

# United Nations Convention to Combat Desertification National Report

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Ministry of Natural Resources and Environment - Tuvalu

United Nations Convention to Combat Desertification (UNCCD)  
NATIONAL REPORT



FIRST NATIONAL REPORT for TUVALU

*Ministry of Natural Resources & Environment*

April 2000

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## Summary

Tuvalu is a small atoll nation, populated by around 11,000 Polynesians, located in the Central Pacific north of Fiji. The country is characterised by high dispersion, with a total of just 26 km<sup>2</sup> of land area distributed among 9 islands over a sea area of 1.3 million km<sup>2</sup>.

Tuvalu's location, small size and remoteness makes it a nation extremely vulnerable to climatic events and human impacts. In recent years, the country has seen the emergence of problems with drought and habitat damage. Although the overall climate is tropical-marine with a mean annual rainfall of 3000 mm at the capital of Funafuti, other islands in the group are experiencing periods of drought, particularly in the north. Problems with drought occur not only because of a lack of rain, but also because of the nature of the coral rubble and sand soils, the complete lack of surface water storage (no rivers, dams or lakes) and the very limited reserves of largely brackish groundwater.

In order to help it address these issues, the Government of Tuvalu signed CCD in 1998. Although to date some reactive measures have been taken (such as acquisition of a desalinator), very little strategic and preemptory action has been taken on issues of habitat degradation or drought, largely due to a lack of expertise and understanding. The country now wishes to begin addressing these problems through the international mechanisms of the CCD.

### 1. Introduction

#### 1.1 *Setting*

The nation of Tuvalu comprises nine atolls and island groups stretching from Nanumea in the north to Niulakita in the south. The islands are located between 5-10° south and 176-179° east over a distance of 680 km, approximately in a NW-SE line. While the total land area is only 26 km<sup>2</sup> this is spread over a large sea area of 1.3 million km<sup>2</sup>. The furthest island, Nanumea is 455 km from the capital, Funafuti.

The islands have only been in their present form for between 2,000 and 4,000 years (Lane, 1993) with most islands having poorly-developed and infertile sandy or gravel coral and foraminifera soils. ). The islands are low in relief, none being more than about 3m above sea level and are subject to cyclones, variable rainfall and tidal inundation. They are also subject to constant erosion and accretion by the sea and new sediment is constantly being produced by reef organisms while some sediments can be lost to the atoll ecosystems into the deeper ocean. Although most changes are gradual, some can occur rapidly and with dramatic results through the action of storms and human activities.

The marine environments of Tuvalu are comprised of six major ecosystem types (oceanic, outer reef, lagoonal backreef, lagoon floor, bommies or patch reefs and natural channels between the ocean and lagoon). These ecosystems produce the sediment required for island building and maintenance and support communities of corals, other invertebrates, algae, plankton, fishes and marine mammals and reptiles. For example,

approximately 30 common species of corals and over 350 species of fishes characterise the marine ecosystems of the country.

On land, indigenous plants are rare because of habitat modifications such as the extensive planting of coconuts and other food plants. There are probably 200 plant species in Tuvalu, 50 of which are possibly indigenous (Lane, 1993) and none of which are endemic. There are probably no indigenous land mammals, though there are indigenous birds (28 species), insects and land crabs.

Tuvalu's climate is tropical-marine being influenced by the south-east Pacific trade wind belt with a wet Westerly and a dry Easterly Season. The wet months are November to April and the drier months from May to October. The mean annual rainfall for Funafuti is 3000mm, but can go as high as 4000mm per annum. Dry periods are more severe in the northern islands of the group, particularly Nanumea, Niutao and Nanumaga, notably in the months August to October. Drier years are associated with a positive SOI (Southern Oscillation Index), with drier than average years occurring in 1950, 1964, 1975, 1976, 1988 and 1999..

