and coastal forests, aggregates mining and quarrying as well as waste management, research and technology development, education, trainings and awareness, knowledge, data and information management, and financial mechanisms.

Land and resource use and management have emerged as principal issues due to competition to use the limited resources to support the growing national economy. We are also seeing changes in patterns of land areas being developed as development pressure increases. Between 2002 and 2004, 34% of developments on Rarotonga were concentrated around the foreshore areas and 37% were on sloping lands.<sup>1</sup> During the period 17% of these developments also required EIA considerations.<sup>2</sup> Diminishing agricultural or arable lands are recognisable on Rarotonga as there is a shift towards tourism type activities.

Cyclones in 2004 and 2005 have caused major damage to coastlines and properties on Rarotonga and the outer islands. The Cook Islands is implementing several projects to lessen future disaster damage through institutional strengthening exercises, capacity building and policy changes.

Limited availability of land for waste disposal and management concerns and a growing awareness of negative impacts from pollution and contamination of resources have pushed the management of waste, chemicals and hazardous materials to the fore as priority issues for the Cook Islands.

Water security has emerged as a concern in the outer islands especially in the Northern Group. On Rarotonga, the biggest challenge facing government is the growing demand for water. It is also important that a national watershed and forestry management plan is developed to guide watershed development and forestry activities. There is need to develop and implement a community awareness and participation programme for maintaining healthy watersheds.

---

<sup>1</sup> Nia (2006)

<sup>2</sup> Nia (2006)

Since 2004, the Ministry of Marine Resources, the National Environment Service and the Ministry of Health have implemented programmes for conducting water quality tests and continuing monitoring of nutrient levels in Rarotonga's lagoon and waterways.

The key challenge for the Cook Islands biodiversity programmes is the implementation of the NBSAP. A recent national workshop on climate change awareness called for the development and implementation of a national climate change policy that will take into effect adaptation options and mitigation of land degradation.

The government, in conjunction with the Asian Development Bank, has commissioned the development and implementation of an integrated and sustainable 20 year preventive infrastructure master plan. Sub-sectors being considered include transport (roads, airports, ports and harbours), water, sanitation, solid wastes, electricity and energy, telecommunications, cyclone shelters and maintenance facilities.

There are gaps in terms of dedicated mechanisms or processes including policies for the monitoring the rate of development of resources and land use activities, even on Rarotonga.

The Cook Islands continues to collate baseline data and establish databases for future reference. This is a priority area and has been identified as a national constraint due to the lack of quality data and functional databases. Furthermore, the need to translate data into spatial information context (i.e. GIS) to assist with decision making at all levels has been highlighted widely as a key component for alleviating land degradation.

The limited capacities in local technical personnel and support facilities combined with weak data and information management capabilities will hamper future progress in planning biodiversity, climate change and land degradation programmes, let alone meeting the obligations of all three Conventions.

Meanwhile, the Cook Islands is preparing to address some of its land use problems under the Portfolio project to implement an MSP on Capacity Building for Sustainable Land Management (SLM). It will enable the Cook Islands to strengthen the policy, regulatory and economic incentive frameworks to facilitate wider adoption of sustainable land management practices across sectors.

Preliminary results from the National Capacity Self Assessment (NCSA) thematic assessments suggested the following key areas of capacity constraints and needs: limited numbers of local technical personnel and researchers; limited enforcement capacities; identified key sectors lack appropriate legislations, policies and strategies; roles and responsibilities of stakeholders not always clear; weak institutional structures for forestry, water, land use and survey management; limited capabilities of laboratories and research facilities; lack of database on technologies and detailed assessment of technology needs and transfer processes; lack of quality data and poor data management; limited numbers of functioning computer networks and databases; limited trained staff in media educational programmes and inconsistencies in the levels of resources committed by government and donors for CCD initiatives.

The amount of donor contributions to the Cook Islands environment sector was estimated at over NZ\$8.4 million for the period from 2002 to 2005. The Cook Islands government would like to acknowledge the assistance to its environment and related sectors from the NZAID, AusAID, GEF via UNDP, UNEP, SPREP, ADB and UNESCO, SOPAC, WMO, CSIRO, NIWA, USP, SPC, FAO, Japan (JICA), EU and CIDA.

## TABLE OF CONTENTS

---

ACKNOWLEDGEMENT .....	2
EXECUTIVE SUMMARY .....	3
TABLE OF CONTENTS .....	5
BACKGROUND INFORMATION TO COMBATING LAND DEGRADATION IN THE COOK ISLANDS .....	6
1. SIGNIFICANCE OF THE SECOND NATIONAL REPORT TO THE COOK ISLANDS .....	6
2. PROCESS FOR PREPARATIONS OF THE SECOND NATIONAL REPORT .....	7
NATIONAL STATUS OF COMBATING LAND DEGRADATION IN THE COOK ISLANDS .....	8
3. CLIMATOLOGICAL AND BIOLOGICAL INDICATORS RELATED TO LAND DEGRADATION .....	8
4. GEOPHYSICAL INDICATORS RELATED TO LAND DEGRADATION .....	14
5. SOCIO-ECONOMIC INDICATORS RELATED TO LAND DEGRADATION .....	23
MEASURES FOR IMPLEMENTATION OF THE UNCCD IN THE COOK ISLANDS .....	29
6. STRATEGIES AND POLICIES ESTABLISHED WITHIN THE FRAMEWORK OF SUSTAINABLE DEVELOPMENT PLANS AND/OR POLICIES .....	29
7. INSTITUTIONAL MEASURES TAKEN TO IMPLEMENT THE CONVENTION .....	32
8. PARTICIPATORY PROCESS IN SUPPORT OF PREPARATION AND IMPLEMENTATION OF ACTION PROGRAMMES .....	32
9. CONSULTATIVE PROCESS IN SUPPORT OF THE PREPARATION AND IMPLEMENTATION OF NATIONAL ACTION PROGRAMMES AND PARTNERSHIP AGREEMENTS .....	34
10. MEASURES TAKEN WITHIN THE FRAMEWORK OF NATIONAL ACTION PROGRAMMES (NESAF) .....	35
11. FINANCIAL MECHANISMS IN SUPPORT OF IMPLEMENTATION OF UNCCD .....	37
12. REVIEW OF BENCHMARKS AND INDICATORS TO MEASURE PROGRESS .....	39
FUTURE DIRECTION .....	42
13. FORMULATION OF NATIONAL ACTION PLAN .....	42
14. EMERGING ISSUES TO BE ADDRESSED .....	42
REFERENCES .....	43
ANNEX 1. UNCCD COUNTRY PROFILE .....	46
ANNEX 2. ADDITIONAL INFORMATION ON UNCCD COUNTRY PROFILE .....	50
ANNEX 2. LISTS OF EXPERTS CONSULTED .....	58
ANNEX 3. GLOSSARY .....	60

---

# **BACKGROUND INFORMATION TO COMBATING LAND DEGRADATION IN THE COOK ISLANDS**

---

## **1. SIGNIFICANCE OF THE SECOND NATIONAL REPORT TO THE COOK ISLANDS**

---

1.1 This report is part of an effort to inform key national stakeholders including international development partners, interested countries and the UNCCD Conference of the Parties on implementation of the UNCCD in the Cook Islands.

1.2 The report only comments on progress made after the First National Report on the Implementation of the UNCCD which was submitted to the COP in 2002. This is the second national report although this is the third reporting period for UNCCD.

1.3 This report will not repeat statements already contained in the first national report unless they revealed new information and progress impacting on the implementation of the UNCCD.

1.4 In 2004, the National Environment Service produced the National Environment Strategic Action Framework (NESAF) 2005-2009 to support the National Sustainable Development Plan (NSDP). The NESAF continues to provide and guide activities and strategies related to land degradation programmes. This report provides support to the NESAF implementation, monitoring and review processes.

1.5 It is important to note that the Cook Islands has not formulated its NAP but is preparing to secure funding for the formulation exercise in late 2006.

1.6 It is also important to note that the Cook Islands does not have a formal programme under a single domain for land degradation and drought. However, strong sectoral programmes on land degradation and drought related programmes are being implemented which fall within and address concerns of the UNCCD.

1.7 In the Cook Islands context, "land degradation" is defined as realised changes to the environment and includes the loss or scarcity of natural resources as result of climatic variations, impacts from pollution and wastes and unsustainable human development activities.

1.8 Most important is the fact that the Cook Islands is currently dealing with negative implications of land degradation that have emerged over the last 10 years as a result of unsustainable development activities conducted up to 50 years ago.

1.9 Our lagoons and coastal zones have been stressed as result of negative effects from past and present land based pollutions, terrestrial runoffs and unsustainable resource use.

1.10 Land and resource use and management have emerged as principal issues due to competition to use the limited resources to support the growing national economy.

1.11 These challenges remain at the centre of the Cook Islands CCD-related programmes and will be discussed in depth throughout the report.

1.12 These challenges transcend sectors and are now drawing in support from service providers such as the tourism industry, financial and commerce sectors due to community-wide realisation of broader implications for land degradation on the overall national economy.

## **2. PROCESS FOR PREPARATIONS OF THE SECOND NATIONAL REPORT**

---

2.1 The report was prepared using information from various national forums and consultation processes since submission of the first national report in 2002.

2.2 These stakeholders' consultation meetings include: the National Tourism Industry Retreat in 2003; National Development Plan Forum in 2003; the National Health Sector Advance 2004; the National Environment Forum and development of NESAF consultation processes in 2004 and the national Good Governance Forum in 2004.

2.3 Outcomes of sustainable development and environment-related programmes, workshops and projects were also considered. These include preparations for the Second National Communications consultation processes for climate change since 2005; continuing National Capacity Needs Assessment (NCSA) stocktaking and thematic areas assessments consultation processes which started in 2005; continuing National Millennium Development Goals and National Sustainable Development Plan consultation processes since 2003; the NSDP National Assessment Report consultation process; GEF National Dialogue Consultation meeting in 2005; the recent Cook Islands National Environment Service/WWF South Pacific Climate Change Awareness Raising Workshop as well as the Legal and Institutional Strengthening for Environment Management in the Cook Islands community consultation meetings in May and June 2006.

2.4 Due to the wide range of consultation processes and programmes undertaken nationally and within the environment sector since 2002, the NES suggested not calling another national consultation forum for this particular project but to first compile the vast information collated, and analyse its relevance under the UNCCD reporting requirements.

2.5 This information was compiled and the report was formulated. The report was referred to key national stakeholders for a one day workshop for verification and validation. The final report was then completed using the information passed from the workshop.

# NATIONAL STATUS OF COMBATING LAND DEGRADATION IN THE COOK ISLANDS

---

## 3. CLIMATOLOGICAL AND BIOLOGICAL INDICATORS RELATED TO LAND DEGRADATION

---

### Climate

3.1 The Cook Islands was pummelled by five destructive cyclones graded Category 4 and 5 over a six week period in February and March 2005. Categories 4 and 5 are severe cyclones generating maximum wind gusts of greater than 225 km/h with the potential to create devastating or extreme damage.

3.2 The Cook Islands has experienced increasing numbers of severe cyclones since Cyclone Sally in 1987 including damaging waves from Cyclone Heta in 2004. This is unusual given the Meteorological Service's predictions of lower chances of annual cyclonic activities since 2003.

3.3 The Cook Islands is implementing several projects to lessen future disaster damage through institutional strengthening exercises, capacity building and policy changes.

3.4 From 2002 to 2005, local climatic conditions have also experienced five months where extreme temperature ranges soared above 32°C and two months where it dipped below 13°C.<sup>3</sup> These increases in temperatures will have an impact on rates of evaporation thus affecting agricultural productivity as result of poor soil structures.<sup>4</sup>

3.5 There were four (4) months with more than 400 mm of rainfall recorded for the period compared to the highest mean average of just above 200 mm for January (peak of rainy season) from 1973 to 1998.<sup>5</sup> These have caused flooding to agricultural land and damage to crops on Mangaia and Rarotonga.

3.6 Normal annual rainfall is about 2000 mm. Despite the annual rainfall average being high over the last four years, some areas have been affected by shortage of water, especially in the Northern Group islands. The Southern Group islands have experienced unusual severe downpours causing landslides and flooding in low lying and agricultural areas.

3.7 The Southern Cook Islands heavy rainfall is reportedly associated with weather patterns influenced by the La Nina effect (the opposite of the El Nino effect), as result of negative Southern Oscillation Index variations and westerly movement of the South Pacific Convergence Zone. During a La Nina episode, rainfall will increase in the Southern Group islands but decrease in the Northern Group.

3.8 Both phenomena influence ocean temperatures and trade winds. El Nino increases sea surface temperature and decreases trade winds therefore increasing the chances of annual tropical cyclones.

---

<sup>3</sup> Ngari (2006).

<sup>4</sup> Rainforest Conservation Fund

<sup>5</sup> Ngari (2006).



## Climate Change Impacts

3.9 Climate changes contribute to changes in biogeochemical cycles, alter hydrological cycles, and influence ecological balances and complexity.<sup>6</sup> Through these environmental impacts at local levels, land-use and land-cover changes driven by human activity will certainly adversely affect food security, tourism, transportation and the sustainability of the world agricultural and forest activities.

<sup>78</sup>

3.10 Independent of long-term global trends, changes in land use and land cover will have profound national environmental implications, such as alterations in surface runoff dynamics, lowering of groundwater tables, impacts on rates and types of land degradation, and reduced biodiversity.<sup>9</sup>

3.11 Land degradation in the context of the Cook Islands is most dramatically caused by human activities and extreme events such as the five cyclones of 2005.

3.12 It is also now known that land degradation and land use changes can potentially affect both local micro climate and global warming. For example, the establishment of pine forest in place of local species on Mangaia for erosion control has also lead to higher evapotranspiration rates and suspect in contributing to drought conditions as result of its efficiency in capturing of rainwater due to its high canopy cover and ground water uptake.<sup>10</sup>

3.13 These conditions reaffirm the close links between climate change and land degradation.

3.14 The Cook Islands participates in a number of regional and global research and systematic observations programmes which provide data relevant to land degradation.

3.15 One of the regional programmes the Cook Islands is participating in, is the Pacific Islands' Global Ocean Observation System (PI-GOOS), which seeks to ensure that applications for ocean observation and products from global, regional and national observation systems, are made available to relevant government departments.

3.16 Manihiki and Penrhyn have remote sensing monitoring buoys which monitor their lagoon systems to support pearl farming activities. Data collated from these buoys were automatically transferred via satellite to MMR and SOPAC for analysis. Variables monitored include dissolve oxygen, chlorophyll, pH, pressure, wind speed and direction, air temperature, sea temperature and salinity.

3.17 The Cook Islands is participating in the Pacific Islands Global Climate Observation Systems (PI-GCOS) including the South Pacific Sea Level and Climate Monitoring Project which has a string of automated tide gauge monitoring units across the South Pacific Ocean. Rarotonga and Penrhyn each has one monitor. Tide gauge data show that global average sea level rose between 0.1 and 0.2 metres during the 20th century.<sup>11</sup> This has implications for coastal erosion and salt water intrusion.

---

<sup>6</sup> IASA (2006)

<sup>7</sup> ibid

<sup>8</sup> Rainforest Conservation Fund

<sup>9</sup> ibid

<sup>10</sup> Nambiar & Brown (2001).

<sup>11</sup> IPCC-TAR (2001)

3.18 Since 2002, national climate change activities have been focussed on vulnerability, (risks and impacts assessment), piloting adaptation and mitigation (renewable energy, energy efficiency) issues.

