

Tonga National Report of the United Nations Convention to Combat Desertification

Executive Summary

The Kingdom of Tonga is a nation of 171 islands located in the South Pacific. It has a relatively stable population of 101,000 distributed in three island groups, but most are principally located in and around the capital city of Nuku'alofa on the main island of Tongatapu. As Tonga is the last Kingdom in the South Pacific, land tenure regulation is principally owned by the King and his Nobles. According to law, the Lands Act designates every Tongan male upon the age of 16 to be given town and agricultural allotments in their village. However, Tonga has not had sufficient land to keep pace with the nuances of its modern dilemmas including heavy domestic migration to urban areas, unsound agricultural methods, and unsustainable development with no impact assessment. Mangrove forests have been severely depleted disturbing precious biodiversity and removing barrier effects of sea level rise and flooding. Tonga is also an agricultural nation. Its flat, rich soil is host to many fruits and vegetables not found in other South Pacific countries. Heavy fertilizer and pesticide use coupled with excessive clearance of wind-sheltering trees has significantly affected the country's natural resources. Although the government has been active creating policy and recommendations for various agricultural and land use issues, there is no enforcement to maintain safety standards.

Tonga will be conducting 6 international donor-funded projects in 2003 with a central aim to build capacity and compliment mechanisms for proper environmental management. National efforts to improve land use include town planning, forestry replanting and the development of the Environmental Management Plan (EMP) developed to manage the single most important resource to the majority of Tongan citizens, the Fanga'uta Lagoon. Biological control of agricultural pests and the improvement of genetic planting material to reduce disease and infection are measures that may reduce the strain on land use. Environmental Impact Assessment (EIA) legislation is currently being reviewed and various educational and awareness activities are run by government agencies such as the Ministry of Lands, Surveys and Natural Resources (MLSNR), Ministry of Agriculture and Forestry (MAF) and Department of Environment (DoE). However, there is no plan or policy specifically in place to identify, analyze or evaluate desertification in Tonga.

I. Status of Land Use

Tonga is a small island nation with a land area of about 750 km² spread over 347,282 km² of sea. The population of 101,000 is dispersed over 36 islands while the other islands remain uninhabited. There are 17 main islands forming three major groups namely the Vava'u group to the north, the central Ha'apai group and the southerly Tongatapu group. The capital city, Nuku'alofa, resides on the main island of Tongatapu, also the largest of island in the Kingdom. Most islands are flat, elevated coral reefs with the exception of a few uninhabited volcanic islands.

All land in the Kingdom of Tonga belongs to the Crown. It is divided between the estates held by the King, the Royal Family and Nobles. There are two estates subdivided into allotments for civilians. The driving forces that impact or change land resources are population density, land settlements, and the various forms of land use.

Land tenure regulation is unique in Tonga. According to the Lands Act, it designates that every Tongan male over the age of 16 is entitled to a tax allotment of 3.3 hectares for farming and a town allotment of 1,618 square meters for residential purposes, all of which is hereditary through the eldest male. Women can only lease land or hold land in trust for their male heirs or husbands. Sale of land is prohibited, however allotments have been used as mortgage for bank lands. The most recently available data on land holdings indicate that only 35% of the 1996 male population could have been accommodated if they had chosen to exercise their rights to a full grant of heritable land as provided by law.

Population growth is increasingly affecting the demand for land. Regulatory entitlements can no longer be fulfilled pushing families to put pressure on land resources such as coastal buffer zones diminishing natural island protection by excess mangrove harvesting. In 1994, total tax allotments reached 15,485, town allotments were 13,609 and there were 3,736 leaseholds. In 2000, registered tax allotments increased to 16,021 (3.5%), town allotments increased to 15,406 (13.2%) and leaseholds increased to 4,818 (29%). Land registration was recorded at its highest in Tongatapu accounting for 53% of tax allotments, 32% of town allotments and 78% of leaseholds for the year 1994. During the five year period, a 10% decline of town allotment registration for Tongatapu suggested that pressure for space at Tonga's main commercial center has compounded limited available land.

Population density has put tremendous pressure on Tongatapu where it has increased from 244.9 people per sq. km in 1986 to 259.1 people per sq. km in 1996. An even higher figure is speculated to exist now. There is a high migration rate from the outer islands to the Tongatapu, specifically to the capital creating unplanned sprawl and resource depletion. The greater Nuku'alofa area has incurred a migration rate of 37.3% indicated in a 1999 survey.