The country is also subject to cyclones, with a total of 31 being recorded since 1940 (Lane, 1994). Tuvalu has been experiencing an apparent increase in the frequency of storms since the late 1980's. Much of the increase may be attributed to better record keeping and natural cyclical shifts in weather patterns in the Pacific, though global warming brought on by human activities may be contributing to an intensification of cyclones (Lane, 1994).

The islands of Tuvalu were settled by Polynesians from Tonga and Samoa in the 16<sup>th</sup> Century, and slightly later by Micronesians who invaded Nui from Kiribati to the north. Tuvalu was a British colony for 150 years, during which it was called the Ellice Islands (of the Gilbert and Ellice Islands Colony), becoming independent in 1978. On independence the country adopted a Westminster type of government.

The existing environmental and socio-economic challenges facing the country are limited land for housing and development, shortage of water resources, erosion and problems of solid and liquid wastes. The climate change scenarios predict that by 2050 temperatures in Tuvalu will rise by between 0.5 and 2.2°C. The predictions for rainfall are contradictory, with a decrease of between 0.4% and 46% expected under two scenarios (BMR & UKHI) and an increase of between 1.6% and 18% being predicted by another two models (CSIRO9M2 & HADCM2). These contradictory predictions make an assessment of likely impacts difficult. The expected changes in sea level are those predicted for the globe at between 20 and 40cm by 2050. Over the same time period, it is expected that the human population in Tuvalu will increase from around 11,000 to between 17,800 and 26,200. The present economy based on subsistence, aid and managed trust funds will move towards a cash-based economy through the development of the private sector (GOT, 1999).

By 2050, the expected impacts of climate change and sea level rise, changes in economic base and population increases are likely to include symptoms of habitat degradation and drought.

## **1.2 Tuvalu's position on CCD**

Although desertification is not an issue, Tuvalu Signed the Convention on 14<sup>th</sup> September 1998 because of its concerns regarding degradation of its habitats and current and predicted shortages of water connected with increasing population and the effects of climate change. Although surrounded by a huge area of sea, with some of its atolls located within a high rainfall area, there is an absence of surface freshwater resources (rivers, lakes) and extremely limited groundwater resources. As a result of such limited storage capacity, Tuvalu has low resilience either ecologically or in terms of human welfare to even small deviations in rainfall. This report is Tuvalu's first National Communication on the measures taken in this country for the implementation of the UNCCD. Its purpose is to inform other parties to the Convention on the situation in Tuvalu with regard to priorities within the CCD and measures being taken for implementation. Tuvalu supports the efforts of all countries for whom the threat of desertification is a top priority.

## **2. Strategies and priorities within the framework of sustainable development**

### **2.1 Policies**

The Government of Tuvalu has produced several a National Development Plans, the most recent of which is "*te Kaaakega*" (GOT 1995) which is supplemented by yearly updates (e.g. GOT 1997, 1998). These document does not specifically point to plans for combating desertification, habitat degradation or drought. It is, however, generally concerned with sustainable approaches to development.

The primary agencies for promoting sustainable development at the scale of the whole country are the Ministry of Natural Resources & Environment, Office of the Prime Minister (Policy and International Conventions), the Attorney General's Office (International Conventions and Legislation) and the Environment Unit (Specific Programmes). The mission and goals for the Environment Unit are: "*To implement environmentally sustainable development principles, procedures and standards which encourage appropriate development projects and put in place relevant protective measures against adverse conditions in order to encourage human well-being, environmental quality and resources for future generations.*" This mission is carried out in all sectors using the following approaches:

1. Reform and support of the existing environmental institutions and particular, developing the Environment Unit into a strong, well-coordinated and functional body;
2. Passing into law the environmental legislative framework;

3. Integrating environmental considerations into economic development;
4. Improving environmental awareness and education;
5. Addressing issues and taking precautionary steps relating to climate change and sea level rise;
6. Developing population policy, balanced development and planned urbanisation;
7. Improving waste management and pollution control;
8. Development and protection of natural resources;
9. Environmental monitoring and reporting;
10. Ratification of international agreements; and
11. Being at the forefront of regional and international fora involving the environment.