3.19 Under the PICCAP Phase 1 and 2 regional programmes, several national activities were carried out. These included establishment of a national GHG inventory, assessment and overview of the Cook Islands' vulnerability to climate change and identification of local adaptation measures to address its impact.

3.20 Following the Initial National Communication (INC) submission to the UNFCCC, a number of pilot projects and case studies have been conducted in the Cook Islands.

3.21 The first project was a regional initiative funded by CIDA for Capacity Building to Enable the Development of Adaptation Measures in Pacific Island countries (CBDAMPIC) using a community vulnerability and adaptation assessment process. This involved problem solution identification, followed by a project proposal development and implementation phase. Communities on Aitutaki prioritised water resource issues including salt water intrusion into underground water table affecting quality and shifting rainfall patterns affecting quantity. Aitutaki is largely dependent on its underground water sources for its main water supply. The programme also provided awareness raising and mainstreaming exercises for climate change within the community.

3.22 The second project was an Assessment of Impacts and Adaptations to Climate Change (AIACC) <sup>12</sup>research-based initiative which attempted to model coastal inundation and drought indices on Aitutaki with storm surge and climate change. Continuing lack of access to up-to-date aerial or satellite images for digital elevation model was a constraint. Training on use of "next generation" models for integrated modelling and vulnerability assessments for policy and adaptation planning was one of the aims of the project. This is a specialised technical area and while training has been provided for MOW staff, the number of capable technicians is still limited.

3.23 Another regional exercise is the ADB Climate Change Adaptation Programme for the Pacific (CLIMAP) project which in 2003/04 focused on climate proofing initiatives and looked at generating three case studies, including adequacy of building control codes, coastal flooding and inundation under climate change. These demonstrate an integrated risks and cost/benefit approach to climate variability and change and mainstreaming of adaptation. Recommendations to "climate proof" the Avatiu Breakwater from storm surge are being looked at.<sup>13</sup>

3.24 The Pacific Islands Renewable Energy Project (PIREP) was also implemented during this period as a mitigation exercise. The 15-month study provided an opportunity for national consultants to identify barriers to renewable energy use and investigate the capacity to address them. In the Cook Islands a key constraint is the land available for mitigation activities. Limited land available for various uses means there are limited opportunities and resources for switching or using biomass fuels or for setting up wind farms. This is further compounded by lack of important technical support such as accurate maps needed to improve estimates of forestry or land cover.<sup>14</sup>

3.25 Another benefit was training in understanding of the GEF project process which was followed by a full sized GEF Pacific Islands Greenhouse Gas Abatement and Renewable Energy Project (PIGGAREP) application.

---

<sup>12</sup> USP/IGCI –funded through GEF via START

<sup>13</sup> ADB (2006)

<sup>14</sup> PIREP (2004)

3.26 A recent national workshop<sup>15</sup> on climate change awareness called for the development and implementation of a national climate change policy that will take into effect adaptation options and mitigation of land degradation.

3.27 Preparation of the Second National Communications Report to the UNFCCC is currently underway. This will consider and update information on issues relating to land degradation in the context of climatic changes and the impact of extreme events. This project will be completed in late 2009 and will be guided by the National Climate Change Country Team (NCCCT).

## **Water Resources**

3.28 According to the National MDGs report, the proportion of the outer islands population with access to safe drinking water increased from 71% in 1991 to 87% in 2001, an increase of 16%.<sup>16</sup> Access of Rarotonga's population to safe drinking water declined slightly from 100% to 99.25% between 1991 and 2001.<sup>17</sup> Despite the improvements in access, there is still critical concern and clear disparity in access to good quality sources of water between Rarotonga and the outer islands.

3.29 Water security has emerged as a concern in the outer islands especially in the Northern Group. This was highlighted in the aftermath of the 2005 cyclone season with critical water shortages experienced on Pukapuka and Nassau.

3.30 The OMIA, with the assistance of NZAID/AusAID and the NES/CIDA CBDAMPIC project has been providing and repairing water tanks for households and communities in the outer islands to improve local water storage capacities and cope with potential climate changes.

3.31 Over 50% of the 120 kilometres of Rarotonga water pipe network has been upgraded and project information transferred into a spatial format. A survey project to collate and transform all water networks and capacity information onto a GIS platform has been completed for the Southern Group islands of Mauke, Atiu, Aitutaki, Mangaia and Rarotonga.

3.32 Aitutaki and some of the sister islands are facing salt water intrusion and contamination of ground water sources. This is aggregated by high demand and rising sea level.

3.33 On Rarotonga, the biggest challenge facing government is the growing demand for water. It is expected that with current growth in the economy and the Vaimaanga hotel becoming operational soon, daily demands for water within the current network system on Rarotonga will be seriously tested.

3.34 There is an urgent need to establish a Water Utility Board to oversee the strategic review of the sector and implement the new policy frameworks to manage demand levels and the establishment of new water sources before improving the quality of water.

## **Vegetation and Biodiversity**

3.35 The key challenge for the Cook Islands biodiversity programmes is the implementation of the NBSAP. During the drafting of the NESAF 2005-2009, the NBSAP strategies were reproduced and integrated into the biodiversity component of the NESAF. The NBSAP was completed and implementation began in 2002.

---

<sup>15</sup> WWF/NES (2006) Climate change Awareness Workshop

<sup>16</sup> National MDGs Report (2005)

<sup>17</sup> Ibid.

3.36 Capacity constraints experienced in implementing the UNCBD include limited technical capacity, weaknesses in cooperation and coordination between stakeholders and general lack of funding.

3.37 Progress has been made in terms of drafting new Biodiversity Conservation Regulations and a framework for a Biodiversity Prospecting Bill to improve protection and conservation initiatives, enforcement programmes as well as access and benefit sharing.

3.38 Government and NGO representatives indicated that financial limitations and a shortage of skilled programme coordinators have created barriers to implementation of the NBSAP at the local level.

3.39 The Natural Heritage Trust with the assistance of the NBSAP-Add On project continues to update the National Biodiversity Database of over 3,700 species as new species are found. The database is readily available to schools and the general public and is on the internet.<sup>18</sup>

3.40 In 2002, the Cook Islands government declared its national Exclusive Economic Zone (EEZ) as a National Whale Sanctuary in recognition of the continuing research and promotional activities of the Whale Research Centre.

3.41 During the recent community consultation processes, the Koutu Nui (traditional chiefs' organisation) called for the Rarotonga cloud forest land, which is about 3% of the total land area of Rarotonga and lies at more than 400 metres above sea level to be declared a national reserve. This is an important water catchment area and also holds important flowering plants species recognised as deserving national conservation and protection measures.<sup>19</sup>

3.42 Suvarrow Island was declared a national park in 1975. Draft Suvarrow National Park Regulations are still going through public consultation meetings with favourable outcomes. The new regulations will establish an independent authority to manage Suvarrow. The atoll is one of three islands in the Cook Islands which are important bird sanctuaries and identified as being threatened by human development activities.

3.43 The TCA continues to conduct its annual population survey of the Kakerori (Rarotongan Flycatcher). It established a second Kakerori population colony on Atiu in 2003. The current population now stands at 282 birds according to the 2005 survey results - down from 293 in 2004.<sup>20</sup> Previous estimates of an additional 30 birds were affected by the cyclone damage in the conservation area in 2005.

3.44 Preparations are also under way to reintroduce the Rimatara Lorikeet into the country from French Polynesia. Meanwhile, TIS is assessing the feasibility of eradication of mynar birds on Mangaia because these introduced birds are threatening the long term survival of the Mangaian kingfisher, an endemic species.

3.45 The NBSAP-Add On project has enabled the implementation of some NBSAP strategies. Pilot projects were commissioned following the completion of the NBSAP in 2002 including: a survey of practices and measures to conserve rare "Vairakau" (traditional medicinal) plants; assessment of the impact of invasive alien species on Rarotonga, Aitutaki, Mauke, Atiu and Mitiaro

---

<sup>18</sup> [www.environment.org.ck](http://www.environment.org.ck)

<sup>19</sup> Rongo. (2002)

<sup>20</sup> TCA (2006)

and an assessment of the Protected Natural Areas (PNAs) in the Cook Islands within a Proposed National System.

3.46 Proposed regulations including islands' specific by-laws and regulations have been developed to strengthen the implementation of biodiversity related activities.

3.47 Draft legislations and policy framework have been prepared for biosecurity as well as biosafety. Current legislation includes the Cook Islands Quarantine Plant Regulations 1993. The new legislation will regulate the importation and transfer of LMO crops, food, animals and micro-organisms as well as related activities into and within the Cook Islands.

3.48 The Cook Islands has no laboratory or personnel capable of producing genetic technology.<sup>21</sup> According to Manarangi, the main threat to biotechnology and biosafety is the trans-boundary movement of LMOs and GMOs into the Cook Islands.

### **Invasive and alien species**

3.49 Major activities focusing on alien species in the Cook Islands include the surveying of invasive species on Rarotonga, Aitutaki, Mauke, Mitiaro, and Atiu. The project to survey the spread and impact of alien species was part of the NBSAP-Add on programme.

3.50 According to Manarangi (2004)<sup>1</sup>, some of the introduced species were brought into the Cook Islands by accident (Sand fly in Mitiaro and Aitutaki) or intentionally (Wood rose *Merremia tuberosa*) as ornamental and *Wedelia trilobata* as ground cover). Many dominant invasive species have been introduced as garden ornamentals because of their showy flowers (*Merremia tuberosa*) or leaves. Others were introduced as food sources (for pigs) and for timber or agro-forestation (*Acacia mangium*, *A. auroculiformis*, *Parasariensis falcataria*).

3.51 Unfortunately, the survey did not look at the actual size of areas containing species of concern on each island, although these areas were identified and roughly mapped out.

3.52 The spread of notorious species such as *Parasariensis falcataria* (albizia), the invasive vine plants (*Merremia tuberosa*, Mile a Minute, (*Mikania micrantha*), *Merremia peltata*) and nitrogen fixing plants (*Acacia mangium*, *Acacia crassicarpa*, *Acacia auroculiformis*, *Parasariensis falcataria*) has been causing much concern to farmers and local land owners.<sup>22</sup>

3.53 Since 2004, community projects on Mauke, Mangaia, Aitutaki and Mitiaro have been focussed on eliminating *Passiflora rubra* (Pokutekute), *Mimosa invisa* (Pikikaa atupaka) and *Mimosa pudica* (Pikikaa) on these islands.

3.54 In 2002, Space and Flynn suggested the introduction of strong quarantine regulations and improved enforcement and recommended 174 invasive species for inter-island quarantine, as well as recommendations for the management of 26 invasive species. Activities suggested include development and implementation of management plans for areas most at threat, such as Suwarrow, Manuae and Takutea.<sup>23</sup>

---

<sup>21</sup> Manarangi (2004)<sup>2</sup>

<sup>22</sup> Manarangi (2004)<sup>1</sup>

<sup>23</sup> McCormack, 2002

3.55 An outbreak of the coconut flat moth since 2000 has caused devastating damage to coconut trees on the Southern Group islands. Biological control has been successfully introduced on all affected islands during the recent outbreak on Palmerston Atoll.

3.56 The Queensland fruit-fly find was also brought under control and eradicated through the implementation of the agriculture emergency response plan. On-going surveillance is being carried out.

3.57 Potential for introduction of African snails and rhinoceros beetles are key concerns and being monitored.

#### **4. GEOPHYSICAL INDICATORS RELATED TO LAND DEGRADATION**

---

##### **Land Use and Management**

4.1 Land availability in the Cook Islands has not changed much since 2002, with 26.2% covered by the “makatea” land, 4.4% suitable for agriculture purposes and 69.4% marginal land.<sup>24</sup>

4.2 Agricultural land use has been declining on Rarotonga for various reasons and with declining forest cover. The total vegetation cover of lands in the Cook Islands is estimated at 66.6%.

4.3 We are also seeing steady patterns of land areas being developed as development pressure increases. Between 2002 and 2004, 34% of developments on Rarotonga were concentrated around the foreshore areas and 37% were on sloping lands.<sup>25</sup> This compares with 32% and 39% respectively for the period 2000 to 2001.<sup>26</sup>

4.4 The rapid growth of housing on Rarotonga has created land use problems. From 2002 to 2005 about 26% of all Environment Consents and Permits were for residential housing. About 22% of Environment Consents and Permits were also for tourism accommodations.

4.5 This reflects the growing demand for land, especially in at-risk environmental areas. The long term implications are that there will be more environmental problems if current land use trends continue. Government must consider changes to its building and control policies to accommodate housing needs of local people.

4.6 From 2000 to 2005, land taken up by housing development on Rarotonga based on the floor area of buildings totalled about 124,133 m<sup>2</sup>.<sup>27</sup>

4.7 From 2002 to 2004, 17% of all Environment Consent and Permit applications required EIA project reports. Numbers have not increased significantly - 15% of applications required EIA reports from 2000 to 2001. Despite this, development activities are happening within high risk areas.<sup>28</sup>

4.8 NES data also shows 16% of all Environment Consent and Permit applications required clearing of vegetation, especially around flat plains or agricultural lands and along slopes. These

---

<sup>24</sup> Rongo (2002)

<sup>25</sup> Nia (2006)

<sup>26</sup> Upoko (2004)

<sup>27</sup> Tangiruaiane (2006).

<sup>28</sup> Nia (2006)

are mainly bushland and lowland forest, indicating the push to develop virgin lands or old agricultural arable land. In most cases, these projects were to be followed by construction of residential housing.

4.9 Concerns about these issues have raised calls for introduction of comprehensive Natural Resources Management and updating of Land Zoning legislations as well as drafting of Environment Act regulations for Permit and Consents to strengthen the EIA programme. This will cover gaps in current land and natural resources use and management regulations.

4.10 Government is preparing a project to improve land use, survey and building data access for the public via the internet or via public portals. This will be done using a MapInfo Server database containing comprehensive spatial information on topographic, infrastructure, housing, population and water data for Rarotonga, Aitutaki, Mangaia, Mauke, Atiu and Mitiaro. This project is supported by the EU and SOPAC.

4.11 This data and information allows for better planning and decision making and development of awareness programmes on land use.

4.12 The OMIA and Statistics Cook Islands<sup>29</sup> also holds non-spatial and spatial data for outer islands including water, topographic infrastructure and energy. This data and information allows for better planning, decision making and awareness programmes on land use.

4.13 Meanwhile, the Cook Islands is preparing to address some of its land degradation problems under the Portfolio project to implement a Medium Size Project (MSP) on Capacity Building for Sustainable Land Management (SLM). This project will help strengthen its institutional and human resource capacity to improve sustainable land management planning and implementation.<sup>30</sup>

4.14 It will enable the Cook Islands to strengthen policy, regulatory and economic incentive frameworks to help wider adoption of sustainable land management practices across sectors.

4.15 A study in 2004 showed 36 Protected Natural Areas (PNA) in the Cook Islands.<sup>31</sup> Traditional land use practices such as the Ra'ui continue to be applied, especially in the outer islands in the form of resource management and the way people plant their crops.<sup>32</sup> The Ra'ui is further strengthened through the ability of the community and traditional leaders to manage these areas.

### **Sloping lands**

4.16 National Environment Service data shows that 37% of Environment Consent and Permit applications were for development and housing projects around slope areas on Rarotonga.<sup>33</sup>

4.17 The number of applications has stabilised over the last three years. There were 39% applications for the period when information was first collated. Demand remains high as long as limited land is available on the coastal plains.

