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Tuvalu Climate Change response Office

NATIONAL REPORT TO THE UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

TUVALU

The Island Country, Tuvalu.

Tuvalu, a linear chain of nine coralline Islands and composting of five atolls[1], three table reef[2] Islands and an only composite[3] Island. The chain is aligned as a Northeast Southwest orientation between 5^0 S to 10^0S and between 176^0 to 179^0E. The country is located to the North of Fiji, to the East of the Solomon Islands, to the South of Kiribati and to the West of Tokelau. Tuvlau has a land area of approximately 26 km^2 and an Exclusive Economic Zone of 1.3 km^2. Its location, smallness in size and remoteness makes it a country vulnerable to Natural and Human impacts.

The Islands developed as a result Ocean Tectonic Activities. As the Pacific plate moves atop a stationary hotspot, massive successive eruptions thereafter from the hotspot results in the formation of a linear chain of nine Islands called Tuvalu- 'meaning eight standing together'. The Ocean basaltic mountain foundations (OBMF) enhanced the attachment and upward growth of coral polyps to the sea level surface. However, as the hot OBMF cools, the foundation contracts and the mountain height decreases as a result. The Islands of Tuvalu are coralline with Ocean Basaltic Foundations.

The coral platform attached on top of the OBMF emerged above sea level approximately in the past 3,000 years, thus exposing it to erosion and degradation by natural forces. The erosion and the degradation of the coral platform resulted in the accumulation unconsolidated sand on the reef-top. Soil development commenced after the arrival and by the activities of Pioneer plants species, where, litters from these plants increases the humus content and richness of the soil, thus supports growth of higher plant and finally, the arrival of Humans. The sandy soils of Tuvalu are poorly developed, generally coarse textured and non-structured, composing mainly of coral and foraminifera.

The islands are of low relief, mostly less than 3m above mean sea level (msl) and generally flat. There are no surface freshwater rivers or lakes. Tuvalu has a tropical maritime climate and is located just to the North of the tropical cyclone belt. However, it is frequently affected by tropical cyclones recently. The average temperature is 28^0C with a mostly hot and humid surface air.

Rainfall is high to the Southern Islands and decreasing Northwards. Potable freshwater for consumption are commonly stored in limited storage cistern or tanks, however, the groundwater resources has been enormously contaminated to the point that, it's not fit for Human Consumption. Tuvalu has a low resilience to freshwater shortage as seen during the recent 1998 El Niño.

Natural environmental phenomenon such as the 1998 El Niño and the resulting drought, severely affected the entire nation. This has resulted in the importation of Desalination

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[1] Atoll Islands in Tuvalu are Nanumea, Nui, Nukufetau, Funafuti and Nukulaelae – all have central Lagoons interconnected to the ocean by deep passages.

[2] Table reef Islands in Tuvalu are Nanumaga and Niutao – they do not have central Laggons connected to the ocean and are commonly circular in shape.

[3] The composite Island of Vaitupu, the largest Island in Tuvalu, have a central lagoon that is connected to the ocean by a shallow passage, and is circular or elliptical in shape. It is called a composite Island, because it contains both features of Island types above.

plants from Japan, although, it relieved the burden of public and household water needs, , it does not control mini-bush fires, mostly on the outer Islands. Several Islands reported controllable bush fires on a number of occasions.
Bush fires will expose an area to degradation, devastation of the natural ecosystem and vegetation loss. Even though they are miniature in size, if compared to the total land area of Tuvalu, a significant area of land is exposed to degradation.
Land degradation is a problem in Tuvalu, amplified by rapid population growth and development. The high population growth rate of 2.53 is enhanced by the reduced age of marriage and the low death rate in children. High population density increases stress on terrestrial and the already vulnerable marine resources. When the land and marine resources are well managed the impacts are minimised. Therefore, sustainable development, land-use planning and integrated conservation of land and marine living and non living resources are crucial for future generations of Tuvalu.

Tuvalu's Position on Combating Desertification.
Tuvalu signed the UNCCD on 14th September 1998. In the past, desertification is not regarded as an issue, however, perception of an issue changes when there is an increase in environmental problems related to the issue, and as more understanding and findings on the issue is gained. Most of the daily activities of Tuvaluans, enhances desertification such as bush clearing, burning of vegetation and uprooting soil cover grasses just to name a few. Similarly, the advance of Global Warming and Rising Sea Level, degrades coastal areas and regions, thus exposing roots of coastal vegetation. The IPCC predicted a changing climate, and in combination to the daily activities of Tuvaluans, desertification processes are enhanced, therefore becomes an issue.
Desertification is an irreversible process, therefore to successfully alleviate and combat desertification is to develop strategies for sustainable development. The lack of such strategies supports the progress of desertification processes. To develop these strategies, we need a national coordination point, training and knowledge on desertification.
This report is Tuvalu's Second National Communication (Draft) on measures undertaken nationally with regard to the implementation of the United Nations Convention to Combating Desertification (UNCCD).