## **2.2 Implementation**

Tuvalu Environment Unit is presently staffed by two officers, the Environment Officer, funded by GOT and the Climate Change Coordinator (PICCAP), funded by SPREP. These two officers are charged, in association with the PICCAP Country Team, with the environmental management of the entire country, an area of almost one million square kilometres, including the EEZ. The PICCAP Climate Change Coordinator organises activities relating to climate change, vulnerability adaptation and some aspects of disaster management through a team drawn from Ministry of Natural Resources and Environment, Meteorology, Fisheries, Rural Development, Public Works Department, Tuvalu National Women's Council, EU, Energy, Agriculture and Funafuti Town Council. A separate Disaster Management Unit is located in the Office of the Prime Minister.

Although formal environmental legislation has been drafted for the country, this has not yet been passed. Most environmentally-related policies currently in existence in the country are in the form of approximately 20 Acts (listed in SPREP, 1997, page 80) and additional bylaws associated with the local government on each island.

Some additional support for the EU comes from the Funafuti Town Council and the Princess Margaret Hospital. The Funafuti Town Council at present administers the Funafuti Conservation Area, a marine and terrestrial reserve of 36km<sup>2</sup> located on the western side of Funafuti Atoll. A small team, headed by the Project Manager, and two SPREP-funded positions: the Conservation Area Support Officer (CASO) and the Biodiversity Officer, with the assistance of two council-funded Conservation Officers, undertakes management, monitoring and surveillance of the park. This project is funded until the end of the year 2001.

The Princess Margaret Hospital has a small Environmental Health Section, staffed by one officer who has been charged with the monitoring of environmental conditions as they pertain to human health. Unfortunately, the officer is unable at present to carry out comprehensive monitoring due to a lack of facilities and training.

The Agriculture Division provides some environmental services by way of quarantine to minimise the introduction of pests and plant and animal diseases into the country and by

providing seedlings for foreshore restoration. NGOs and schools are involved with cleanup campaigns, particularly of islets in the Funafuti Conservation Area. The Fisheries Division in Tuvalu has a small Research Section, but most projects are concerned with identifying and developing new fisheries stocks. The Research Section is under-equipped (expertise and infrastructure) to undertake any research or implement effective strategies for longterm management of fish stocks.

In recent years, the government has required a four stage process for the submission of development plans (SPREP, 1997). These are:

1. Proposals are prepared by ministries who must report on the likely environmental implications of their plans;
2. Planning staff in the Economic Planning Department assess proposals to identify any with potential impact on the environment which must then be referred to the Environment Officer;
3. The DCC reviews proposals before they are considered by cabinet; and
4. They are then incorporated into the budget process or are taken to donors for funding.

There are at least two steps in this process which take environmental considerations into account at the planning stage, providing a good platform for some of the environmental management against habitat degradation and drought required in the country.

Unfortunately, the expertise to detect and mitigate potential damage to the environment is generally low. The fact that these steps are in place, however, indicates a political will and interest in dealing with environmental issues at the planning level once the capacity to do so is improved.

### **3. Institutional measures, participatory / consultative processes and the National Action Plan on CCD**

There have not yet been any institutional measures taken in Tuvalu specifically to implement CCD. This has largely been because of a lack of understanding and access to information on the issues. As a result of this, Tuvalu has not, to date, participated in any of the meetings and processes operating within this convention and has not developed a NAP. It is intended that Tuvalu will undertake these actions and measures under guidance and support from the CCD.

### **4. Financial allocations**

#### **4.1 Allocation from the national budget**

No money has been allocated for the CCD from the national budget because the issues are not well understood.



## **4.2 Financial assistance**

Financial assistance is being sought to assess the country's risks in term of habitat degradation and drought, particularly for those atolls in lower rainfall areas. At present, Tuvalu is having on-going problems with drought on Nanumaga, one of its northern islands.