4.18 Clearing of vegetation and excavation work were common on these slopes, both for construction sites and access roads. If not properly done this causes topsoil runoffs and slips, especially during heavy rainfall.

---

<sup>29</sup> POPGIS project

<sup>30</sup> Anon (2006)<sup>3</sup>

<sup>31</sup> Saul. E., Tiraa, A. (2004).

<sup>32</sup> Rongo. (2002).

<sup>33</sup> Nia (2006)

4.19 A reduction in agricultural activities has reduced erosion on slopes.

### **Coastal Areas**

4.20 Of the Environment Consent and Permit applications processed by the Rarotonga Environment Authority from 2002 to 2004, 34% were for projects around the foreshore area.<sup>34</sup> Fifteen percent (15%) of these were for foreshore protection and construction and repair of revetment walls, gabions and rock walls while most were for tourism accommodation.

4.21 These activities have led to increasing changes along the coastline in terms of more buildings as well as increases in the risk of future property damage from wave surges. Cyclones in 2004 and 2005 caused major damage to coastlines, hotels and residential properties on Rarotonga and the outer islands especially along the northwest-western shoreline. Wave surges during the 2005 cyclones were estimated at 13 metres high in some areas.

4.22 Other risks include the seepage of liquid wastes into the lagoon as these issues have not yet been properly addressed.

4.23 Cyclone damage to all coastal properties has been severe and has meant future damage will drive insurance prices up. Apart from tourism businesses facing increased insurance premiums, this could have implications for local people planning to build houses on foreshore.

4.24 Insurance coverage is not available for sea surge.

4.25 During the 2005 cyclone season, the total cost of recovery and rehabilitation was about \$10.5 million.<sup>35</sup> This excludes commercial sector losses which also ran into the millions.

4.26 The intermittent construction of foreshore protection walls along the beaches by property owners continues to be a problem for neighbours. Erosion of nearby properties as result of impacts from foreshore protection structures continues to be experienced, especially on Rarotonga.

4.27 Results from beach profiling by NES concluded that the foreshore is eroding, and material deposited in the lagoon, or possibly lost out to the ocean through passages (sinks) especially near these structures.<sup>36</sup>

4.28 From the north to the east side of Rarotonga and the other Southern Group islands, cyclones have caused severe erosion and changes in beach structures. Around Matavera and Ngatangia area cyclone wave surges caused severe erosion to beach faces and debris and sediments were transported to offshore bars in the lagoon near the inner edge of the reef.<sup>37</sup> This rubble is slowly being pushed back onto the beach face.

4.29 On Pukapuka Atoll, 90% of residential housing was affected by Cyclone Percy either by wave surges, wind or both.<sup>38</sup> The effects are still being felt on Pukapuka, with rehabilitation work continuing. Cyclone damage to harbour facilities on Aitutaki, Mauke and Mangaia was severe and reconstruction plans are still being prepared.

---

<sup>34</sup> Nia, A. (2006).

<sup>35</sup> MFEM (2005).

<sup>36</sup> Miro Consultants (2003)

<sup>37</sup> MOW (2005).

<sup>38</sup> Anon. (2005)<sup>1</sup>.



4.30 Defoliation of atoll forests in the Northern Group islands was also noted after the cyclones causing temporary loss of habitat for island birds and affecting nesting and resting.<sup>39</sup> Many birds were killed or injured.

### **Lagoon and Reef Areas**

4.31 The extended period of ciguatera fish poisoning on Rarotonga, averaging 189 reported cases a year from 1992 to 2003 shows that algal blooms in the lagoon which are host to dinoflagellates-carrying ciguatera toxins, could be caused by factors other than climate influences.<sup>40</sup> Raumea (1998) estimated unreported cases to be about 10% of total poisoning cases reported to the Ministry of Health.

4.32 A Ministry of Marine Resources survey programme from 1994 to 1997 confirms Category Three (3) concentrations (very high risks; area close to fishing) of dinoflagellates especially around the Titikaveka area.<sup>41</sup> This problem is continuing in the area.

4.33 In 2003 and 2004, an irritant syndrome scare occurred within the Titikaveka foreshore and lagoon area. This reaffirmed the extent of the problem of pollution contaminating the lagoon area around Rarotonga caused by over 30 years of environmental degradation.<sup>42</sup>

4.34 The Ministry of Marine Resources conducted water quality tests and ciguatera tests around Rarotonga before the Titikaveka incident. Since 2004, the Ministry of Marine Resources, the National Environment Service and the Ministry of Health have implemented programmes for conducting water quality tests and monitoring of nutrient levels in Rarotonga's lagoon.

4.35 Coral health monitoring surveys have been conducted around the Rarotonga lagoon and reef areas since 2000. The second study was conducted in 2003 as follow-up to the year 2000 study. A third study is still being finalised in 2006.

4.36 These studies suggested a decline in large coral colonies outside the Rarotonga fringing reef at 10 metres depth caused by the predatory actions of Crown of Thorns infestations over the last 10 years.<sup>43</sup> The studies also observed new coral growth, indicating early recovery of the reef.

4.37 Comparative analysis between previous surveys and the present survey also indicated a phase shift in bottom water population to a more algal-dominated reef.<sup>44</sup>

4.38 Larger coral colonies were reported in the lagoon, suggesting the impact of COTS may have been minimal. The studies also observed high elevated levels of freshwater contamination (nutrients) in the lagoon areas which support communities of blue-green and other algae (macro-algae).<sup>45</sup>

### **Wetlands**

4.39 While there are no long term data available to analyse long term development patterns, current figures show on-going development activities in wetlands areas.

---

<sup>39</sup> Tangianau. (2005).

<sup>40</sup> MOH (2004).

<sup>41</sup> Raumea, K (1998).

<sup>42</sup> Upoko, T (2004).

<sup>43</sup> Lyons, S. (2003).

<sup>44</sup> Rongo et al. (2006).

<sup>45</sup> ibid

4.40 National Environment Service data shows that from 2002 and 2004, 4.5% of all Environment Consent and Permit applications were for projects within wetlands areas. This figure is half of the total applications for 2000 and 2001 alone.<sup>46</sup>

4.41 One of the reasons for the decline is that NES has been encouraging people to refrain from building their houses on wetlands unless they have no other options. This is especially true on Rarotonga where limited land available for development and agriculture is becoming a constraint.

4.42 Wetlands were also affected by the cyclones of 2005, especially on Rakahanga, Pukapuka and Manihiki. Flooding of low-lying islands occurs through occasional inundation during high seas and the frequent occurrence of cyclones that usually floods their areas.<sup>47</sup>

4.43 On Pukapuka, the swamp land which they used for planting staple root crop such as taro were contaminated by sea water during Cyclone Percy killing taro and puraka plants.<sup>48</sup> Significant amount of rain was required to dilute the saltwater in the swamp. Taro and banana shoots were recently sent to the atoll for replanting of new crops.

4.44 A flood in early 2006 on Mangaia claimed one life and damaged and destroyed taro plantations. This is the second heavy rainfall and flood damage experienced on the island over the last five years. Sea surges have the potential to contaminate fresh water lakes and inland areas on Mangaia.

4.45 Some community projects have been conducted on Mangaia and Mitiaro to promote and raise awareness about the value and sustainable use and management of resources in the islands lakes and surrounding wetlands. These activities were driven by NGOs, especially WWF-Cook Islands. As result the Cook Islands government is considering acceding to the RAMSAR Convention on Wetlands soon.

4.46 The cleaning and maintenance of streams and drainages were the responsibility of the Vaka Councils and Island Councils. These activities have been carried out occasionally and during monthly village clean-ups. The Ministry of Works also provide support to the Vaka Councils and Island Councils for cleaning and maintenance of streams and drainages through their heavy plants and technical expertise where necessary and depending on annual budgetary appropriations.

### **Agricultural land and practices**

4.47 According to Ministry of Agriculture statistics, about 66.6% of the total 240 km<sup>2</sup> of land in the Cook Islands has vegetation cover.<sup>49</sup> The MOA Census report (2000) noted that the area with forest and wooded lands comprised about 61.9%, while arable land suitable for agricultural purposes accounts for 4.4%. Pasture land occupies 1.04%, while irrigated farm lands, mostly on Rarotonga and Aitutaki, occupies 0.19%. The rest of the 3.2% of agricultural lands are used for non-irrigated crops.

4.48 While the issues of diminishing agricultural lands are recognisable on Rarotonga, significant areas are available on the Southern Group islands of Mangaia, Atiu, Mauke and Aitutaki for agriculture.

---

<sup>46</sup> Nia (2006)

<sup>47</sup> Rongo. T. (2002).

<sup>48</sup> Anon. (2005)<sup>1</sup>.

<sup>49</sup> MOA (2000).

4.49 The Ministry of Agriculture is implementing the second phase of its Development of Sustainable Agriculture in the Pacific (DSAP) programme to address constraints to sustainable agriculture and rural livelihoods by regenerating the use of sustainable traditional practices which are sensitive to the environment. The Cook Islands programme was funded by the EU and started in 2003.

4.50 In 2000, the area of crop lands covered as presented by “single crop equivalent” (SCE) areas totalled 2,390 acres.<sup>50</sup> Root crops accounted for 45% of this area with tree crops covering 25%, vegetable crops 6% and the remaining 24% under non-crop.<sup>51</sup> Over 10.4 million plants were estimated to be growing during the year 2000 agriculture census where 82% were root crops, 16% vegetable crops and 2% tree crops. No data were available for the period 2002 to 2006.

4.51 Chemicals and inorganic fertilizers are still being used but on a much lower scale than in the 1960s to late 1980s. Better biodegradable chemicals are also being imported and used as farmers become knowledgeable about the dangers of the use of chemicals. In 2000, about 36.686 tonnes plus 1,036 litres of chemicals were imported into the Cook Islands.<sup>52</sup> According to the newly established NES database on chemicals and fertilizers hazardous profiles, about 11,042 litres and 476.7 kilograms of chemicals as well as 404.105 tonnes of fertilizers were imported into the Cook Islands in 2005.<sup>53</sup>

4.52 Organic farming is being encouraged and driven by the “nono” growers. A newly formed NGO (Islands Sustainability Alliance Cook Islands (ISACI)) and Titikaveka Growers Association also promoted the used of organic chemicals and fertilizers as well participating in community workshops to raise awareness of the dangers of inorganic farming on the environment and human health. There are about 171 acres of land on Atiu, Aitutaki and Rarotonga under organic farming.<sup>54</sup> However, these figures for organic farming areas were not complete due to inconsistencies in data collected and only being provided for reference to the organic activities being carried out.

4.53 Several growers use hydroponic technology, especially on Rarotonga. This reduces the need for more land and water. Vegetables were mainly grown under hydroponic conditions for the local market.

4.54 On Rarotonga, digester tanks have been installed on several pig farms to treat and reduce the amount of raw sewage leaking into soil and contaminating local streams and the lagoon. The by-products which include nutrient-rich water have been used for irrigation of root crops. Not all piggeries have digesters and there is a need to consider this in government policies to reduce the waste from ending up in coastal waters.

4.55 Government has recommended that the pine forest on Mangaia and Atiu be harvested using low impact methods to finance and sustain future forestry programmes on the islands. A feasibility study found that this was not economically viable.<sup>55</sup>

4.56 It is also important that a national watershed and forestry management plan is developed to guide watershed development and future forestry activities.<sup>56</sup> There is need to develop and

---

<sup>50</sup> MOA (2000)

<sup>51</sup> *ibid*

<sup>52</sup> Wigmore (2000).

<sup>53</sup> Arioka (2005)

<sup>54</sup> Cook Islands Premium Noni Ltd (2006)

<sup>55</sup> Weterings (2005)

<sup>56</sup> *ibid*

implement a community awareness and participation programme for maintaining healthy watersheds.<sup>57</sup>

4.57 Sandalwood plots have been planted on the islands of Mangaia, Mauke, Atiu and Mitiaro. About 4500 trees have been planted on Mangaia.<sup>58</sup> Some of the plots on Mangaia suffered cyclone damage in 2005 and have since slowly recovered. There is also concern about the possible contamination of gene pool of the Mitiaro variety with introduced species. Sandalwood, used in traditional medicines, is planted along the coastal forest areas.

4.58 The local community forestry programmes include replanting of local hardwood trees like local mahogany and coconuts.

## **Infrastructure**

4.59 The Cook Islands tourism industry and wholesalers and retailers depend to a large extent on the quality of basic infrastructure.

4.60 Even in the primary industries sectors such as agriculture, pearl farming and fisheries, require access to timely information about market supply and demand, as well as utilities, transportation, processing and ports facilities.

4.61 Infrastructure, utilities and transportation development have been difficult due to limited capacities, lack of capital investments and the rising cost of plant and materials, resources, maintenance, and services. These difficulties have been more pronounced in the outer islands where administrations have to cope with limited budgets.

4.62 Damage to infrastructure from severe climatic events has also contributed to the increasing costs of developing and maintaining them.

4.63 The current infrastructure, utilities and transportation systems need to be reviewed to improve coordination of responsible agencies and application of better development, maintenance, safety, security, management and quality standards.

4.64 The government, in conjunction with the Asian Development Bank, has commissioned the development of an integrated and sustainable 20 year preventive infrastructure master plan. Sub-sectors being considered include transport (roads, airports, ports and harbours), water, sanitation, solid wastes, electricity and energy, telecommunications, cyclone shelters and maintenance facilities.

4.65 With the introduction of broadband connections and development of an e-government strategy, it is expected that the number of internet users and local ICT based businesses will grow from the current 11%.<sup>59</sup> Currently, 89% of the population has land line phone connections. In October 2001, there were 69 cell phone users and increased to 994 users in October 2003. As of May 2006, there were 978 contract cell phone users and 3069 Pre-paid cell phone users, a total of 4047 users or 30% of total resident population.<sup>60</sup>

---

<sup>57</sup> Holcomb & Ward (2002)

<sup>58</sup> Tangianau (2005)

<sup>59</sup> TCI (2004)

<sup>60</sup> TCI (2006)

4.66 The MOW with the help of SOPAC has also completed collecting water capacities information for the Southern Group which will be analysed and transferred onto spatial formats such as GIS for planning purposes. Other sectors with land use data such as buildings standards and control and land survey are also being transposed into spatial formats.

4.67 There is concern about the weak capacity in management of geophysical, environmental and socio-economic data in government ministries. There is need for training in data collation, analysis and management. More resources are also needed to maintain datasets.

### **Mining and Quarrying**

4.68 There are six mining and quarrying operations in the Cook Islands. Three are commercial operations and the others are operated by the government on three islands to support infrastructure development and housing projects.

4.69 According to NES records about 4% of total Environment Consents and Project Permits issued from 2002-2005 were for mining and quarrying activities.

4.70 The extent of aggregate mining in the outer islands is not known but is assumed to be occasionally practiced due to the lack of alternative materials. However, on the islands with operational quarries, aggregates are being used for building construction which will reduce the need for beach aggregates.

4.71 Problems related to mining and quarrying include noise and air quality pollution as well as siltation and runoffs into the lagoon, especially on Rarotonga.

4.72 One of the areas identified as high risk is the new Vairauara Quarry which has been the subject of several environmental complaints due to its effect on the new Rarotonga landfill.

4.73 During the development of the Vairauara landfill baseline assessments and studies were carried out to establish data and information for future reference. Areas covered by the study included the landfill site and downstream areas including the lagoon and reef areas.