1. The strategies and priorities established within the Framework of Sustainable Development Plans and /or Policies.

SEA LEVEL RISE and DROUGHT
Sea Level Rise and Drought are the most important climatic induced threats of concern to Tuvalu in the long-term. The aftermath drought of the 1998 El Niño caused damages to water supply, food security systems and degradation of terrestrial ecosystems in Tuvalu. Although, Tuvalu has an average annual rainfall of 3500mm, irregular short periods of drought persist. Increasing storage capacity for water is a priority in Tuvalu in order to alleviate water shortage in future El Niño and Drought event.
Drought not only damages crops such as Pulaka[4], it also enhances bush fires and indiscriminate burning. Terrestrial undergrowth and shrub clearing is a common practice in Tuvalu. During a drought, waste from undergrowth and shrub clearing becomes dry

[4] Pulaka – (*Cyrtosperma chamissonis) a gigantic taro-like tuber plant.*

and prone to fire overtime, therefore, in an event of burning these wastes, the burning usually spread over a wider area of land than expected, thus, damaging terrestrial ecosystems and exposing land to degradation. However, traditional taboos of banning landowners from lighting fires in the bush during a drought controls damages to terrestrial ecosystems and soil fertility.

Pulaka (*Cyrtosperma chamissonis*) is a traditionally and socially important crop in Tuvalu. They are usually grown close to the water-table in pits. The 1998 El Niño modified pulaka-pit conditions unsuitable for Pulaka growth. The need for more salt resistant species is preferred, rather than introducing new crop species that will effect in land conversion.

In addition, to the Drought induced threat, Sea Level Rise is the other. Tuvalu is vulnerable to the global projected sea level rise of 20 to 40cm by 2050. Recently, inundation and saltwater intrusion is a common occurrence locally and coincides with Spring tides. The rate of desertification would increase due to the increase in soil salinisation and erosion, reduction in soil fertility and fire; all are present in Tuvalu. Soil salinisation due to salt-water intrusion and in addition to vegetation and bush burning due to human activities; justifies that Tuvalu is prone to desertification. The economic and human costs of desertification in Tuvalu would be tremendous in the long-term.

Sea level rise degrades coastal areas including nearby vegetation, however inland vegetation are also affected as well. Pulaka, an important traditional crop and planted mostly inland is impacted by sea level rise, this is due to the upwelling of saline water through blowholes and saltwater intrusion into these plantation pits. Shifting these crops will lead to land conversion.

Pulaka is an essential part of the subsistence economy of Tuvalu, it is important that these Pulaka species are prevented from sea level rise damages. Currently on the Island of Nanumaga, pulaka has been excluded from items that are traditionally presented as gifts to highly respected chiefs and government Officials. The tastelessness of the pulaka corm has led to it traditional rejection as a gift. Additionally, damage to pulaka crops is augmented by the 1998 El Niño drought and massive extraction of groundwater. Similarly, the impact of sea level rise to coastal infrastructure, beaches and the coastal communities[5] of Tuvalu will be detrimental.

The Road Project:

The Tuvalu government recently completed a multi-million dollar Road Selling Project on the island of Funafuti. The project involved widening and sealing the road to give it more stability to unconsolidated soil particles, hence minimising poor road conditions.

Unfortunately, the road project has had significant environmental impacts. Though it benefits vehicles using the road, not all problems arising from previously poor road conditions were minimised, with some environmental problems being amplified subsequently.

The roads were constructed without proper drainage systems. Despite the high cost of the project no environmental impact assessment (EIA) was conducted. The widening of the road results in the destruction of roadside vegetation, thus increasing vulnerable lands to

[5] All communities on the nine Islands of Tuvalu lives close to the vicinity of the land and marine interface, usually 50m or less and are all on the western side of the Islands.

soil erosion and degradation. The total area of vegetation removed during the road construction project is 8.25 km^2 and about 31.73% of the total land area of Tuvalu.
One significant ancillary environmental impact associated with the road is the increase in land clearing due to ease access to far off lands, thus opening up development in marginalized areas. Several landowners have cleared their lands for their private developmental use. Currently, no national land-use plan is in place, therefore landowners are allowed to decide what to do with their land. The need to implement a land-use and management plan is urgently needed in order to minimise land degradation in Tuvalu.
If more impermeable structures such as the tar-sealed road are constructed without proper drainage systems and the unrestricted clearing of lands, the impact of a heavy downpour on exposed lands will be enormous. This can be due to the decrease in permeable soil for infiltrating surface water while the surface lateral flow volume of water and erosion processes are increased.
The increase in surface lateral flow after the completion of the project has caused problems of soil erosion and water pooling around residences, becoming a health hazard. Eroded particles and debris from the surface lateral flow will either end up in the central lagoon or the Ocean, and will be destructive to coral reefs.