Land on the main island has become sparse. Mangrove swamps have been converted into subdivisions further depleting indigenous tree species and eroding natural buffering systems. Sanitation in these areas has also become a big concern with human and industrial waste infiltrating the areas. Free-ranging domestic animals, specifically pigs and goats, have been identified as a land degrading hazard by various environmental organizations.

Agriculture in Tonga has taken a dramatic shift in recent years with the advent of cash cropping originating at the turn of the century. At that time traditional subsistence agriculture was replaced by large-scale coconut planting that has nearly eliminated all areas of indigenous forest in the 20th century. Cash cropping for most highly sought exports (squash, watermelon, vanilla, kava) has strained traditional bush plot limits requiring further land clearance along with heavy fertilizer and pesticide use. Compelled with high rates of migration to both urban areas and destinations abroad bush plots turn into agricultural leasehold arrangements whereby cash cropping

replaces originally intended subsistence agriculture. There are no management schemes to regulate or monitor these new agriculture practices.

Indigenous forests have been nearly eliminated on the main island while limited exotic species of timber still exist on the government plantations in 'Eua. The coastal forest strip, which serves the essential function of preventing shoreline erosion and protecting inland agricultural and inhabited areas, has been dramatically reduced (Wiser et al., 1999). Traditional forestry practices including tracking (for firewood) and bark stripping (medicinal purposes and tapa cloth dyes) is a significant depleting activity.

Climate change issues and its mitigative efforts remain a primary environmental issue in the Kingdom. Sea level rise and other global warming effects such as increased frequency and intensity of cyclones and its associated storm surges and prolonged droughts or floods are predicted to significantly affect small island developing states within the next 50 years. Locally, direct inundation will be a significant problem on the main island of Tongatapu where most of the country's population resides. Low lying areas in Ha'pai and to a lesser extent Vava'u will also be affected. The capital is particularly vulnerable as it lies on the northern edge of the island that happens to also be the lowest point on the island. It is surrounded by the lagoon to its east/south and by low lying swamp to the west making it highly susceptible to local flooding and inundation.

Tongatapu's vulnerability to sea level rise was assessed, using the predicted IPCC (Intergovernmental Panel of Climate Change) sea level rise scenarios of a 0.3 m sea level rise by 2100. Areas up to 5 m above the sea level will be affected. Between 37.0% to 46.6% of the total population and 10.6% to 14.1% of the total land area of Tongatapu will be inundated (Hori, Mimura and Prescott, 1992). As many coralline islands do, Tongatapu and its other large islands obtain its water supply from a fresh water lens residing just below its limestone. With the forecasted inundation, it is likely that the freshwater lens will be pushed up and the results will be contaminated well and drinking water. Coral reefs that serve as a primary food and tourism resource as well as a barrier to open ocean swells and storm surge will not respond well to global warming events. Secondary effects on agriculture and usable land area will hamper the country's ability to achieve sustainable development.

Biodiversity is already under intense pressure as commercial and agricultural development continue to push into the country's last frontiers. The 'Eua and Mount Talau National Parks created in the 1990's are positive steps towards protecting precious biodiversity although there is no legal enforcement of these areas. Of the 12 endemic plant species in Tonga, only 3% account for the total flora in the Kingdom. Four of these are found on the uninhabited volcanic islands of Kao and Tofua. Old growth forests in these regions ('Eua, Vava'u, Tofua and Kao) are most threatened by anthropomorphic activity (Wiser et al., 1999).

II. Policy Measures for Promoting Sustainable Land Use and Combating Land Degradation

The Ministry of Lands, Surveys and Natural Resources (MLSNR) is responsible for all land use activities. Land allocation, registration and leases are maintained by this

agency. The Ministry of Agriculture and Forestry (MAF) under the Forestry Act of 1961 maintains control over all forest and agriculture resources. The newly formed Department of Environment (DoE), once a section within the Ministry of Lands, Surveys and Natural Resources, has yet to establish any legal authorization in any environmental planning activities. Interdepartmental coordination in land resource management is handled in a makeshift fashion.