### **Waste Management**

4.74 The Waste Management Project sponsored by the Asian Development Bank (ADB) and the Cook Islands government has been completed. The engineered landfills, sewage treatment ponds and recycling centres on Rarotonga and Aitutaki were constructed to address potential increases in waste and pollution problems. These facilities are currently facing major operational challenges.

4.75 All other inhabited islands do not have properly engineered landfills. The outer islands have limited options for disposal and recycling of wastes. Proposed island by-laws have been developed with waste management provisions including the prohibition of importing selective consumer goods containers likely to produce certain waste lines.

4.76 The MOW has established a Waste Management Department to oversee the implementation of the newly completed National Waste Management Strategy. The strategy consists of two (2) main parts. The National Waste Policy defines wastes and sets out the general principles which guide how waste issues are dealt with in the Cook Islands. The Waste Management Plan highlights specific objectives and actions proposed to manage waste in the Cook

Islands. The National Waste Management Strategy is the first of its kind in the country and will guide the drafting of the following sub-sector plans.

Rarotonga Solid Waste Management Plan  
Aitutaki Solid Waste Management Plan  
Outer Islands Solid Waste Management Plan  
National Septage Management Plan

4.77 From 2002 to July 2005, the Rarotonga Recycling Centre shipped to New Zealand about 184.44 tonnes of glass, 28.2 tonnes of aluminium cans and 8.06 tonnes of plastic bottles.<sup>61</sup> From February 2005 to September 2005, the new landfill in Rarotonga received about 3,178.0 m<sup>3</sup> of solid waste and 1,223 m<sup>3</sup> of septage waste.<sup>62</sup>

4.78 The private sector has also entered the programme with major importers and wholesalers implementing their own recycling programmes of packaging materials, scrap metals and unwanted vehicles and parts.

4.79 In 2004, 3943kg of persistent organic pollutants (POPs) (mainly agricultural chemicals) were collected as part of an AusAID/SPREP POPs in Pacific Islands project from several islands and shipped in 2005 to Australia for disposal.<sup>63</sup>

4.80 MOH has completed public consultations regarding its draft Sewage Regulations designed to improve sewage treatment standards in the Cook Islands taking into accounts aspects such as soil types. Households and most tourist accommodation units on Rarotonga rely on stand-alone septic tank systems for sewage treatment.

4.81 According to de Rommily et al (2005), the lack of standards and effective control over the siting, construction and operation of septic tanks and sewerage treatment systems on residential and commercial buildings is causing increasing concern – particularly associated with increasing pollution of lagoon areas and freshwater resources.

4.82 New tourist accommodations are required to install tertiary treatment systems.

4.83 Concerns have been expressed over the lack of coordination between the three government agencies involved, namely MOH, NES and MOW.

4.84 The Agricultural Chemicals (Pesticide) Board established under the Pesticides Act 1987 was responsible for monitoring the level and standards of chemicals, especially pesticides, and fertilizers imported and used in the country. The board has been inactive since 1994.

4.85 There is limited control over the importation and use of chemicals despite the presence of adequate legislation such as the Pesticide Act for this purpose.

4.86 The MOA relies on New Zealand border management and importation standards and regulations to vet unwanted and banned chemicals and fertilizers from entering the Cook Islands.

4.87 The lack of proper dumping sites for asbestos has become an important issue. Asbestos is being removed from government buildings, especially schools, and has been stored at various sites

---

<sup>61</sup> Herrmann (2005).

<sup>62</sup> Herrmann (2005)

<sup>63</sup> SPREP (2003).

around Rarotonga. The National Waste Management Committee is still discussing how to deal with this issue.

4.88 NES has a management plan for the phase out of Ozone Depletion Substance (ODS) from the Cook Islands. The Cook Islands does not produce ODS but they are imported into the country. The strategy has been implemented since 2004 by the NES with the assistance of SPREP. Legislation to enforce the phase out of ODS is currently under development.

4.89 The Cook Islands does not have an overall management plan for hazardous substances and this is being considered by the National Waste Committee. However, there is a management plan for asbestos and vehicle batteries.

4.90 There is need for clear policy frameworks and responsibilities regarding disposal of waste from visiting vessels including ships and aircraft.<sup>64</sup> Waste from planes and ships is currently being incinerated by the Cook Islands Quarantine Service and recycled where possible. At present, not all conditions required under the MARPOL 73/78 Convention are being met.

## **5. SOCIO-ECONOMIC INDICATORS RELATED TO LAND DEGRADATION**

---

### **Population and Economy**

5.1 In 2004, the total national population was estimated at 20,300 with the resident population estimated at 13,500.<sup>65</sup> In 2001, Rarotonga accounts for 63% of the resident population in comparison to the outer islands. Preparations for another National Census are under way for implementation in September 2006.

5.2 There are no new unemployment figures. According to national indicators and 2001 Census figures, the number of Rarotonga residents 15 years and over that are unemployed is about 6.5% compared to 26.8% in the Southern Group and 34.6 % in the Northern Group islands. Most unemployed people were females.<sup>66</sup> About 13% (2001) of the population aged 15 years and over was unemployed, up from 7% in 1991.

5.3 Unemployment in the outer islands is high due to the absence of private sector activities and lack of employment opportunities. Government salaries and welfare payments are a crucial source of cash income.<sup>67</sup>

5.4 The economy grew at an average rate of 6.2% a year from 2000 to 2004. Real GDP growth was about 3.0% in 2005-06 and is projected to remain strong with a sustainable long-term growth rate of around 3.5% in 2006-07 and over the next two years.<sup>68</sup>

5.5 Most of the recent economic growth has been driven by private sector developments, especially in the tourism, wholesale/retail, transport and communication, pearl, fishing and agriculture sectors.<sup>69</sup> Tourism industry receipts now stand at 46% of real GDP with tourism arrivals growing from 37,779 visitors in 1987 to 87,846 in 2003. The transport and communications sectors

---

<sup>64</sup> de Rommily et al (2005)

<sup>65</sup> Statistics Cook Islands, 2005

<sup>66</sup> National MDGs Report (2005)

<sup>67</sup> CIANGO. (2006).

<sup>68</sup> MFEM (2006)

<sup>69</sup> MFEM (2006)

receipts stands at 14% of GDP, construction amounts to 10.9% of GDP, and the fisheries sector accounts for 3.3% of GDP.

5.6 Exports statistics show a high of NZ\$19.967 million in 2000 compared to NZ\$14.588 million in 2004. Imports have risen from NZ\$78.637 million in 1999 to NZ\$121.021 million in 2003.<sup>70</sup>

5.7 Government is phasing out import levies on all imported goods apart from alcohol, vehicles, tobacco and fuel to boost the economy. Import levies for pig feed and vegetables will remain but will be reviewed in two years time. The impact of this policy change is an immediate loss of annual revenue of NZ\$6.3 million but this is expected to be recovered in the medium to long term as economic activities increases.<sup>71</sup>

5.8 Increasing investments, job opportunities and labour shortages locally has seen increasing reliance on imported foreign labour, especially to work in the agricultural, tourism, financial, pearl farming and fisheries industries.

5.9 Investments and employment opportunities were concentrated on Rarotonga and Aitutaki skewing the level of development and distribution of wealth nationwide. As a result, the level of poverty of opportunity in the outer islands is high despite the impressive GDP per capita of US\$4,947.

5.10 The Cook Islands has finally reduced its external debt from a high of 81% of GDP in 1998 to 19% of GDP (as of June 2006).<sup>72</sup> This was made possible with the retirement of the government guarantees of the Italian loan for the failed Vaimaanga Hotel project by 30 June 2006 after positive debt restructuring and buy-off negotiations. This means that the Cook Islands government is in a strong fiscal position to borrow again for future development programmes.

5.11 In 2005, the Development Investment Board (DIB) reviewed its Investment Code 2003 in order to improve the management and monitoring of foreign enterprises and concessions as well as identify particular growth areas for trade, development and investment within and outside of the Cook Islands. A final draft of the Investment Code 2006 is being prepared by Crown Law Office.

5.12 Total Foreign Enterprise Approvals by the DIB from 2000 to 2006 indicate an overrepresentation of businesses in the tourism sector (48%), followed by finance (21%), marine resources (15%), agriculture (5%), retail (5%), and others (6%).<sup>73</sup>

5.13 The Cook Islands Tourism Corporation is formalising its next Tourism Master Plan. This will provide the platform for strategic tourism development over the next decade. Government is focusing on strengthening tourism infrastructure support to ensure that development is integrated with other sectors

5.14 Growth in the tourism sector needs to be coordinated and managed to overcome sectoral resource and other capacity constraints.

## **Human Development**

---

<sup>70</sup> DIB (2006)

<sup>71</sup> MFEM (2006)

<sup>72</sup> MFEM (2006)

<sup>73</sup> DIB (2006)



5.15 While the Cook Islands human development indicators paint a positive picture of the state of social affairs, these statistics are somewhat misleading and flimsy. In-depth assessments of social welfare statistics beyond Rarotonga often show a different set of indicators with huge disparity between Rarotonga and communities in the outer islands.

5.16 While there is no extreme poverty in the Cook Islands, poverty amongst communities in the outer islands exists in the form of being vulnerable and experiencing hardship due to lack of opportunities for employment and access to basic social services.

5.17 The dependency ratio of the resident population in the Cook Islands was 79 (both in 1996, 2001) for every 100 persons, an increase from 75.6 in 1991.<sup>74</sup> About 38% (2001) of the total outer islands population was dependent on welfare benefits of various sorts. Income levels were about 80% higher on Rarotonga compared to the Outer Islands, and disparities between males and females were also significant.

5.18 At the National Development Forum in 2003, the issues of the “*Vulnerables*” were highlighted together with the need to investigate their true circumstances and the kind of help needed. These are a susceptible group of people thought to be living at the lower end of the national socio-economic scale. It includes the elderly, single/solo parents, children, unemployed, disabled, and squatters, victims of crime, and those destitute and infirm.<sup>75</sup>

5.19 Government budgetary appropriation for the education sector for FY 2005/06 is \$8.6 million (18.8% of total Crown appropriations), up from a low of \$3.15 million in FY 1997/98 (9.9% of Crown appropriations). The MOE has completed its Education Strategy Plan 2006-2020 as well as its Education Strategic Plan (Policy Options Papers) 2006-2010.

5.20 In 2005, the teacher to students’ ratio in the classroom was steady at 1:17.<sup>76</sup> School attendance was about 99% for the 5-to-14 years’ old school age population. After the age of 14 and up to 18 years old, enrolment levels tapered off from 90% to 30%. Of national concern is the growing number of young adults and school leavers without formal educational qualifications and lacking the necessary skills for the local job market.

5.21 The government has established several vocational and trade skills training programmes under the National Department of Human Resources Development (NDHRD) and a Division of Youth to address youth unemployment and trade capacity constraint issues in industry sectors and local island communities. The NDHRD is also coordinating a *distance learning* programme for people in the outer islands as well as tertiary scholarship training programmes to overseas institutions for promising students.

5.22 The NCW has submitted its National CEDAW Report to government and the United Nations. The key challenge for the government and the National Women’s Council is to implement the 2006 CEDAW Report recommendations. These include improving the number of women’s representatives or professional appointments on decision-making bodies as well as senior management positions.

---

<sup>74</sup> National MDGs Report, (2005)

<sup>75</sup> Drollet et al, (2003)

<sup>76</sup> MOE Budget Report, (2005)

5.23 Eighty-six percent (86%) of senior management positions in government are dominated by males with less than 5% of women occupying senior management positions.<sup>77</sup>

5.24 On some islands women participate in small markets where they sell fresh vegetables, bakery products, cooked food and handicraft.<sup>78</sup>

5.25 Women are predominantly involved in “maire” production for local and national sales and assist in meeting export demands for the garlands.<sup>79</sup> They are involved in growing banana, pawpaw, citrus, nono, taro and vegetables but to a lesser degree of participation than their male counterparts.

5.26 The involvement of the people in the Northern Group in the agricultural sector has diminished due to increasing pearl farming activities, particularly in the islands of Manihiki and Penrhyn. A number of women own pearl farm operations and assist with pearl farm work.<sup>80</sup>

5.27 An increasing prevalence of non-communicable disease (NCDs) such as diabetes, obesity, hypertension, circulatory illnesses and their complications is a major cause of morbidity and mortality in the adult Cook Islands population.<sup>81</sup>

5.28 The prevalence of diabetes in 1962 was 4% in men and 4.5% in women compared to 10% for each group in 1987. Registered cases of diabetes and hypertension increased from 9.5% of the total population in 1980 to 18% in 2002. The proportion of deaths in 2000 caused by cardiovascular disease, diabetes and cancer were; 39%, 11% and 9% respectively.<sup>82</sup>

## Energy

5.29 The demand for energy in the Cook Islands is gradually increasing as indicated by the increase in the amount of imported fossil fuel. Imports rose from 10.927 million litres in 2002<sup>83</sup> to about 22.7 million litres in 2005.<sup>84</sup> This is valued at 9.0% of total national GDP.

5.30 Te Aponga Uira (TAU) consumes 30% of total national fuel capacity. TAU's fuel usage increased from 5.9 million litres in 2001 to 6.8 million litres in 2004<sup>85</sup> or from a generation capacity of 22.8 MWh in 2001 to over 25.0 MWh in 2004. About 89% of all fuel is consumed on Rarotonga.<sup>86</sup>

5.31 The sector also needs to consider its energy security policy by considering self sufficiency through renewable energy, as well as improving and managing its infrastructure capacity, especially for storage of imported petroleum fuel. The fragile nature of shipping to the Cook Islands means fuel shortages as result of shipping problems could have devastating effect on the national economy.

5.32 It is important that government provide financial support to energy conservation programmes and the use of renewable energy technologies, especially wind and solar systems, to

---

<sup>77</sup> Anon, (2006)<sup>2</sup>

<sup>78</sup> ibid

<sup>79</sup> ibid

<sup>80</sup> ibid

<sup>81</sup> National MDGs Committee(2005)

<sup>82</sup> MOH(2004)

<sup>83</sup> PIREP (2004)

<sup>84</sup> Bartmanovich. (2005).

<sup>85</sup> ibid

<sup>86</sup> ibid

reduce the national energy bill. Most of the new houses being constructed in the Cook Islands have solar water heating panels.

5.33 In terms of land degradation, a major oil spill on Rarotonga could also have significant effect on the national economy since most tourism activities are based on Rarotonga. The National Marine Spill Contingency Plan (NATPLAN) has been drafted but there is concern about the effectiveness of local agencies to execute and manage an emergency marine oil spill response within the Cook Islands waters, especially on Rarotonga.

5.34 Problems with soil contamination within fuel storage farms areas have been raised with responsible fuel importers in the past. No significant activities have been implemented to assess the extent of the problem.

5.35 It is also important that government provide financial support to energy conservation programmes and the use of renewable energy technologies especially wind and solar systems to reduce the national energy bill. Most of the new houses being constructed in the Cook Islands have solar water heating panels.

5.36 A pilot wind turbine project which has been tested on Mangaia since 2003 suffered technical problems although the generation of energy and its conversion to electrical power was proven to be successful. Considerations of bio-fuel such as coconut oil for the Northern Group are underway. The Pukapuka solar photovoltaic power has been damaged by cyclones and requires upgrading and replacement of batteries.

### **Science and Technology**

5.37 The Ministry of Agriculture, Ministry of Works (Energy Division and Water Works Division) Ministry of Health, National Environment Service, Cook Islands Meteorological Service and Ministry of Marine Resources were key government agencies involved in scientific research, technology adaptive activities that focussed on land degradation and resource monitoring.