Watershed Management.
A watershed is a dynamic and unique place consisting of a complex web of Natural resources such as soil, water, air, plants and animals. Yet everyday activities can impact these resources, and ultimately our well-being and economic livelihood.
The primary source of water for consumption in Tuvalu is rainwater collected in water catchment infrastructure (tanks and cisterns). A secondary source is available from groundwater but the impacts of sea level rise and human pollution renders this resource unsuitable for human consumption. The Waste management Project is currently monitoring Pollution to groundwater resources, however, no detailed study has been conducted on the impact of sea level rise on groundwater. The biotic component of the watershed depends on groundwater. Effective control of pollution is needed to maintain sustainable ecosystems.

1. Institutional measures taken to implement the Convention
The Tuvalu Environmental Unit was formerly the institution coordinating the implementation of the convention. Since then, Tuvalu sees that there is a strong linkage between the United Nations Convention to Combating Desertification (UNCCD) and the United Nations Framework Convention on Climate Change (UNFCCC), that is, local activities related to drought, El Niño and others. Therefore the National Action Plan (NAP) for the UNCCD and the National Adaptation Plan of Action (NAPA) for the UNFCCC will be similar. Towards the end 2001, the Climate Change Office was mandated to implement the UNCCD and also acting as secretariat. To date, the Secretariat has not developed an NAP but will in the near future with the guidance and assistance from the UNCCD and partner organisation.

2. The participatory process in support of the preparation and implementation of the NAP

The Climate Change Country Team (CCCT) was established under the Pacific Islands Climate Change Assistance Programme (PICCAP[6]). The CCCT includes major government agencies, private and public sector. It has effectively coordinated the activities of the PICCAP project such as Climate Change Workshops and information dissemination.
A similar committee to the CCCT is called the National Disaster Committee (NDC). It composed of officers from several government agencies and none from the private sector. However, there is an Island disaster committee (IDC) on each of the outer Islands. The NDC has also developed the National Disaster Plan. The merging of the two will support the preparation and implementation of the NAP.
The Tuvalu Association of Non Governmental Organisation (TANGO) is very active. It includes Environmental Organisations such as the Island Care and others. The participation of the three organisations above is needed in the preparation and implementation of the NAP.

3. The consultative process in support of the preparation and implementation of the NAP and the partnership agreement with developed country parties and other interested entities.

There has been no direct consultative process associated with the development of a NAP, however the recently conducted Climate Change Workshop covered the environmental impacts of bush burning and the benefits of groundwater conservation. Bush burning increases greenhouse gas emission and degrades soil fertility while groundwater conservation, preserves the balanced terrestrial ecosystem.
To this end, we request the UNCCD secretariat to assist us in the conduction of the consultative process in support of the NAP in the near future with the support of the UNCCD secretariat.

4. The measures taken or planned within the framework of the NAP, including measures to improve the economic environment, to conserve Natural Resources, to improve institutional organization, to improve knowledge of desertification and to monitor and assess the effects of Drought.

In late 2001, the Tuvalu National Council of Women (TNCW) erected a water storage cistern for their members on each of the Islands of Tuvalu. This will improve the water storage capacity on each islands and more water could be equally distributed among the civil society especially during drought.
Our national meteorological and climatological capabilities were unable to provide early warning of drought, nevertheless we are relying on the National Institute of Water and Atmospheric Research for updated drought forecasting.
The shredding (only on Funafuti) of green-waste and waste from plant cuttings has been successfully converted to compost by the waste management project and has been demonstrated to the civil society. As stated earlier, some local activities (such as green-waste burning) supports desertification processes. Supporting shredding is a practical

[6] PICCAP – is a project funded by GEF, implemented by UNDP and executed by SPREP.

measure that will slow or arrest desertification processes. We look forward for an extension to the outer islands shredding and compost making knowledge.

5. Financial Allocations from the National budgets in support of implementation as well as financial assistance and technical cooperation received and needed, identifying and prioritising requirements.

Prioritising and identifying requirements for actions on desertification has not been undertaken, except under the auspices of activities under the UNFCCC. Subsequently the government has not provided financial or technical cooperation and assistance under a budget allocation associated with the UNCCD, However, the government is supporting the UNCCD by providing logistic support for the Coordinator.

6. A review of benchmarks and indicators utilized to measure progress and an assessment thereof.

To date, the government has not established any benchmarks or indicators as a means of measuring progress. Nevertheless, has approved the strengthening of the Environment Unit (EU). The EU implements environmentally sustainable development principles; encourage appropriate development projects and environmental monitoring. A division or unit is yet to be identified to carryout monitoring of project performance and its impact on the environment. Once strengthening of the EU is enforced, environmental monitoring will be the top priority; therefore benchmarks and indicators could be established.