

**Tuvalu's Views on the Possible Security Implications of Climate Change  
to be included in the report of the UN Secretary General to the  
UN General Assembly 64<sup>th</sup> Session.**

**A: Security Implications of Climate Change for Tuvalu**

**Tuvalu's geography:** Tuvalu is a series of nine small coral atolls spread over 750,000 square kilometres of the central Pacific. The total land surface of Tuvalu is 26 sq kilometres and the highest point above sea level is around 4 metres. On average it is less than 2 metres above sea level.

During the many thousands of years that Polynesian people have inhabited Tuvalu, Tuvaluans have faced many climatic threats ranging from cyclones to droughts. Tuvaluans have developed many strategies to cope with these climate threats. Today, however Tuvalu is faced with an unprecedented threat created by human-induced climate change. Tuvalu is now one of the most vulnerable countries in the world to the impacts of climate change. The implications of climate change affect the nation as a whole and therefore have serious implications for its national security and statehood.

There are many existing and potential impacts that climate change have and will have on Tuvalu's ability to feed its nation.

**I. Resource Scarcity**

**a. Food Security**

The diet of Tuvaluans is primarily based around the marine environment and a limited number of food crops. These will be seriously affected by climate change. There will be a number of impacts that will affect the food security of Tuvalu. These include:

(i) Coral Bleaching: Many coral species are highly vulnerable to heat stress. Scientists suggest that a 1 deg Celsius increase in average water temperature will cause coral reefs to die – a process know as coral bleaching. Tuvalu is experiencing a small amount of coral bleaching and this is expected to rise. The Intergovernmental Panel on Climate Change predicts that in the next 30 to 50 years coral bleaching events will occur every year. With coral dying, Tuvalu will lose its fish stocks - a principle source of protein for island communities like Tuvalu.

ii) Ocean Acidification:

Increased levels of carbon dioxide (CO<sub>2</sub>) in the atmosphere are also causing more carbon dioxide to be dissolved in the ocean and hence acidifying the ocean. Acidic sea water causes coral reefs to weaken and become more vulnerable to severe weather events, like cyclones. Recent studies suggest that even if atmospheric CO<sub>2</sub> stabilizes at the current level of 380 parts per million (ppm), fewer than half of existing coral reefs in the world will remain. If the levels stabilize at 450 ppm, fewer than 10% of reefs may survive. Weaker coral reefs will exacerbate the problem of coral bleaching and will have a serious affect on food security.

Acidic seawater will also weaken the shells of various shell fish and threaten their survival. This could further limit food sources for Tuvaluans.

### iii) Saltwater Contamination through Storm Surges:

Tuvalu has already experienced the impacts of storm surges. In 1972, tropical Cyclone Bede destroyed nearly all the houses on the capital of Tuvalu, Funafuti. In 1992, Cyclone Nina, created storm surges and seawater flooding on the islands of Nanumea, Nanumaga, Niutao, Nui and Vaitupu. This has left a lasting impact on the island of Nanumea. Seawater inundation of the island was trapped inland by a poorly designed sea wall, causing saltwater contamination of the island vegetation. Many trees, including coconut trees – important for food and livestock feed, were killed through this saltwater contamination. It may be too soon to suggest that these storm surges were caused by climate change, but they are a strong indication of things to come.

Over-washing waves caused by cyclones and storm surges fill pits dug in the ground to grow swamp taro (known as *pulaka* in Tuvalu) with seawater. Swamp taro, a tuberous plant is a major staple of Tuvaluans and is sensitive to seawater contamination. An increase in cyclones and storm surges as a result of climate change is likely to severely limit the growing capability of the nation's principle crop.

(iv) Sea Level Rise: Scientific predictions of sea-level rise will have a severe effect on Tuvalu as a nation as a whole. As the sea level rises, it will affect the nation's ability to produce crops as the limited freshwater supplies will be displaced by seawater. There will be a significant challenge to provide land for food production and human habitation as the land surface disappears as a result of sea level rise.

## **b. Water Security**

(i) Drought: Apart from severe weather events, climate scientists suggest that Tuvalu may be vulnerable to more severe droughts, particularly in the northern islands. Currently Tuvalu relies on a thin lens of freshwater that exists under each atoll. A drop in rainfall due to drought could severely affect Tuvalu's access to freshwater. There are expensive options to desalinate seawater, but these options are energy intensive and beyond the economic limitations of the nation. Apart from creating problems with respect to fresh drinking water for the people of Tuvalu, drought could seriously affect Tuvalu's agricultural and livestock production.

(ii) Saltwater Contamination by Sea Level Rise and Storm Surges: Storm surges are known to affect the septic sewage treatment systems that predominate in Tuvalu. Not only does the seawater contaminate the septic systems, making the microbial processes inactive, they can cause sewage contamination of the groundwater lens, making the freshwater unsuitable for human consumption. This would further limit the supply of freshwater for the nation.