Government concern for land use has become a top priority. Although there are over 20 acts or other legislations currently in place, implementation and enforcement are separate issues. Tight budgets and limited capacity keep land use issues at a planning level while at the community level, very little supervision or sustainable practice knowledge exists. For example, the Forestry Act of 1961 states that a required portion of forest be reserved in each village. There is no such protected area in Tonga. Moreover, Section 22 of the Land Act prohibits the cutting of trees within 50 feet of the high water mark yet new migrants and other civilians continue to use these trees for medicines, dyes and firewood. Other unenforced acts include the Public Health Act prohibiting littering in public places and the Bounds and Animals Act limiting the roaming area of animals. A recent report indicated that most current legislation for environmental protection or conservation is outdated, not enforced and/or no longer appropriate or applicable (Prescott, 2000). Lack of agency coordination continues to hamper implementation and enforcement. However, amendments to the Land Act and other legislative efforts are currently being undertaken.

III. Field Projects and Activities

1. Coastal Area Management Planning (DoE)

The Environmental Management Plan (EMP) has been developed by the Department of Environment (DoE) in collaboration with ten other government agencies, three NGOs and communities focusing on the Fanga'uta Lagoon, an estuarine encompassing nearly a quarter of the total size of the main island used both as a fishing resource and a sink for waste dispersal and agricultural runoff.

2. Forestry Nursery (MAF)

The Forestry Division branches in Tongatapu, 'Eua, Ha'apai and Vava'u nurseries have raised native trees and exotic species, which are then sold to the public at economical prices.

3. Guidelines for town planning

Cabinet approved in 1994 a set of policy guidelines for town planning purposes as a response to rapid growth of land development in commercial areas but there are currently no enforcement measures in place.

4. Improved Awareness Programme

Attempts have been made to translate instructions of agrochemicals materials into the Tongan language, as well as to develop farmers training. Government-assisted committees such as the District agricultural committees serve as important forums for the discussion of agricultural development at the district level or for the preparation for the Royal Agricultural Show.

5. Hawaii & Pagopago Estate Project

The objectives of the investment project were to improve Tonga's marketing strategy, provide an opportunity for Tongan farmers to extend their agricultural boundaries, and to ease pressure for agricultural lands in Tonga. The Tongan government supported the project investment by providing an allocation of more than \$3 million TOP during 1998-2000.

6. Institutional strengthening (MAF)

The Asian Development Bank (ADB) loan scheme for outer islands agricultural development was developed for Niua & 'Eua with aims to develop the skills and abilities to respond to technical and marketing queries by commercial private sector farmers and merchants, as well as informing growers and exporters of new marketing opportunities and production.

7. Women in Forestry Development Program

Women's development groups participate in Agroforestry development promoting tree planting, purchasing seedlings, distributing and planting ornamentals, fruits and cultural species. Women's community groups are supported by the MAF and DoE through project development, technical advice and training.

IV. Collaborations with donor funded countries and agencies

1. National Biodiversity Strategic Action Plan (UNDP)

Comprehensive analysis and review of legislation, identification and inventory, database creation, and strategies to instill conservation for biodiversity will occur in this two year project commencing December 2002.

2. National Biosafety Framework (UNEP)

Development of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements beginning in December 2002.

3. National Implementation Plan for Persistent Organic Pollutants (UNEP)

Preliminary inventories on POPs, POPs contaminated sites and POPs containing equipment will be taken in an effort to strengthen POPs management infrastructure in particular the legal bases to ratify and implement the Stockholm Convention starting in December 2002.

4. Enabling Activity to Prepare its First National Communications in Response to Commitments to the UNFCCC (UNDP)

The components of the project consist of an inventory of greenhouse gases, an assessment of potential impacts of climate change in Tonga, an analysis of potential measures to abate the increase in greenhouse gas emissions in Tonga, and the preparation of a national action plan to address climate change and its adverse impacts (2001-2003).

5. International Waters Project (UNDP)

Development of improved local community capacity and processes for the design and implementation of sustainable resource management and conservation programmes specifically focusing on fresh water quality and community-based waste management in Tonga (2002-2005).

6. National Compliance Action Plan for the Phasing Out of Ozone Depleting Substances (UNEP)

Development of legislation to eliminate completely the use and importation of Ozone Depleting Substances (ODS) starting in January 2003.