5.38 The Research Division of the Ministry of Agriculture has conducted research on Rarotonga to improve crop cultivation practices and crop production levels from intensive cropping, due to increasing constraints on the availability of land.

5.39 Water quality testing has become an important programme for the National Environment Service, Ministry of Marine Resources, and Ministry of Health. Testing and monitoring is also applied to fresh water resources intakes and drinking water quality by the Water Works Department and Ministry of Health. The MMR and NES programmes were broader in focus than basic drinking water tests.

5.40 The outbreak of the Titikaveka Irritant Syndrome problem in 2004 and a decade long ciguatera lagoon/reef fish poisoning problem on Rarotonga has prompted the government and local environmental NGOs to monitor and conduct tests of waterways and lagoon areas affected.

5.41 In support of the same programme, a local technologist led the instalment of locally design septic digester technology with government and private sector funding. This reduces the discharge of raw pig waste into local streams. Pig waste and other land-based pollutants were suspected as the main cause of these problems in the lagoons.

5.42 The Ministry of Marine Resources uses remote technology to monitor water quality in the pearl farming lagoons in the Manihiki Atoll and Penrhyn Atoll in the Northern Group islands.

5.43 The Energy Division has monitored the performance of their pilot wind turbine generator project on Mangaia. Data is still being collated on the effectiveness and efficiency of the technology. There are other sites on the islands of Rarotonga being monitored for future testings of wind turbine technology.

5.44 As mentioned earlier, the Meteorological Service and the Ministry of Works continue to participate in the Pacific Islands Climate Observation Systems project and the Pacific Islands Global Ocean Observation Systems programme.

5.45 Partnership arrangements and technical assistance programmes with local research programmes has been engaged with the New Zealand Institute of Water and Atmospheric (NIWA), University of the South Pacific (USP), Commonwealth Scientific and Industry Research Organisation (CSIRO), Department of Scientific and Industry Research (DSIR), South Pacific Applied Geoscience Commission (SOPAC), South Pacific Community (SPC) and other regional and international universities and research institutions conducting independent or collaborative research in the Cook Islands and the Pacific region.

5.46 A major challenge to the stakeholders involved in land degradation and water resources research and monitoring is the need for standardisation of methodologies and techniques.

5.47 Sharing of data was also recommended in recent consultation meetings especially in referring back to local government authorities, communities and resource owners' the outcomes of local studies.

# MEASURES FOR IMPLEMENTATION OF THE UNCCD IN THE COOK ISLANDS

---

## 6. STRATEGIES AND POLICIES ESTABLISHED WITHIN THE FRAMEWORK OF SUSTAINABLE DEVELOPMENT PLANS AND/OR POLICIES

---

6.1 Several overarching policy frameworks guide the implementation of UNCCD within the Cook Islands. These include the Agenda 21, BPOA and recently the Mauritius Strategy, MDGs, the Pacific Plan, NSDP and the NESAF.

6.2 While these are important policy frameworks, brief outlines in this report will focus on the key regional and national policies only.

6.3 The Pacific Plan is a strategy to address the many challenges facing Pacific Islands countries through the strengthening of mechanisms for cooperation and integration of responses.

6.4 The main goal of the Pacific Plan is to: *“Enhance and stimulate **economic growth, sustainable development, good governance** and **security** for Pacific countries through regionalism.”*

6.5 Regarding land degradation, the Plan aims to achieving the following objectives:

- i. Promote economic growth, sustainable development, good governance and security;
- ii. Strengthen support for current programmes, develop new initiatives and advocate for the needs of the Small Island States, particularly given their limited capacity and fragile and vulnerable environment, including to climate change.

6.6 The draft National Sustainable Development Plan (NSDP) is being finalised and will be ready for adoption and implementation from September 2006. The NSDP represents the National Development Plan, National Sustainable Development Strategy and National Millennium Development Goals Strategy, all three combined into a single leading and influential national strategy.

6.7 This combination allows for harmonisation and integration of sustainable development principles with economic and poverty reduction initiatives.

6.8 Key priority areas to be addressed under the NSDP include:

- Good Governance,
- Human Development Programmes,
- Economic Development,
- Infrastructure, Utilities and Transport,
- Natural Resources and Environment
- *National Coordination and Development Planning*
- *Cultural Diversity*
- National Security
- International Relations.

6.9 In 2004, the National Environment Service drafted the National Environment Strategic Action Framework (NESAF) 2005-2009 to support the NSDP. As a result the NSDP strategies directly reflect the NESAF strategies and initiatives as one of the first sectoral strategies to be completed parallel with the development of the NSDP. This allows for strong integration of environmental policies within the national policy framework.

6.10 The NESAF focuses on four strategic goals:

**Goal 1: Enhance the management, protection and sustainable use of our natural resources.**

**Goal 2: Reduction and prevention of environmental degradation from waste and all forms of pollution.**

**Goal 3: Increase resilience by strengthening national capacities for climate change, variability, adaptation and mitigation**

**Goal 4: Improve our institutional support and implementation mechanisms to manage our environment in a sustainable manner.**

6.11 Seven (7) priority areas were examined and the National Environment Forum recommended these to guide future policy directions: Biodiversity, Species and Ecosystems Conservation; Land Use and Resources Management; Ocean, Coastal and Foreshore Resources Management; Fresh Water Resources Management; Economics and Development; Waste Management, Sanitation and Water Quality; and Climate Change, Variability, Mitigation and Adaptability. These programmes are directly linked to ecological systems.

6.12 The fourth chapter presented was the Institutional Support Mechanisms which profile: Planning, Policy and Legislations; Finance and Administration; Capacity Building; Information, Communications and Technology; Partnerships; and International Obligations. Implementation of the NESAF was estimated to cost NZ\$20.755 million over five years.

6.13 Implementation is progressing well and the NESAF will be subjected to a mid-term review in late 2007.

6.14 Apart from the NESAF and the NBSAP, no other key strategies have been completed especially for climate change and land degradation. The NAP and NAPA have not been drafted but the NES has indicated that preparations are underway to start the process for drafting of the NAP and to complete it in 2006.

6.15 Other sectoral plans drafted to support the NSDP and pursued by NES for integration of environment priorities include the draft Education Strategic Plan 2006-2020; draft Marine Resources and Industry Plan 2006-2009; National Waste Management Plan; Cook Islands Tourism Master Plan 2006-2015; draft Health Sector-Medium Term Strategy 2006-2009; National HRD Strategy and the Infrastructure Master Plan which is being prepared with ADB assistance.

6.16 These plans were the outcome of sectoral consultations and national forums following the 2003 National Development Forum. There has been community-wide interest in updating and developing new strategies for sectors in the aftermath of the National Development Forum.

6.17 All ten Outer Islands Councils and Administrations each have an island strategic plan. According to OMIA which produces these plans, they will need to be reviewed and new plans

drafted during the 2006/07 fiscal year. Relevant strategies and considerations from the current policy statements have been incorporated within the NSDP.

6.18 There are major gaps in terms of the policies, strategies and legislations needed to support the implementation of the UNCCD. The following areas will require technical support in terms of review, completion, amendments and drafting of new policies, strategies and legislations. These areas include natural resource management, water, building standards and control, hazardous wastes and pollution, physical infrastructure development and maintenance, land use and survey and foreshore, forestry and chemicals management.

6.19 The ADB-sponsored Legal and Institutional Strengthening of Environmental Management and other previous TA projects have started formulating legislations and frameworks in key areas including: water resource management, biodiversity prospecting, trade in endangered species and ozone depleting substances.<sup>87</sup>

6.20 The same project has drafted regulations under existing legislations including: Environment (Atiu) Regulations; Environment (Aitutaki) Regulations; Environment (Biodiversity Conservation) Regulations; Environment (Environment Protection Fund) Regulations; Environment (Mitiaro) Regulations; Environment (Permits and Consents) Regulations; Environment (Suvarrow National Park) Regulations; Environment (Takuvaive Water Catchment) Regulations; Environment (Waste Licensing) Regulations and Public Health (Sewage) Regulations.<sup>88</sup>

6.21 The project also drafted the Atiu Bylaws 2006, Aitutaki Bylaws 2006 and the Mitiaro Bylaws 2006.<sup>89</sup>

6.22 Draft Sewage Regulations have been completed by the Public Health Department to support activities related to improving septic tank storage systems and sewage treatments around homes and businesses especially in high risk areas. Whilst there is no National Waste Management Act, general waste management concerns have been addressed by the Public Health Act 2003 and the Environment Act 2003.

6.23 The Marine Resources Act 2005 is another supporting legislation to land degradation through its provisions on water quality monitoring and land based pollution impacts on lagoon and foreshore processes and ecosystems.

6.24 Draft Disaster Risk Management legislation and strategy are yet to be formalised. These legal frameworks will provide direction and support for the effective planning and management of mitigation, preparedness, and response and recovery efforts.

6.25 Key stakeholders have participated strongly in improving policies and development strategies.

6.26 Where most problems occur is in the lack of clear roles and responsibilities between agencies, leading to poor implementation, enforcement and administrative support.

6.27 Problems have also been attributed to poor policy and legal frameworks as noted in the gaps and constraints mentioned above. These tie the hands of officials in regard to enforcement and oversight.

---

<sup>87</sup> de Romilly et al (2006).

<sup>88</sup> ibid

<sup>89</sup> ibid

6.28 Limited technical and legal capacity locally has also been attributed to lengthy delays in reviews, amendments and drafting of new policies, plans and legislation.

## **7. INSITUTIONAL MEASURES TAKEN TO IMPLEMENT THE CONVENTION**

---

7.1 Several national decision-making bodies, with broader community representatives as members, are involved in UNCCD-related programmes. They include the NSDP Advisory Committee; Rarotonga Environment Authority; National Waste Management Committee; National MDGs Committee; National Biodiversity Steering Group Committee; National Climate Change Country Team; National Disaster Risks Management Council; and National Water Safety Project Committee.

7.2 The Cook Islands does not have a national CCD programme and coordinator. This is a major weakness in the government's attempt to meet its national obligations under the UNCCD. Current institutional arrangements allow the NES to facilitate and coordinate UNCCD-related activities using internal project personnel and resources.

7.3 The lack of programme and coordinator is balanced with the participation of strong key sectoral players on the National Land Degradation Technical Working Committee which includes: Ministry of Works (Infrastructure, Waste, Water and Energy), Ministry of Agriculture, Ministry of Health, Environmental NGOs, CIANGO, Cook Islands Tourism Corporation, Cook Islands Meteorological Service, Emergency Management Cook Islands (EMCI) and the National Environment Service.

7.4 This committee was responsible for reviewing achievements and constraints related to sectoral and national programmes being implemented which are related to land degradation and drought concerns. Its members are also representatives of their sectors on the other national decision-making bodies mentioned above.

7.5 Two priority areas with weak institutional structures have been recommended for improvement including water and disaster management. A stand-alone National Water Authority was recommended to be established as priority for government to firmly deal with continuing water problems instead of the current structural set-up which is deemed ineffective. The National Disaster Management Office is still a one man band and needs to be reorganised to fit greater responsibilities under the proposed draft legislation and policies.

7.6 To further progress implementation of the UNCCD, government will need assistance to establish a National Land Degradation Programme with dedicated resources to effectively implement across all sectors. This will ensure that the UNCCD programme is well coordinated and other institutional structures are also active and effective.

## **8. PARTICIPATORY PROCESS IN SUPPORT OF PREPARATION AND IMPLEMENTATION OF ACTION PROGRAMMES**

---

8.1 While there is no NAP, the NESAF 2005-2009 have provided the framework for the implementation of land degradation and drought strategies called for under the UNCCD.



8.2 The preparation of the NESAF was a national and cross-sectoral effort rather than an environment sector effort alone. The Chamber of Commerce, NGO's and community representatives were active in the whole preparatory process.

8.3 It is now a common part of any programme formulation in the Cook Islands for the private sector, NGOs or community groups' representatives to be invited to participate with government on environmental projects.

8.4 Communities in the Outer Islands were consulted via other government workshops, forums and meetings on Rarotonga.

8.5 These participatory processes have been extended to the implementation phase of the NESAF. The private sector has taken on recommendations by the NESAF for more input in addressing the need to send solid waste to New Zealand for recycling. Material from cardboard boxes, aluminium cans, plastics bottles, glass, and vehicles parts have been collected for recycling by the private sector.

8.6 NGOs and CBOs have also taken on more CCD-related responsibilities as recommended by the NESAF. Annex 3 highlights the priorities being implemented by NGOs under the Cook Islands GEF Small Grants Programme and other NGOs projects which they pledged to implement during the formulation of the NESAF.

8.7 In 2002, two (2) NGOs including TIS and REAP were actively involved in implementing CCD related programmes.

8.8 In 2006, six (6) additional NGOs, including the Avana-Muri Marine Awareness Group (AMMAG), WWF Cook Islands, Red Cross Cook Islands, Mitiaro Itiki Rangers, Mangaia Tangaero Rangers, and Islands Sustainable Alliance Cook Islands (ISACI) focussed on land degradation and drought related problems.

8.9 These do not include community-based organisations.

8.10 These organisations form the platform for lobbying for government and international support on community environment issues such as the declaration of Suvarrow as a national park, water quality monitoring, protection of wetland areas, beach areas, islets (motu), waste management, community rubbish clean-ups and collection and recycling, national protected areas (rau'i), information dissemination, environmental education and awareness, vulnerability and adaptation capacity assessments and disaster preparedness and responses.

8.11 A result of having a transparent process, especially with broader participation by stakeholders in the formulation process of the NESAF, is that we are seeing more environmental programmes and projects implemented than before in the Cook Islands. There is an also better organisation by the NGOs of their affairs and programmes. This has come about as a result of better understanding by stakeholders of their responsibilities.

## **9. CONSULTATIVE PROCESS IN SUPPORT OF THE PREPARATION AND IMPLEMENTATION OF NATIONAL ACTION PROGRAMMES AND PARTNERSHIP AGREEMENTS**

---

9.1 There has been active interest and participation by development partners in the Cook Islands environmental programmes since 2002.

9.2 ADB has assisted the funding of the new landfills and sewage treatment tanks for both Rarotonga and Aitutaki. It also continues to provide TA grant projects for: climate proofing of infrastructure, policies and communities; legal and institutional strengthening of environmental management in the Cook Islands, strengthening disaster management and mitigation including the development of a Preventive Infrastructure Master Plan.

9.3 NZAID and AusAID have harmonised their bilateral aid programme to the Cook Islands in 2004 and this is currently administered by NZAID. NZAID and AusAID hold annual and biannual negotiations on Annual Forward Aid programme.

9.4 NZAID/AusAID have contributed through their bilateral and multilateral programmes, financial and TA assistance for water tanks in the outer islands, water quality testing and monitoring, waste management, development of the NESAF, NSDP and other sectoral policies, National Environment Forum, community environmental education, awareness and promotions, disaster recovery and reconstruction, and including infrastructure development projects.

9.5 NZAID/AusAID is a member of two key decision-making committees - the Aid Capital Coordinating Committee (ACCC) and Outer Islands Development Grant Funds. Meetings at this level are normally conducted on a monthly basis.

9.6 The GEF through the UNDP, UNEP, and SPREP has provided funding for the National Capacity Needs Assessments (NCSA), NBSAP and NBSAP Add-On projects, Climate Change National Communications, Vulnerability and Adaptation as well as Mitigation projects, International Waters Programme (IWP) projects, UNCCD reports and disaster-related programmes.

9.7 The GEF via the UNDP also initiated the Cook Islands-GEF Small Grants Programme specifically for local NGOs and CBOs.