## **c. Other resources: i. Reefs, ii. Biodiversity**

(i) Reefs: Coral bleaching and ocean acidification will also mean that Tuvalu will lose its first line of defence against severe weather storm surges. Severe weather events are also linked to warmer oceans. Scientists predict that tropical cyclone intensities could increase by 5 to 10 percent by the year 2020. Studies show that the number of category 4 and 5 storms has doubled from the period 1975-1989 to the period 1990-2004. In 2004, tropical cyclone Heta hit the small island nation of Niue to the south

east of Tuvalu. Massive waves crashed over the top 30 meter cliffs that surround the island. Massive waves like those created by Cyclone Heta could totally devastate Tuvalu.

(ii) Biodiversity: The die-off of reefs due to coral bleaching and acidification would also create a massive loss of the nation's biodiversity. Tuvalu's highly diverse marine biodiversity is found within its coral reef systems. The coral reefs not only provide a food source for Tuvaluans they are also a significant source of biological resources such as medicines and other important traditional resources.

## **II. Migration**

As resources become scarcer there will be increasing pressure of Tuvaluans to migrate to other countries. The Government of New Zealand has a limited immigration programme for Tuvaluan. To date Tuvaluans who have availed themselves of this programme have done so for economic and social reasons (e.g. employment and family reunions). The reasons for migration are likely to change in the near future as the impacts of climate change increase and the viability of living in Tuvalu becomes more tenuous.

## **III. Loss of territory, sovereignty, and other legal rights**

Due to the predictions of the impacts of climate change, there is a potential that the entire land surface of Tuvalu could disappear as a result of sea level rise. In other words Tuvalu could lose its sovereignty due to the loss of its land surface. Tuvalu is likely to be the first nation to face this very serious situation. The loss of territory could mean that Tuvalu could lose its nationhood.

Well before the loss of its land surface, Tuvalu may become uninhabitable as a result of climate change related events such as: more severe cyclones, storm surges, coral reef bleaching and acidification and drought. The nation could lose a large proportion of its population as a result of these effects. Migration to another country would be necessary.

## **IV. Loss of Culture**

The loss of the entire land surface of Tuvalu could spell the end of the rich and unique Tuvaluan culture as we know it. While Tuvaluans may be able to establish themselves in another country, and restart their lives, the loss of their connection with the islands could spell the end of their culture. Tuvalu's culture, its language, dance, songs, cultural ceremonies and celebrations, sense of community, clan relationships, educational systems, knowledge of food production and traditional medicines could disappear. While only a small nation, the loss of Tuvalu's culture would be a huge loss to humanity.

## **V. Natural Disasters**

Many of the impacts of climate change are linked to natural disasters. For instance, it is predicted that cyclones are likely to become more severe as climate change worsens. While Tuvaluans have natural coping systems for natural disasters, the severity and frequency of these climate change related events is likely to be well beyond the capability of these traditional coping systems.

## **VI. Disease/Pandemic**

Poor nutrition as a result of climate change related loss of food production, contamination of freshwater supplies and possible drought will all place a serious toll on the natural health of Tuvaluans. This will make Tuvaluans more susceptible to disease and various pandemics.

## **VII. Conflict/Unrest**

Tuvaluans pride themselves in being a peace loving people. They have no arm or other form of military personnel. Nevertheless that large movement of Tuvaluans to another country with a different set of cultural systems could potentially cause tensions and unrest. A people that have lost their culture and sense of identity could lead to various social complications.

## **B. Proposed Actions for the United Nations to Address Security and Climate Change Issues**

Tuvalu as a nation will never concede that its country will disappear. Every effort must be made within the United Nations system to ensure that this never happens. There are a number of steps that should be taken to ensure security and climate change issues and the survival of Tuvalu. These measures should include:

1. There must be agreement in Copenhagen at the end of this year to renew and enhance commitments under the Kyoto Protocol to reduce greenhouse gases substantially to avoid a higher than 1.5 Deg C increase above pre-industrial levels. Further, nations that attend Copenhagen should also agree on a new legally binding instrument that will establish emission reduction commitments for the United States and major developing economies.
2. The Copenhagen agreements should also agree on set of outcomes relating to adaptation. This should include commitments for new and additional financial resources to support the most vulnerable countries adapt to the impacts of climate change. These financial resources should be derived from new and innovative financial resources, including a share of proceeds of emissions trading, rather than the re-allocation of existing development assistance. Regional centres for adaptation should be established in all regions of the developing world and an international insurance mechanism should be developed to assist the most vulnerable to recover from the impacts of climate change.
3. The Security Council should recognise climate change as a global security threat and therefore take immediate steps to maintain international peace and security by means of establishing permanent seats in the Council for countries most vulnerable to the impacts of climate change. Furthermore, the Council should establish a special Committee on Security and Climate Change as a means of assessing security threats associated with climate change and to make recommendations to the UN General Assembly on means to address these threats.

4. World leaders who attend the Summit on Climate Change at the UN Headquarters in September this year should form the catalyst for a commitment for a meaningful and legally binding outcome in Copenhagen. Leaders should also support the measures on security and climate change within the Security Council as prescribed in paragraph 3 above.

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