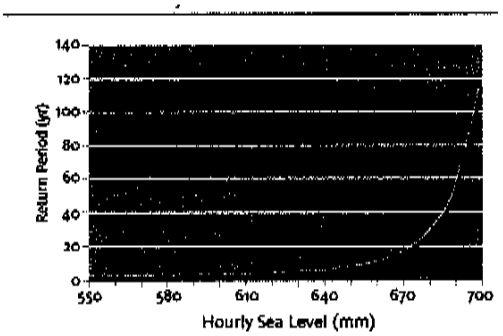
Response paper to the security implications of climate change draft report

Particular Vulnerabilities and Security Threats

Rising Sea Levels

The global mean sea level rose 10 to 20cm during the 20th century at the rate of 1 to 2mm/year. Future sea level is projected to rise within the range of 9 to 88cm between 1990 and 2100. Sea level is projected to rise under all scenarios of IPCC Special Reports on Emission Scenarios (SRES). The projected average rate of increase is 5mm/year, with a range of 2 to 9mm/year (IPCC 2001) For Maldives, the observed long term trend in relative sea level for Hulhulé (Male' International Airport Weather Station) is 1.7mm/year. The maximum hourly sea level is increasing by approximately 7mm/year, a rate far in excess of the observed local and global trends in mean sea level For Hulhulé an hourly sea level of 70cm above mean sea level (MSL) is currently a 100-year event. It will likely be at least an annual event by 2050. (Refer the figure) [1]



Source: MEEW (2006)

Salt Water Intrusion

Intrusion of Salt water and a reduction in the sustainable yield from the fresh water lens is seen as an impacts associated with climate change and Sea level rise. Some of the water resources, especially in the low-lying atolls, may be degraded beyond their ability to recover and may not be exploitable by residents in the short term. Additionally, changes in the average annual and temporal patterns of the rain fall would also lead to localized water stress on some islands requiring augmentation by desalination alternatives.[1]

As the islands have a precarious hydrological system, with the predicted sea level rise and during periods of wave-induced flooding, there is a very high risk of saltwater intrusion into the freshwater lens. Salinization of groundwater would affect the quality of life in the islands as people depend on

[1] National Adaptation Program of Action (2007)
[2] First National Communication of the Republic of Maldives to the United Nations Framework Convention on Climate Change

groundwater for washing, bathing and other non-potable uses. Saltwater intrusion would also affect soil and vegetation causing impacts on agriculture and terrestrial ecosystems.

Water Resources

Groundwater is a scarce resource because of the hydrogeology of the country. The freshwater aquifer lying beneath the islands is a shallow lens, 1 to 1.5m below the surface and no more than a few meters thick. Surface freshwater is lacking throughout the country with the exception of a few swampy areas in some islands. Traditionally people depended on shallow wells to get access to the groundwater lens for drinking water. However, 90% of the atoll households now use rainwater as the principal source of drinking water. In Male', 100% of the population has access to piped desalinated water. [2]

Land Loss and Beach Erosion

Sea level rise will have great consequences for the Maldives. The islands of the Maldives are among the most susceptible to inundation from water rising from the ground, as well as overtopping dune ridges. Being made of coral limestone, the islands of the Maldives are also among the least defensible against sea level rise in the world. Over 80 % of the land area of the Maldives is less than 1 m above mean sea level. No islands have an elevation greater than 3 m.

The islands are extremely vulnerable to beach erosion. The shapes and size of these islands depends mainly on the tides and current patterns. Seasonal variation and its fluctuation play a major role in dynamic and directional shifts of the shorelines. Around 50 % of the current in habited islands suffer the problem of erosion.

Damages to coral reefs

Coral reef ecosystems of the Maldives are significant both at international and national level. They form the seventh largest reef system and are among the richest in the world in terms of species diversity. At the national level, the Maldives is a nation of coral islands where the reefs function as natural sea defences for the highly vulnerable islands. The two major economic activities tourism and fisheries are reef based and provide more than 80% of the total revenues to the country. The coral reef system of the Maldives supports rich marine biological diversity. Corals are highly sensitive to changes in temperature and some species of corals live at or near their thermal limits (Goreau, 1992). As a result the incidence of bleaching will increase in frequency and intensity with the projected rise in SST. The evidence from the reefs of the Maldives supports that warming of the ocean surface leads to significant coral bleaching. [3]

[3] National Adaptation program Action (2007)

Precipitation and Temperature

Although the global average precipitation is projected to increase during the 21st century, a marginal decline in precipitation is projected for the Indian Ocean region (Nurse and Sem 2001). The predicted changes in precipitation have the potential to impact on rainwater harvesting across all the atolls and in particular the northern atolls. Drinking water shortages during dry periods is a significant challenge for the atoll population even at present.