7. Inventory of the Coconut Palm Resources (NZODA)

The project was funded by New Zealand Overseas Development Assistance (NZODA) researching coconut palm resources and applications at the MAF.

8. Economic Assessment of 'Eua Forest Farm (NZODA)

A study determined the commercial viability of the 'Eua Forest Plantation.

9. Coastal Forest Protection and Rehabilitation (SPREP)

The South Pacific Regional Environment Programme (SPREP) provided funds to the MAF to establish a pilot project with an aim to rehabilitate and protect coastal forests from 1993-1995. The project site was the area including and between Houma to Ha'akame villages on Tongatapu. This coastal strip consisted of a 1.5 km by 5-30 m plot that was cleared and replanted with 200,000 seedlings of different species.

V. Scientific and technical activities

1. Biological control (MAF)

Several programs are under way to use biological controls to reduce the need for pesticides. This includes biological control of the banana weevil borer, parasites for leaf mites and nematodes to kill the kava beetle and sweet potato pests, as well as viral disease for rhinoceros beetles. Tests are being made at the Vaini experimental farm on intercropping techniques to reduce plant diseases and pests.

2. Improved genetic planting material (MAF)

Disease resistant planting materials are raised in the MAF Research and Trials before releasing to farmers

VI. NGO & Civil Society Involvement

Non-governmental organizations (NGOs) are highly involved with national and grassroot projects in Tonga. The Tonga Association of Non-Governmental Organizations (TANGO) has worked with international donor-funded projects and Government activities for over a decade. Organizations such as Tonga Trust with its Village Women's Development Programme (VWD) and two very prominent women's organizations, Langafonua 'a e Fefine Tonga (the National NGO umbrella for all women's organizations in Tonga) and 'Aloua Ma'a Tonga (the Tonga branch of the Pan-Pacific Southeast Asia Women's Association (PPSEAWA) lead the NGO involvement. TANGO has been involved with reestablishing medicinal and culturally important plants and also carrying out small scale tree planting programs. The women's groups along with the MAF, DoE and Tonga Visitors Bureau (TVB) have encouraged tree planting through village competitions and inspections.

These NGOs in collaboration with Government and the private sector have raised awareness in the communities on the issues of land degradation through the following activities:

- Consultation with women on replacing and replanting trees that have been damaged by cyclone or sea sprays
- Social/Community Forestry Programme that promotes the replanting of valuable trees on available community, domestic and agricultural land. Species to protect include those in handicrafts, traditional medicines, food/fruits, ornaments and other cultural activities.
- Work with local landholders to preserve fragments of native forest
- Acquisition and documentation of information of native species, uses, etc.
- Promotion of the use and value of non-timber forest products (NTFP)
- Oversight in the planting of pandanus and mulberry trees to ensure sustainable resource management for traditional crafts
- Promotion of the collection and establishment of seed banks as part of the Pesticide and Sustainable Agriculture Project (PSAP)
- Pesticide Awareness Project that provides training on appropriate use of pesticides, labeling and interpretation, disposal, etc.

VII. Suggested Future Activities

In its Strategic Development Plan 2001-2004, the Central Planning Department highlights the need for sustainable natural resources and a clean, healthy environment. In parallel with economic development, the Plan states that, "in view of the fragile nature of Tonga's eco-systems, its limited land, fresh water, natural resources, and vulnerability to natural disasters, future development must be consistent with the conservation of the environment and sustainable utilisation of natural resources through educational awareness and legislative means where appropriate."

Government has already made strides towards promoting this vision. The newly formed Department of Environment that opened in October 2001 is the coordinating agency for all international and regional projects dealing with the environment. Legislation such as the Environment Impact Assessment (EIA) Act currently under review by Cabinet is one example of measures Government is taking to limit desertification and promote sustainable development. Collaborative efforts among Ministries and agencies have yielded good results as evidenced by the recent Environmental Management Plan (EMP) created in 2001.

The Kingdom of Tonga will host 6 international donor funded projects under the United Nations umbrella in 2003. Plans to build capacity and obtain synergies among projects is a primary objective. Although all projects involve land use, conservation of natural resources and improved management capacity, there is no planned project specifically focused on desertification. As Tonga looks forward, economic development including sustainable use of its land must be planned and achieved.