9.8 At the beginning of 2006, a national GEF Dialogue Workshop was conducted to improve national capacity in terms of understanding GEF policies, priorities and funding mechanisms. Very few local professionals understand GEF policies and can develop GEF project proposals.

9.9 The NESAF was supported by NZAID/AusAID, UNDP and SPREP, with representatives attending the National Environment Forum which endorsed the strategy.

9.10 It is important to note that the Cook Islands was concerned about the amount of national funding allocations taken out to regional support components when national projects are implemented via regional programmes.

9.11 One of the main constraints in accessing GEF funding is probably the timeframe taken from time of project proposal submission to receiving of funds. However, this is currently considered in planning and project design timeframes.

9.12 Meanwhile, government and NGOs annual reporting and budgetary appropriation processes provide additional information needed for monitoring and tracking progress to UNCCD-related programmes.

9.13 The NESAF will also undergo a mid term review towards the end of 2007 which will again provide additional monitoring and assessment information for further improvement in the consultative processes.

9.14 The official focal point is the Ministry of Foreign Affairs and Immigration while the NES is the UNCCD executing agency. There is good working relationship between the UNDP-Cook Islands GEF focal point in Samoa, NES and national implementing agencies.

9.15 The National Technical Working Committee for UNCCD is the first national body with the responsibility of advocating for CCD-related priorities and concerns. The NES, as the GEF focal point, uses its own internal information distribution networks and processes to share information with. This has been difficult given that there is no formal national land degradation programme or coordinator.

9.16 Representatives on the National Technical Working Committee for CCD have not been designated specific tasks to perform on behalf of the committee. One of the difficulties in getting consistent commitments from representatives includes the lack of continuity in agency representatives attending meetings.

## **10. MEASURES TAKEN WITHIN THE FRAMEWORK OF NATIONAL ACTION PROGRAMMES (NESAF)**

---

10.1 The Cook Islands conducted its national assessment review and process to complete the National Report for the Convention to Combat Desertification (land degradation) and submitted it to CCD in 2002. That was the first comprehensive assessment of CCD programmes nationally.

10.2 Since then, the NESAF assessment and formulation, the IWP Takuvaine Watershed and Community project, the NCSA thematic assessment and profiling, disaster damaged assessments, vulnerability and adaptation assessments and annual reports of key stakeholders have provided the background information for what has been achieved to date.

10.3 There has been no general review of past experiences under the field of land degradation apart from the above assessments. The outcome of these assessments and reports has been translated into current programmes such as the NESAF and will be integrated into the NAP for action.

10.4 Continuing programmes on organic farming practices have contributed to diversifying income-generating activities within outer island communities.

10.5 Government has recently suggested as a matter of budgetary policy for matured pine forests on Mangaia and Atiu to be harvested to assist with the cost of maintaining the forestry programmes and for future forestry initiatives. There is continuing discussion on this matter.

10.6 Planting of new drought-resistant crop varieties especially taro and other root crops and vegetables was aimed at improving the national food security situation. This has been supported by the DSAP Phase 1 and 2 programme implemented by the Ministry of Agriculture.

10.7 The IWP sponsored Takuvaine Water Catchment Management project was aimed at encouraging local communities to take responsibility for ensuring that local water resources are well managed for irrigation and other uses and to improve the quality of accessible drinking water. The project was able to produce a Takuvaine Water Catchment Ra'ui Management Plan.

10.8 A climate change programme was initiated as part of the CBDAMPIC project to collect and record traditional knowledge on local weather information and climatic forecasts. This project has received important information on early warning systems and forecasting of extreme weather patterns.

10.9 The NCSA thematic assessment profiling of national capacity needs to support the implementation of the UNCCD is continuing. It is expected to be completed by the end of June 2006. A national capacity building Plan of Action will be developed based on the outcome of the thematic assessment and is expected to be completed before the end of 2006.

10.10 A National Capacity Self Assessment (NCSA) workshop was conducted on Rarotonga in September 2003. The workshop was an attempt at introducing the NCSA process to identified key stakeholders and progressive ways and means of completing the NCSA.

10.11 Since 2002, with the assistance of NZAID/AusAID, SOPAC, several Cook Islands technicians and budding engineers have completed their studies in the Earth Science and Marine Geology (CESMG) programme from the USP. This is the only formal training programme to build national capacity in the areas of applied geoscience for local technicians with minimal university entrance qualifications.

10.12 Some of the important local training workshops that have been conducted at national and local community level especially in the outer islands since 2002 include: waste management operations on Rarotonga and Aitutaki; forestry programme for sandalwood planting for economic and soil stabilisation purposes in the makatea and coastal areas; GIS applications; climate change vulnerabilities and adaptations assessments; integrated assessment modelling of coastal inundations; systematic observations and Pacific islands-Global Climate Observation System (PI-GCOS).

10.13 Local personnel also have short term training attachments to regional institutions in Fiji, Samoa, New Zealand, Australia and Japan on water quality testing, laboratory programmes, EIA, report writing, crop research, GIS, statistics and waste management programmes. Most of these attachments were funded by NZAID/AusAID and JICA.

10.14 Since 2002, eleven students on NZAID/AusAID scholarships have graduated with degrees from regional universities and most are back in the country working within various sectoral agencies. Their fields of training include environment, marine resources, agriculture, technology engineering and laboratory technology.

10.15 Preliminary assessments from the NCSA thematic profiling suggested the following key areas of capacity constraints and needs: limited numbers of local technical personnel and researchers; limited enforcement capacities; identified key sectors lack appropriate legislations, policies and strategies; roles and responsibilities of stakeholders not always clear; weak institutional

structures for forestry, water, land use and survey management; limited capabilities of laboratories and research facilities; lack of database on technologies and detailed assessment of technology needs and transfer processes; lack of quality data and poor data management; limited numbers of functioning computer networks and databases; limited trained staff in media educational programmes and inconsistencies in the levels of resources committed by government and donors for CCD initiatives.

## **11. FINANCIAL MECHANISMS IN SUPPORT OF IMPLEMENTATION OF UNCCD**

---

11.1 The total percentage of the annual national budget appropriations for the National Environment Service has slightly increased in value from 1.0% in 2002 to 1.49% in 2005. The total value of government appropriations to the NES for the period is about NZ\$2,796,467. Despite the lack of a national land degradation programme, these funding are appropriated for outputs and priority areas identified in the NESAF, the NBSAP and other related strategies for support.

11.2 A local environment funding mechanism, the Environment Protection Fund (EPF) has received about NZ\$380,000 annually over the last eight (10) years. This amounts to just over NZ\$1 million from 2002 to 2005. The Airport Departure Tax fees are collected by the Customs Department. Out of the NZ\$30.00 fee, the total EPF component is NZ\$8.50. The Ministry of Cultural Development also receives \$1.50 for their cultural and traditional heritage development programme.

11.3 The EPF is aimed at the tourism sector to capture the environmental costs of the tourism sector from impacts on local resources and environment. The fund actively supports domestic rubbish collection, management of Rarotonga and Aitutaki landfills, awareness and education, environmental studies and monitoring, NES support and other smaller community projects.<sup>90</sup>

11.4 Waste management (MOW) received from ADB and NZAID over \$3 million dollars which was mostly appropriated towards the construction of the new waste management facilities on Rarotonga and Aitutaki. The physical construction part of the project started in 2002 and was completed in 2004.

11.5 From 2002 to 2005, the NBSAP-Add On project received about NZ\$622,297 while the International Waters Programme received NZ\$297,000 and Biosafety received about NZ\$143,260. Climate change programmes through the Second National Communications and CBDAMPIC received about NZ\$142,886. Environment education and awareness programme received about NZ\$9361. The NCSA programme received about NZ\$103,142 and NZ\$300,000 to manage the removal of Ozone Depletion Substances (ODS) project. The total value of direct development partners' grants mainly through GEF to support core National Environment Service programmes, is about NZ\$1,320,946.

11.6 Development partners were also able to provide assistance in the other sectors with CCD-related activities. Disaster recovery received NZ\$3,000,000, Meteorological Service received about NZ\$18,399 and Ministry of Agriculture received for its DSAP programme is NZ\$210,000 while the Ministry of Marine Resources received NZ\$500,000 for the period. The National Environment Service also received NZ\$400,000 from NZAID. The outer islands received funds through the OMIA valued at NZ\$2,974,394. The total amount of funds received from donors for the period for sectors with CCD-related activities is estimated at NZ\$7,102,793.

---

<sup>90</sup> Upoko (2005).

11.7 Overall, donor contributions to the Cook Islands environment sector were estimated at over NZ\$8.4 million for the period from 2002 to 2005. The Cook Islands government would like to acknowledge the assistance to its environment and related sectors from the NZAID, AusAID, GEF via UNDP, UNEP, SPREP and UNESCO, FAO, Japan (JICA), EU (CTA) and CIDA.

11.8 In December 2005, the CIANGO, GEF via UNDP in partnership with the Government of the Cook Islands formalised the Cook Islands-GEF Small Grants programme. The programme is aimed at addressing and funding NGOs and CBOs environmental programmes in local communities.<sup>91</sup>

11.9 An Outer Island Development Grant Funding (OIDGF) scheme and a Community Initiative Scheme (CIS) have been developed in partnership with NZAID/AusAID. The OIDGF core objective is to facilitate investments in physical and human capital projects that can generate substantial increases in productivity, revenue and employment opportunities in the outer islands.<sup>92</sup> The OIDGF provides 30% funding for start-up private businesses in the outer islands. The Bank of the Cook Islands also provides loan facility to the project up to 70% of the total project budget.

11.10 The Cook Islands-EU 9th EDF National Indicative Programme (NIP) provided €3.1 million under the A-envelope and B-envelope to focus on improving the delivery of social services in the outer islands and for natural disaster recovery and against future cyclones.<sup>93</sup> NGOs received 15% of the National Indicative Programme (NIP).

11.11 The Cook Islands Government has not considered tax incentives for the use and adoption of various environmental friendly products and services. There are no levies or tax break mechanisms for recycling and importation of biodegradable products.

11.12 Instead, the government is removing import taxes on all products apart from vehicles, tobacco, alcohol, fuel, pig-feed and vegetables from July 2006. This policy has implications of more waste and pollution from imported products. Implications which will require a significant amount of resources including funding to remove waste and for management. It will also put pressure on existing landfills. Funding will be sourced from other sectors using other difficult mechanisms.

11.13 There is no dedicated National Land Degradation Fund or budgetary lines appropriated exclusively for land degradation programmes.

11.14 There is a need for government to introduce regulations for charges for natural resources usage especially for water. Road and vehicle taxes currently do not cover environmental impacts costs from GHGs pollution, disposal problems from lack of land on these small islands and the costs of recycling vehicle parts, and these need to be reviewed and introduced. Sand and aggregate mining has not been taxed.

11.15 One of the areas that will need to be considered for technical assistance is that of training local personnel to understand what economic or financial incentives can be applied and how such policies will work and their impact on the resources and consumers intended for taxing. This training has also been identified as important for biodiversity and climate change programmes.

---

<sup>91</sup> Upoko (2006)

<sup>92</sup> AGRICO LTD. (2003).

<sup>93</sup> CIANGO. (2006).

## **12. REVIEW OF BENCHMARKS AND INDICATORS TO MEASURE PROGRESS**

---

12.1 The EIA process is probably the most effective monitoring process applied in the Cook Islands. Unfortunately, it only applies fully to Rarotonga, Aitutaki, Atiu and Mitiaro due to their acceding to the Environment Act and selectively on other islands.

12.2 Other islands are currently formulating their by-laws under the Environment Act before they fully adopt the Act. Despite this situation, the EIA process has been applied for major construction and infrastructure projects on all islands as a matter of policy for government and NZAID.

12.3 Disaster impact assessments data is being collated from all islands and provides some important information on resource and land degradation rates.

12.4 A beach profiling programme also provides information on coastal degradation or sand movements as result of tidal wave actions. It is important that this project is applied to the outer islands as well and that it is applied consistently over a period of time. The 2005 cyclones caused severe damage to coastal areas that shifted and changed land forms along some beaches.

12.5 NGOs have also become a part of the monitoring processes through their own vigilant assessment of development activities through community surveys, field testings, awareness and educational programmes.

12.6 Unfortunately, there are gaps in terms of dedicated mechanisms or processes including policies for the monitoring the rate of development of resources and land use activities, even on Rarotonga.

12.7 There are weak institutional arrangements to control development projects creating a need for better cooperation and coordination between agencies to minimise overlap of responsibilities involved especially among those managing development activities.

12.8 Critical studies and surveys on the carrying capacity and baseline information needs to be conducted, collected and translated into management strategies especially on stressed systems such as water resources, slopes as well as coastal, lagoon and wetlands areas.

12.9 The Cook Islands continues to collate baseline data and establish databases for future reference. This is a priority area and has been identified as a national constraint due to the lack of quality data and functional databases. Furthermore, the need to translate data into spatial information context (i.e. GIS) to assist with decision making at all levels has been highlighted widely as a key component for alleviating land degradation.

12.10 Development partners' assistance is needed to assist with training in data collation and analysis as well as data management.

12.11 The Meteorological Service is participating in the Pacific Islands Global Climate Observation System (PI-GCOS) programme for strengthening up-to-date climate and weather forecast including forecasts for ENSO weather patterns and tropical cyclones. This allows local communities to prepare for cyclones and drought, changes in farming practices and resource use.

12.12 The Cook Islands is also developing local capacity in the South Pacific Sea Level and Climate Monitoring Project under the Pacific Islands Global Ocean Observation System (PI-GOOS). Local government agencies are collaborating with WMO, NIWA, SOPAC, PTWC, NOAA, USP and

AUSAID in support of the PI-GOOS and the South Pacific Sea Level and Climate Monitoring Project.

12.13 The Ministry of Works was engaged to collect continuous GPS data, which is the land-based component of the South Pacific Sea Level and Climate Monitoring Project under PI-GOOS.

12.14 The Meteorological Service office has 7 weather observation stations nationwide. Five of them use fully automated remote sensing technology.

12.15 The MMR is also using remote sensing technologies to monitor and collect data on environmental changes in lagoon systems especially in pearl farming areas. This gives them an early lead on any environmental changes likely to cause outbreak of disease in the lagoon which will affect pearl stocks. These data have led to changes in farming practices and formulation of lagoon (whole ecosystem) management plans.

12.16 The Water Works Department is using capacity loggers to monitor and collect data on water levels and community usage. This has been done for islands with water reticulation networks. This gives water authorities information to act on in cases of dropping water levels. Unfortunately, outer islands which rely on rainwater collection tanks and ground water wells especially in the Northern Group still need alternative early warning systems such as ENSO weather predictions and forecasts.

12.17 All three organisations collaborate with regional and international organisations such as NIWA, SOPAC, SPC, WMO, and CSIRO for TA support, information networking as well as accessing capacity building opportunities. These activities were generally supported, for example by WMO, SOPAC, NIWA, USP, SPC, SPREP, NZAID, and AusAID among others.

12.18 Currently the MMR, MOW and the Meteorological Service use regional institutional TAs and university researchers for highly technical studies of areas affecting local resources and environmental concerns.

12.19 Policy formulation regarding early warning systems information has been considered and adopted by key sectors and their responsible key stakeholders in their strategies, legislations and policies. However, sectors not directly responsible for any climate change impact responses are now slowly adopting policy changes.

12.20 NES is in the process of preparing a Sustainable Land Management project which will be linked to the MOW/SOPAC/EU 9th EDF-Map Server Host project being set up as clearing house mechanism within the MOW for land use information network for Government agencies and the general public.