The global average surface temperature is projected to increase by 1.4 to 5.8°C over the period 1990 to 2100. The projected rate of warming is much larger than the observed changes during the 20th century (IPCC, 2001). For the Indian Ocean region, temperature is expected to increase by 2.1°C for the 2050s and 3.2°C for the 2080s (Nurse and Sem, 2001).

Human Health

The challenge to Human Health is a major problem that is encountered in the Maldives. The health status of the Maldivian population has improved significantly over the last two decades. In 2005, the infant mortality rate was 12, maternal mortality was less than 1 per thousand and life expectancy was 72.2 years. The Country is in transitional stage of Communicable to Non Communicable diseases. Despite the improvement in health status the country still experiences high incidences of water- and vector-borne diseases that are attributed to climate change. Changes in temperature and rainfall regimes are causing higher incidence of vector-borne diseases. There is evidence that dengue outbreaks are becoming more frequent and it appears that there is an association with ENSO events. The high level of risk to the health of the population from climate change related water-borne diseases. Increase in flooding coupled with increased surface air temperature will cause higher incidence of vector-borne diseases in the Maldives. The vulnerability to climate change related health risks is further compounded by local characteristic thus causing several impacts to the human health. [4]

Security dimension of Climate Change

Frequent extreme weather events; flooding, lack of water and other such events, have been proven an immense challenge on sustainable development. As the adverse effects of climate change becomes more evident, new facets of climate change; such as impacts on human health and the impacts on the very survival of small islands states become more apparent and clear.

The Human Rights Council adopted the resolution 10/L.30 on "Human Rights and Climate Change" in which Maldives played a lead role; *"notes that climate change-related effects have a range of implications, both direct and indirect, for the effective enjoyment of human rights"* [3]. This HRC

[3] This language is taken from Human Rights Council Resolution 10/L.30 on Human Rights and Climate Change of March 25, 2009. The Resolution (PP7-PP10): "notes that climate change-related effects have a range of implications, both direct and indirect, for the effective enjoyment of human rights; recognizes that while these implications affect individuals and communities around the world, the effects of climate change will be felt most acutely by those segments of the population who are already in vulnerable situations owing to factors such as geography, poverty, gender, age, indigenous or minority status and disability; recognizes also that effective international cooperation to enable the full, effective and sustained implementation of the United Nations Framework Convention on Climate Change in accordance with the provisions and principles of the Convention is important in order to support national efforts for the realization of

resolution is complimented by The General Assembly resolution A/RES/63/281 which intern compliments the discussion on Climate Change and Human Rights which brings in a blanket approach to the issue. It is importantly noted that the general Assembly resolution notes that the assembly is *"Deeply Concerned that the adverse Impacts of climate change, including sea-level rise, could have possible security implications"*. Climate Change is not an environmetal issue, it is a human rights issue. It is the right to live. It is a fundamental right. Therefore, it is non-negotiable [i].

Immediate Actions to Avert or Reduce Security Threats

Adaptation:

Adaptation issues are also addressed under the UNFCCC process.

The Program of Action has been developed in Maldives to communicate the most urgent and immediate adaptation needs, as stipulated under UNFCCC Decision 28/CP.7, which also responds to the security implications and sustainable development goals.

Mitigation:

Mitigation issues are also addressed under the UNFCCC process.

Maldives along with many other SIDS and LDCs calls for an ambitious mitigation action from all the nations, which will address to security implications. Also, a higher priority has been given by the president of Maldives in achieving carbon neutrality for the year 2019.

Long –Term Mechanism to address and respond to Security Threats

As mentioned in the above actions, Maldives call for urgent and immediate action, if failed to do so, relocation of people is inevitable [i].

Mainstreaming of climate change issues and mitigation and adaptation has been the long-term mechanism to respond security threats. The strategy for long-term response to security threats is through addressing and acting on the immediate priority measures needed. In this respect National Adaptation Programme of Action which addresses priority areas has been formulated and implemented.

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human rights implicated by climate change-related effects; and affirms that human rights obligations and commitments have the potential to inform and strengthen international and national policy-making in the area of climate change, promoting policy coherence, legitimacy and sustainable outcomes."

[i] Speech by His Excellency President Mohamed Nasheed, at the Commonwealth Parliamentary Association's Conference on Climate Change - 06 July 2009 | Ref #: PRO/RMN/2009/170 - http://www.presidencymaldives.gov.mv/4/?ref=1,6,1407