## **4.3 Technical and other requirements**

Tuvalu currently has no expertise in the area of assessing the risks of habitat degradation, drought or desertification. It will be necessary to obtain technical assistance in these areas.

## **5. Conclusions**

Tuvalu's location, small size and remoteness makes it a nation extremely vulnerable to climatic events and human impacts. In recent years, the country has seen the emergence of problems with drought and habitat damage. In order to help it address these issues, the Government of Tuvalu signed CCD in 1998. To date, however, very little action has been taken on these issues, largely due to a lack of expertise and understanding. The country now wishes to begin addressing these problems through the international mechanisms of the CCD.

## **6. Literature**

- GOT (Government of Tuvalu). 1999. Tuvalu initial national communication under the United Nations Framework Convention on Climate Change. Report to UNFCCC, Oct 99, 25pp.
- GOT (Government of Tuvalu), 1995. Kakeega o Tuvalu: National Development Strategy 1995-1998. Government of Tuvalu, August 1995, 86pp.
- GOT (Government of Tuvalu), 1997. The Amatuku Accord: Visioning for our future. Public Sector Reform Consultation 12-14 August 1997. 192pp.
- GOT (Government of Tuvalu), 1998. Strategic Planning Statements: Visioning for our future. Public Sector Reform Consultation (preliminary report), March 1998, 107pp.
- Lane, J. 1994. Tuvalu State of the Environment Report (SOE). Report for SPREP, 64pp.
- SPREP, 1997. Tuvalu National Environmental Management Strategy (NEMS). Grano, S, Sharp, R, and Henson, B (eds), SPREP Report, 80pp.

## 10. Annexes

### **Annexe 1: National profile database**

Tuvalu has had an Environmental Vulnerability Index Database developed for it by SOPAC, Fiji. A summary of the information in this database is presented here.