12.21 There is also a need to assess the effectiveness of mainstreaming exercises in the past. This exercise might include another review of the effectiveness of the EIA processes or other monitoring systems. This is necessary as some stakeholders still do not understand, for example, the role of the EIA in monitoring the development activities on land and resource use.

12.22 The local scientific and technical communities have made significant contributions to the development of the Cook Islands. They have made contributions to all three Conventions through their support in enabling activities as well as implementation.



12.23 The main constraint within the scientific and technical community is that the Cook Islands has limited numbers of scientists and technicians and technologists on the ground. This is a concern as fewer students are coming through the science courses in local high schools.

12.24 There is need to strengthen the promotion and awareness of scientific activities and for more recognition and promotion of people who have positively contributed to national development in the past through scientific, engineering and technical achievements.

## **FUTURE DIRECTION**

### **13. FORMULATION OF NATIONAL ACTION PLAN**

---

13.1 The National Environment Service is preparing to formulate its NAP. Having a NAP will further strengthen land degradation activities already suggested under the NESAF.

13.2 The NAP will address priority areas such as biodiversity, climate change impacts and adaptation, agricultural land use, wetlands and drainages, coastal and foreshore development and protection, housing development, water catchment areas and streams, inland, makatea, and coastal forests, aggregates mining and quarrying as well as waste management, research and technology development, education, trainings and awareness, knowledge, data and information management, and financial mechanisms.

13.3 Funding has been secured and it is now just a matter of securing technical personnel and setting out the formulation process. NES is adamant that following the completion of the NAP, a secretariat and a national focal point or coordinator with its own annual budgetary allocation will be established to facilitate and coordinate the implementation process in the coming financial year.

13.4 The NESAF continues to provide and guide activities and strategies related to land degradation programmes.

13.5 Due to current ad hoc implementation of land degradation and drought concerns, the establishment of a CCD-related secretariat within the National Environment Service will strengthen the facilitation of roles and responsibilities of key stakeholders, networking and especially information distribution and communications.

### **14. EMERGING ISSUES TO BE ADDRESSED**

---

14.1 It is difficult to determine the impact of changes in Heads of Ministries (HOMs) of fourteen (14) government agencies. The HOMs have come to the end of their contracts and their positions have become vacant. How these changes will impact on agencies with key roles and functions in dealing with land degradation and drought remains to be seen.

14.2 Government need to reconsider the strengthening of agriculture infrastructure in the Southern Group islands to supply Rarotonga as agricultural activities on Rarotonga decrease due to limited availability of land. This will lead to the need for strengthening of monitoring processes.

14.3 Changes in import levies will lead to more imported products and therefore increased waste.

14.4 Increasing extreme and severe weather conditions are being forecast and there is a need to consider their impacts on local communities, land use and management and the economy.

14.5 The limited capacities in local technical personnel and support facilities combined with weak data and information management capabilities will hamper future progress in planning biodiversity, climate change and land degradation programmes, let alone meeting the obligations of all three Conventions.

## REFERENCES

---

1. ADB. (2005). Climate Proofing – A Risk-Based Approach to Adaptation. Pacific Studies Series. Asian Development Bank.
2. AGRICO LTD. (2003). Preparing the Outer Islands Programme: Final report. ADBTA 3795-COO.MFEM. Government of the Cook Islands.
3. Anon. (2005)<sup>1</sup>. Tropical Cyclone Percy: Damage Assessment Report for Pukapuka. National Disaster Management Office/Office of the Minister for Islands Administration (OMIA). Government of the Cook Islands.
4. Anon. (2005)<sup>2</sup> State Party Report on the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). Government of the Cook Islands
5. Anon (2006).<sup>3</sup> Project Development Facility: Request for Preparation of MSP under the LDC-SIDS Portfolio Project for Sustainable Land Management. National Environment Service/UNDP-GEF.
6. Arioka, P. A. (2005). Database: Hazardous Chemicals and Fertilizers Used for Agricultural Purposes in the Cook Islands. National Environment Service. Government of the Cook Islands.
7. Bartmanovich. A. (2005). Cook Islands Review of Fuel Distribution and Pricing System. Ministry of Finance and Economic Management. Government of the Cook Islands
8. CIANGO. (2006).Country Strategy Report 20006-2009. Cook Islands-GEF Small Grants Programme. CIANGO/UNDP
9. Cook Islands Premium Noni Ltd. (2006). Noni Premium Statistics. Noni Premium Ltd. Rarotonga, Cook Islands.
10. de Romilly, G, Manarangi-Trott, T. Matepi, M. and Tiraa-Passfield, A. (2005). Draft Report-Review of Legal and Institutional Frameworks: Legal and Institutional Strengthening of Environmental Management in the Cook Islands. (ADB TA 4273-COO). National Environment Service, Government of the Cook Islands.
11. DIB (2006). Development Investment Board Statistics. Development Investment Board. Government of the Cook Islands.
12. Drollet, B; Tangimetua, T; Tyler, N. & Sugden, C. (2004). National Development Strategy Working Paper: Living Standards and the Vulnerable. Office of the Prime Minister/Ministry of Finance and Economic Management. Government of the Cook Islands.
13. Herrmann, T. (2005). Rarotonga Waste Facility Operations Report. Waste Management Division. Ministry of Works. Government of the Cook Islands.
14. Holcomb, J., Ward.J.D. (2002). Draft Report-Technical Assessment and Support for Watershed Management, Planning and Training for Tonga, Cook Islands, Samoa, Palau and the Federated States of Micronesia. USDA Forest Service.
15. IPCC (2001). Third Assessment Report. Inter-governmental Panel On Climate Change. UNFCCC. UN.
16. Lyons, S. (2003). Rarotonga Fringing Reef Survey, 2003 Report. National Environment Service. Government of the Cook Islands.
17. Manarangi, A. (2004)<sup>1</sup> Survey and Reducing the Impact of Alien Species on Rarotonga, Aitutaki, Mauke, Atiu and Mitiaro. National Environment Service. Government of the Cook Islands.
18. Manarangi (2004)<sup>2</sup> Assessing the State of Biotechnology and Biosafety in the Cook Islands. National Environment Service.
19. McCormack, G. (2002) National Biodiversity Strategic Action Plan (NBSAP). National Environment Service, Government of the Cook Islands.

20. MFEM (2005). Cook Islands Government Budget Estimates 2005/06. Ministry of Finance and Economic Management. Government of the Cook Islands.
21. MFEM (2006) Cook Islands Budget Policy Statement 2006/07. Ministry of Finance and Economic Management. Government of the Cook Islands.
22. Miro Consultants Ltd. (2003). Rarotonga Beach Profile Survey. National Environment Service. Government of the Cook Islands.
23. MOA (2000) Cook Islands 2000 Census of Agriculture and Fisheries. Ministry of Agriculture. Government of the Cook Islands.
24. MOE. (2005). MOE Budget Report 2005. Ministry of Education. Government of the Cook Islands.
25. MOH (2004). Ministry of Health Annual Statistics Report. Ministry of Health. Government of the Cook Islands.
26. MOW (2005). Cyclone Damage Assessment for Meena, Nancy and Olaf. Ministry of Works. Government of the Cook Islands.
27. Nambiar, E.K.S & Brown, A.G. (eds.) (2001). Plantations, Farm Forestry and Water. Proceedings of a National Workshop, 20-21 July 2000. Melbourne. RIRDC Publication No. 01/20, 62pp.
28. Ngari, A. (2006). meteorological parameters data. Cook Islands Meteorological Service. Cook Islands.
29. National MDGs Committee (2005) Millennium Development Goals National Report 2005. Office of the Prime Minister/CIANGO. Government of the Cook Islands.
30. Nia, A. (2006). Rarotonga Islands Environment Authority Consents/Project Permit Statistics. National Environment Service. Government of the Cook Islands.
31. PIREP (2004) Cook Islands National Report on Barriers to Renewable Energy. Pacific Islands Renewable Energy Programme (PIREP). GEF/UNDP.
32. Rainforest Conservation Fund (2000) Rainforests in Peril: Deforestation. Rainforest Conservation Fund. [www.rainforestconservation.org](http://www.rainforestconservation.org)
33. Raumea, K. (1998). Ciguatera Report: Miscellaneous Report. Ministry of Marine Resources. Government of the Cook Islands.
34. Rongo, T.; Holbrook, J.; Rongo, T.C. (2006) Reef Survey for Rarotonga. National Environment Service. Government of the Cook Islands.
35. Rongo, T. (2002). Cook Islands National Report: United Nations Convention to Combat Desertification (Land Degradation). National Environment Service. Government of the Cook Islands.
36. Rongo, T. (2004). Priority Environment Problems: Cook Islands Report. International Waters Project. National Environment Service. Government of the Cook Islands.
37. Statistics Cook Islands (March 2005) Quarterly Statistical Bulletin. Ministry of Finance and Economic Management. Government of the Cook Islands.
38. Saul, E., Tiraa, A. (2004). Proposed Natural Areas in the Cook Islands within a Proposed National System. National Environment Service. Government of the Cook Islands.
39. SPREP (2003). Cook Islands POPs Project Country Plan. South Pacific Regional Environment Programme (SPREP), Samoa.
40. Tangianau, O (2005)<sup>1</sup>. Country Report. Regional Workshop on Sandalwood Research, Development and Extension in the Pacific Islands and Asia. Office of the Minister for Islands Administration. Government of the Cook Islands.
41. Tangianau, O. (2005)<sup>2</sup>. Palmerston Islands: Cyclone Damage Assessment. Office of the Minister for Islands Administration. Government of the Cook Islands.
42. Tangiruaine, T. (2006). Data Sheet: Land Taken Up by Buildings based on Floor Areas of Buildings. Ministry of Works. Government of the Cook Islands.
43. TCA (2006). Kakerori Population Survey Statistics. Takitumu Conservation Area (TCA). Rarotonga, Cook Islands.

44. TCI (2004). Sales and Marketing Statistics. Telecom Cook Islands.
45. TCI (2006). Sales and Marketing Statistics. Telecom Cook Islands.
46. Upoko, T. (2005). National Environment Strategic Action Framework 2005-2009. National Environment Service. Government of the Cook Islands.
47. Upoko, T (2006). Draft National Assessment Report of Commitments to Sustainable Development in the Cook Islands. Office of the Prime Minister. Government of the Cook Islands.
48. Weterings, R. (2005). Mangaia-Cook Islands Forest Resource Feasibility Study. FAO-Subregional Office for the Pacific. FAO.
49. Wigmore. W. (2000). FAO Chemical Publication. FAO.

## Annexes

### ANNEX 1. UNCCD COUNTRY PROFILE

---

#### Cook Islands

This UNCCD country profile has been provided by: National Environment Service

Name of focal point institution/ministry/office: National Environment Service

Date: 5 July 2006

Mailing address: PO Box 371, Rarotonga, Cook Islands

Telephone: +682 21256/24256                      Telefax: +682 22256

E-mail: [resources@environment.org.ck](mailto:resources@environment.org.ck) or [Ipukarea@environment.org.ck](mailto:Ipukarea@environment.org.ck)

#### Biophysical indicators relating to desertification and drought

##### 1. Climate

1.1. Index of aridity <sup>94</sup>	1.383 mm
1.2. Normal rainfall	2000 mm
1.3. Rainfall standard deviation	150 mm

Sub-national areas	mm
Rarotonga	2000
Southern Group Islands	1900
Northern Group Islands	2300

##### 2. Vegetation and land use

2.1. NDVI (normalised difference vegetation index)	na
2.2. Vegetation cover (% of total land area)	66.6%
2.3. Land use (percent of total land)	

Land Use	1990-1999	2000-2005
Arable Crop Land		4.4%
	Irrigated	0.19%
	rainfed	4.21%

---

<sup>94</sup> The index of aridity is the ratio P/PET; P=precipitation, PET=potential evapotranspiration. Climatic zone maps to be annexed if available in a scale of 1/million.

Pasture		1.04%
Forest and woodland		61.9%
Other land		33%

2.4. Surface albedo<sup>95</sup> \_\_\_\_\_ na \_\_\_\_\_

### 3. Water resources

3.1. Fresh water availability (million m<sup>3</sup>) 451m<sup>3</sup> /month  
 3.2. Fresh water resources per capita (m<sup>3</sup>) 200 liters/person/day  
 3.3. Agricultural water use (million m<sup>3</sup>) \_\_\_\_\_ na \_\_\_\_\_  
 3.4. Industrial water use (million m<sup>3</sup>) \_\_\_\_\_ na \_\_\_\_\_

### 4. Energy

#### Consumption

4.1. Energy use per capita (kg oil equivalent) 1,263 kg/capita/annum  
 4.2. Agricultural energy use per hectare (millions of BTU) -na

#### Production

4.3. Energy from renewables excluding combustible renewables and waste (% of total supply) 7% (solar, wind)

#### Renewables - Consumption by sector

4.4. Industry (% of total renewable consumption) 3% telecommunication  
 4.5. Residential (% of total renewable consumption) 4% households  
 4.6. Agriculture (% of total renewable consumption) 0%

### 5. Types of land degradation

Type of land degradation	1990-1999		2000-2005	
	Million ha	% of total area	Million ha	% of total area
Degradation of coastal areas		NA		NA
Degradation of wetlands		NA		NA
Degradation of sloping lands		NA		NA

<sup>95</sup> Surface albedo map to be annexed if available.

Land Use and Management		NA		NA
Waste Management		NA		NA
Degradation of lagoon and reef areas	Live coral cover decline, local depletion of some species. E.g giant clam  On Rarotonga nitrification occurring supporting blue-green agal population in some areas		Live coral cover decline, local depletion of some species. E.g giant clam,  On Rarotonga nitrification occurring supporting blue-green agal population in some areas	
Agricultural land use and practices		NA		NA
Invasive and alien species	Tilapia	NA	tilapia	NA
Loss of biodiversity				
Housing and development expansion		NA		NA
Climate change impacts		NA		NA
Infrastructure		NA		NA
Mining and quarrying		NA		NA

## 6. Rehabilitation

Lands under rehabilitation	1990-1999	2000-2005
Rehabilitation of degraded crop land (km <sup>2</sup> )	950 ha	-
Rehabilitation of degraded range land (km <sup>2</sup> )	-	-
Rehabilitation of degraded forest (km <sup>2</sup> )	-	



## **Socio-economic indicators related to desertification and drought**

### **7. People and economy**

7.1. Population (total) (2005)	<u>20,200</u>
<input type="checkbox"/> Population: urban (percent of total) (Rarotonga)	67.6%
<input type="checkbox"/> Population: rural (percent of total) (outer islands)	32.4%
7.2. Population growth (annual %)	-1.2%
7.3. Life expectancy (years)	<u>71 years (2001)</u>
7.4. Infant mortality rate (per 1,000 live births)	<u>9.8</u>
7.5. GDP (current US\$)	US\$4947
7.6. GNI per capita (current US\$)	_____
7.7. National poverty rate (% of population)	6%
7.8. Crop production (metric tons)	_____
7.9. Livestock production (metric tons)	_____

### **8. Human development**

8.1. Primary education completion rate (% age group)	90%
8.2. Number of women in rural development (1795)	20.6% of female pop.
8.3. Unemployment (% of total)	13% (15yrs over)
8.4. Youth unemployment rate (age 15-24)	above
8.5. Illiteracy total (% age 15 and above)	99%
8.6. Illiteracy male (% age 15 and above)	_____
8.7. Illiteracy female (% age 15 and above)	_____

### **9. Science and technology**

9.1. Number of scientific institutions engaged in desertification-related work (total number)	6 national agencies
---	---------------------

### **10. Please specify the data sources**

Sources of Data: Ministry of Works (Energy Division, Water Works Department, Land Survey and GIS Unit); Ministry of Marine Resources, National Environment Service, Ministry of Agriculture; Ministry of Finance and Economic Development (Aid Management Division, Cook Islands Statistics); Cook Islands Meteorological Service; Office of the Minister for Islands Administrations.