| Indicator | Indicator text  | Data<br>(ND=No data) |
|-----------|---|----------------------|
| 1         | Greatest average annual deviation in Surface Sea Temperature in last 5 years from long term mean (30 years) (Centralised database)  | ND                   |
| 2         | Number of days over the last 5 years during which the max recorded wind speed (3 second gusts) >20% higher than the average maximum for that month (use 30yr average for each month as reference) (Data accumulated over all reference climate stations / # stations) | ND                   |
| 3         | Number of months over the last 5 years during which rainfall >20% lower than the 30yr average for that month. (Data accumulated over all reference climate stations / # stations)   | 21                   |
| 4         | Number of months over the last 5 years during which rainfall >20% higher than the 30yr average for that month (Data accumulated over all reference climate stations / # stations)   | 22                   |
| 5         | Number of days over the last 5 years during which the max temperature >5 C higher than the mean monthly maximum for that month (use 30yr average for each month as reference) (Data accumulated over all reference climate stations / # stations)                     | 0                    |
| 6         | Number of days over the last 5 years during which the max temperature >5 C lower than the mean monthly minimum for that month (use 30yr average for each month as reference) (Data accumulated over all reference climate stations / # stations)                      | 0                    |
| 7         | Number of volcanos with potential for eruption $\geq$ VEI 4 (Volcano explosivity Index) within 100km of country land boundary / area of land  | 0                    |
| 8         | Earthquakes within 100km of country land boundaries / land area with ML $\geq$ 6.0 and $\leq$ 15km depth over last 5 years  | ND                   |
| 9         | Number of tsunamis or storm surges with run-up >2m above MHWS / 100km coastline since 1900  | 9                    |
| 10        | Total land area (sq km)   | 25.9                 |
| 11        | Length of ocean shoreline or land border divided by total land area   | 3.142                |
| 12        | Distance to nearest continent within 10 degrees latitude (km) (Australia is smallest continent)   | 3300                 |
| 13        | Altitude range (Highest point - lowest point in country)  | 4.58                 |
| 14        | Percent of land area <10m above sealevel  | 100                  |
| 15        | Percentage of land area <10m elevation within 2km of coast composed of unconsolidated sediments (excluding coral reefs and ice)   | 100                  |
| 16        | Number of known endemic species / sq km land area (multiply result by 1,000)  | 38.6                 |
| 17        | Number of reported (and verified) organism outbreaks over the last 5 years / land area (competitors, pathogens, blooms, plagues etc) (multiply result by 1,000)   | 38.6                 |
| 18        | Total tonnage of freight imported / year / sq km land area  | 521.24               |
| 19        | Number of all introduced species / sq km land area since 1900 (multiply result by 1,000)  | 10039                |
| 20        | Number of endangered and threatened species / sq km of land area (IUCN definitions) (multiply result by 1,000)  | 309                  |
| 21        | Number species which have become extinct since 1900 / 10,000 sq km land area (IUCN definitions) (multiply result by 1,000)  | ND                   |
| 22        | Percentage of natural and regrowth vegetation remaining (e.g. forests, mangroves, saltmarshes, prairies, savannah, desert, tundra)  | 29                   |
| 23        | Tonnage of intensively-farmed animal products / yr / sq km land area (includes aquaculture, pigs, chickens, etc)  | 51.27413             |
| 24        | Percent of fisheries stocks overfished (FAO)  | 50-60                |
| 25        | Density of people living in coastal settlements with city centre within 20km of coast (people per sq km land area)  | 438.2                |
| 26        | Total human population density (per sq km land area)  | 438.2                |
| 27        | Annual human population growth rate (percent) (average over last 5 years)   | 1.66                 |
| 28        | Net percentage of land area changed by the removal of natural vegetation over last 5 years  | 1                    |
| 29        | Annual number of international tourists * average days stay / 365 / sq km (last 5 years)  | 1.743                |
| 30        | Litres / sq km / day of untreated industrial and domestic wastewater discharged   | 13146.72             |
| 31        | Total tonnage of generated and net imported toxic, hazardous and municipal wastes / sq km land area / year (average last 5 years)   | 65.946               |

|    |   |            |
|----|---|------------|
| 32 | Mean percent of hazardous, toxic and municipal waste effectively managed or treated / year  | 0          |
| 33 | Number spills of oil and hazardous substances >1,000 litres during last 5 years on land, in rivers or within territorial waters / land area (multiply results by 1,000) | 0          |
| 34 | Number of nuclear, chemical and other major industrial facilities that could cause significant damage / 10,000 sq km land area  | 0          |
| 35 | Number of vehicles (World Bank definition) / land area  | 12.9       |
| 36 | Max 24 hour SO <sub>2</sub> concentration (micro g /cubic m) (average over last 5 years)  | ND         |
| 37 | Tonnes of N,P,K fertilisers used / sq km agricultural land area / year (average last 5 yrs) (multiply result by 1,000)  | ND         |
| 38 | Tonnes of pesticides used / sq km of agricultural land / year (average last 5 years) (multiply result by 1,000)   | negligible |
| 39 | Number of new fisheries stocks or expanded fisheries efforts (>20% increase in catches) added to country over last 5 years (within territory)                           | ND         |
| 40 | % Land area degraded since 1950 (includes salinisation, desertification etc.)   | 1-2        |
| 41 | Mean rate of water usage per capita per day   | 30         |
| 42 | Tonnes of mining material (ore + tailings) extracted / sq km land area / year (average last 5 years)  | 0          |
| 43 | % Land, rivers and coastal zone affected by mining and quarrying  | 0.0097     |
| 44 | Percent of terrestrial zone set aside as reserves   | 0.24       |
| 45 | Percent of marine zone set aside as reserves (mean high tide to continental shelf)  | 0.0037     |
| 46 | Number of war or civil strife years over the last 50 years within the territory   | 0          |
| 47 | Environmental legislation with regulations  | Draft      |