## ANNEX 2. ADDITIONAL INFORMATION ON UNCCD COUNTRY PROFILE

### 1. Focal point institution:

Name of focal point	<b>National Environment Service</b>
Address including e-mail address	Po Box 371, Rarotonga, cook Islands Phone: +682 21 256 Fax#: +682 22 256 <a href="mailto:resources@environment.org.ck">resources@environment.org.ck</a> or <a href="mailto:jpukarea@environment.org.ck">jpukarea@environment.org.ck</a>
Country-specific websites relating to desertification	
National Environment Service	1. <a href="http://www.environment.org.ck">www.environment.org.ck</a>
Ministry of Works	2. <a href="http://www.mow.gov.ck">www.mow.gov.ck</a>
Ministry of Marine Resources	3. none
Ministry of Finance and Economic Management	4. <a href="http://www.mfem.gov.ck">www.mfem.gov.ck</a>
Ministry of Agriculture	5. none
Te Aponga Uira (Electricity Provider)	6. none
Ports Authority	7. <a href="http://www.ports.co.ck">www.ports.co.ck</a>
Airports Authority	8. none
Ministry of Transport	9. none
Cook Island Tourism Corporation	10. <a href="http://www.cook-islands.com">www.cook-islands.com</a>
Cook Islands Investment Corporation	11. none
Ministry of Health	12. <a href="http://www.health.gov.ck">www.health.gov.ck</a>
Ministry of Education	13. <a href="http://www.education.gov.ck">www.education.gov.ck</a>
Ministry of Internal Affairs	14. none
Ministry of Foreign Affairs	15. none
Development Investment Board	16. <a href="http://www.cook-islands-invest.com">www.cook-islands-invest.com</a>
Office of the Prime Minister	18. <a href="http://www.cook-islands.gov.ck">www.cook-islands.gov.ck</a>
Ministry of Justice	19.
Ministry of Cultural Development	20. none
Office of the Minister for Islands Administration (OMIA)	21. none

National Meteorological Service	22. <a href="http://www.cookislands.pacificweather.org">www.cookislands.pacificweather.org</a>
---------------------------------	--

**2. Status of NAP (please provide information relevant to the status in your country only):**

Date of validation - The Cook Islands does not have a NAP	Body/institution/Government level which validated the NAP - The Cook Islands does not have a NAP
NAP review(s) - The Cook Islands does not have a NAP	Date(s) - The Cook Islands does not have a NAP
NAP has been integrated into the poverty reduction strategy (PRSP)	No-The Cook Islands has not completed its NAP.
NAP has been integrated into the national development strategy	No-The Cook Islands has not completed its NAP.
NAP implementation has started with or without the conclusions of partnership agreements	No-The Cook Islands has not completed its NAP
Expected NAP validation	Month/year
Final draft of a NAP exists	No-The Cook Islands has not completed its NAP
Basic guidelines for a NAP have been established	No-The Cook Islands has not completed its NAP
Process has only been initiated	Yes
Formulation of a draft NAP is under way	No
Process has not yet started	No

**3. Member of SRAP/RAP (please provide information where appropriate):**

Name of sub-regional and/or regional cooperation framework	Involvement specifically in topics such as water harvesting techniques, soil erosion etc.
1 Action Plan for the Managing the Environment of the Pacific Islands Region 2005-2009	Involvement in all fields of the environment sector

2	Pacific Plan 2006-2008	Involvement in all fields especially sustainable development
3	South Pacific Biodiversity Conservation Programme	Development of biodiversity conservation programmes
4	Pacific Islands Renewable Energy project (PIREP)	Assessment of renewable energy related needs and barriers
5	Pacific Islands Energy and Strategic Action Plan (PIESAP)	Involvement in development of energy related programmes
6	Pacific Islands Climate Change Assistance Programme (PICCAP)	Development of climate change initiatives and programmes
7	International Waters Programme (IWP)	Involvement in water resources management
8	Integrated Water Resources Management project	Involvement in water resources management
9	Development of Sustainable Agriculture in the Pacific (DSAP)	Involvement in sustainable agricultural practices

4. Composition of the NCB (indicate whether it is a Government or civil society organisation, and provide information on the representatives' gender): Note: Stated gender designation only for Head of Agency but representatives to any meeting could be either senior male or female staff as per Head Of Ministry's discretion.

Name of institution	Government(√)	NGO (√)	Male/female
1 Ministry of Works	(√)		Male
2 National Environment Service	(√)		Male
3 Meteorological Service	(√)		Male
4 Ministry of Agriculture	(√)		Male
5 Ministry of Marine Resources	(√)		Male

6	CIANGO (ISACI)		(√)	Male
7	CIANGO (TIS)		(√)	Female
8	Public Health	(√)		Male
9	Emergency Management Cook Islands	(√)		Male

5. Total number of NGOs accredited to the process: 11 Environmental NGOs participating independently

Has an NGO National Coordinating Committee on desertification been established; if yes, how many NGOs or Civil society organisations participate in it?	No: However, these are the NGOs actively involved in CCD programmes at community, national and international levels.
	TIS-Taporoporoanga Ipukarea Society
	AMMAG-Avana-Muri Marine Management Awareness Group
	REAP-Rarotonga Environment Awareness Programme
	Islands Sustainability Alliance Cook Islands (ISACI)
	Climate Change Action Network (CCAN)
	Red Cross Cook Islands
	WWF Cook Islands
	Takitumu Conservation Area
	Tourism Industry Council Environment Committee
	Mangaia Tangaeo Rangers
	Mitiaro Itiki Rangers

6. Total number of acts and laws passed relating to the UNCCD: \_\_\_9

Name up to five most relevant acts and laws and/or regulations.

	Title of the law	Date of adoption
1.	Environment Act	2003
2.	Marine Resources Act	2005
3.	Public Health Act	2003
4.	Building Control and Standards Act and its Regulations (need review and update)	1991
5.	Land Use Act (need review and update)	1969
6.	Rarotonga Water Ordinance (priority need for update)	1960

7. The consultative process

Number of partnership agreements that have been concluded and/or are being initiated within the framework of the UNCCD (please provide information where appropriate):

	Official title of partnership	Donor(s), international organisation(s), and/or agencies of the UN system involved	Date of (expected) conclusion
1.	NSDP Advisory Committee	FORSEC	On-going
2.	National MDGs programme	UNDP	On-going
3.	Takuvaine Water Catchments Area Management	UNDP/IWP/SPREP	2006
4.	National Waste Management Committee	ADB/NZAID/AusAID	On-going
5.	National Disaster Risk Management Committee	NZAID/AusAID/ADB	On-going
7.	National Climate Change Country Team	UNDP/GEF/CIDA/ADB	2007
8.	National Biodiversity Steering Group Committee	UNDP/GEF	2006
9.	National NCSA Steering	UNDP/GEF	2006

	Committee		
10.	GEF-SGP National Focal Group	UNDP/GEF/NZAID	On-going
11	Marine Resources ISP	NZAID/AusAID	On-going
12	Development of Sustainable Agriculture in the Pacific (DSAP)	EU/SPC	On-going
13	Land Mapping (9 <sup>th</sup> EDF)	EU/SOPAC	On-going

List of consultative meetings on UNCCD implementation (please provide information where appropriate):

Name of consultative meeting	Date/year	Donor countries involved	International organisations or agencies of the UN system involved
1. WSSD Forum	2002	New Zealand	UNDESA, UNDP
2. Tourism Sector Review	2003	New Zealand	
3. National Development Plan Forum	2003	New Zealand,	UNDP, ADB, NZAID, SPREP
4. Health Sector Advance Forum	2004	New Zealand	WHO, UNDP
5. National Environment Forum	2004	New Zealand, Australia	UNDP, SPREP, NZAID, AusAID
6. GEF consultative meeting	2004		GEF, UNDP, SPREP
7. National Good Governance Forum	2004	New Zealand, Australia	Forum Secretariat, NZAID, AusAID
8. National MDGs & NSDP consultation meetings	2004-present	New Zealand, Australia	UNDP
9. Ministry of Agriculture sectoral consultation meetings	2002 -present		FAO

Name of country which has taken over the role of *Chef de file*

(please provide information where appropriate): New Zealand, since harmonization of the AusAID and NZAID programmes in the Cook Islands.

8. Name up to 10 projects currently in progress which are directly or indirectly related to the UNCCD.

Name of project	Project	Project implemented	Time Frame	Partners Involved	Overall
-----------------	---------	---------------------	------------	-------------------	---------

		implemented within the framework of the NAP/SRAP/RAP? (Yes/No)	within the framework of...			Budget
1.	MOW-Water Safety Plan	RAP	WSSD, NESAF, NSDP, MDGs	2006-2007	MOW, SOPAC	
2.	MOW-8 <sup>th</sup> /9 <sup>th</sup> EDF MapServer project SOPAC/EU-Reducing Vulnerability of Pacific ACP States	RAP	WSSD, NESAF, MOW GIS programme		MOW, SOPAC/EU	
3.	NES/GEF - NCSA	RAP	NESAF	2004-2006	NES	\$250,000
4.	NES-Takuvaine Water Intake Management Project	RAP	WSSD, NESAF, IWP, MDGs	2002-2006	NES, Takuvaine Village Community	\$410,000
5.	MOA-DSAP-Development of Sustainable Agriculture in the Pacific Programme (Phase 1&2)	RAP	WSSD, DSAP, MOA strategies,	2004-2007	EU, SPC, MOA, Others	\$200,000
6.	OMIA/NZAID-Community Water Tanks in Northern Group Islands (water security)	National	CI/NZAID/AUS Forward Aid Programme, NSDP	2005-2007	NZAID, AusAID, CIGOV	\$750,000
7.	MOW-Waste Management Project	National	NESAF, NSDP, WSSD, ADB Pacific Environment Strategy	2002-on-going	CIGOV, ADB	\$7,000,000
8.	NES-ADB –Legal and Institutional Strengthening of Environmental Management in the Cook Islands	National	NESAF, WSSD, NSDP	2005-2006	CIGOV, ADB	\$390,000
9.	MFEM-Cyclone Rehabilitation and Reconstruction Programme	National	CI/NZAID/AusAID Forward Aid	2005-on-going	NZAID/AusAID, ADB, CIGOV,	\$3, 450,000



			Programme		FRANZ, SOPAC	
10.	Disaster Mitigation Programme Capacity/Preventive Infrastructure Master Plan-ADB	National	NESAF, NSDP,	2006-2006	ADB, CIGOV	\$600,000

## ANNEX 2. LISTS OF EXPERTS CONSULTED

Name	Designation	Institution
Nga Mataio	Secretary	Ministry of Agriculture
Ngatoko Ngatoko	Chief Agricultural Officer	Ministry of Agriculture
Charlie Numanga	Senior Officer	Cook Island's Red Cross
Metuatini Tangaroa	Director	Emergency Management Cook Islands
Tuaine Teokotai	Senior Inspector	Department of Public Health
Vaitoti Tupa	Director	National Environment Service
Tania Temata	International Adviser	National Environment Service
Elizabeth Munro	Biodiversity (NBSAP) Coordinator	National Environment Service
Joseph Brider	Compliance Officer	National Environment Service
Antoine Nia	Compliance Officer	National Environment Service
Louisa Karika	NCSA Officer	National Environment Service
Pasha Carruthers	Climate change Officer	National Environment Service
Otheniel Tangianau	Chief Executive Officer	Office of the Minister of Islands Administration
Alistair Newbeginning	Senior Officer	Te Aponga Uira (Electricity Authority)
Nandi Glassie	Chief of Staff	Office of the Prime Minister
Trina Pureau	Senior Officer	Tourism Cook Islands
Aukino Tairea	Secretary	Ministry of Transport
Tekao Herrmann	Director	Ministry of Works-Waste Management

		Management
Timote Tangiruaine	Director	Ministry of Works-GIS Centre
Atatoa Herman	Secretary	Ministry of Works
Tangi Tereapii	Senior Advisor	Ministry of Works-Energy Division
Arona Ngari	Director	Metrological Service
Ian Bertram	Secretary	Ministry of Marine Resources
Garth Henderson	Manager	Aid Management Division (MFEM)
Taggy Tangimetua	Chief Statistician	Cook Islands Statistics (MFEM)
Teava Iro	Nono Grower	Titikaveka Growers Association

### ANNEX 3. GLOSSARY

---

ADB	Asian Development Bank
AMMAG	Avana-Muri Marine Management Action Group
AUSAID	Australia Agency for International Development
BPOA	Barbados Programme of Action
CAN	Climate Awareness Network
CBDAMPIC	Capacity-building for Development of Adaptation Measures in Pacific Islands Countries
CBOs	Community-Based Organisations
CEDAW	Convention for the Elimination of Discrimination Against Women
CHARM	Comprehensive Hazards and Risks Management
CIANGO	Cook Islands Association of Non-Government Organisations
CITES	Convention for the International Trade of Endangered Species of Wild Fauna and Flora (animals and plants)
CLIMAP	Climate Change Adaptation Program for the Pacific
CIDA	Canada International Development Assistance
COTs	Crown of Thorns
DSAP	Development of Sustainable Agriculture in the Pacific
DWW	Department of Water Works
EIA	Environmental Impact Assessment
EU	European Union
ENSO	El Nino-Southern Oscillation
FAO	Food and Agricultural Organisation
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
GIS	Geographical Information System
HRD	Human Resources Development
IWP	International Waters Program
INC	Initial National Communication
IPCC	Inter-governmental Panel on Climate Change
MFAI	Ministry of Foreign Affairs and Immigration
MMR	Ministry of Marine Resources
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOW	Ministry of Works
NAP	National Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self Assessment
NCW	National Council of Women
NDMO	National Disaster Management Office
NEMS	National Environment Management Strategy
NES	National Environment Service
NESAF	National Environment Strategic Action Framework
NGOs	Non-Government Organisations
NIWA	National Institute of Water and Atmosphere (NZ)
NSDP	National Sustainable Development Plan
NZAID	New Zealand Agency for International Development
ODS	Ozone Depletion Substance

OMIA	Office of the Minister for Outer Islands Administration
PACER	Pacific Agreement on Closer Economic Relations
PATA	Pacific Area Tourism Association
PERCA	Public Expenditure Review Committee and Audit
PICCAP	Pacific Island Climate Change Assistance Program
PICTA	Pacific Islands Country Trade Agreement
PI-GCOS	Pacific Islands Global Climate Observation Systems
PI-GOOS	Pacific Islands Global Ocean Observation Systems
PIREP	Pacific Island Renewable Energy Project
POPs	Persistent Organic Pollutants
REAP	Rarotonga Environmental Awareness Program
SLM	Sustainable Land Management
SPREP	South Pacific Regional Environment Programme
SOPAC	South Pacific Applied Geoscience Commission
TAU	Te Aponga Uira
TCA	Takitumu Conservation Area
TIS	Taporoporoanga Ipukarea Society
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention for Combating Desertification
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Social and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WSSD	World Summit for Sustainable Development
WWF	World Wide Fund for Nature