

NTS POLICY BRIEF

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Security implications of climate change: A case study of Bangladesh



Climate change is a major non-traditional security (NTS) challenge for Bangladesh. Sea level rise, and the possible loss of land mass, represents an existential threat to the country. More immediately, thousands of people are directly and indirectly suffering from the impacts of climate events. This NTS Policy Brief highlights key climate change-related challenges facing Bangladesh. It goes on to provide policy recommendations for governmental as well as non-governmental organisations (NGOs) dealing with the climate vulnerabilities experienced by Bangladesh.

Introduction

Climate change poses a grave threat to Bangladesh. The country faces possible loss of large areas of land to sea level rise over the next decades. In the shorter term, Bangladesh has to deal with more frequent and intense cyclones and floods. In addition, the direct and indirect consequences of climate change on countries upstream of it would likely affect it as well.

The various vulnerabilities combine to compound the impact of climate change on the country, threatening water, food, health and livelihood security. Those pressures could lead to a dramatic rise in the number of climate refugees, which would put further stress on resources and create further tensions both within the country and with its neighbour, India.

This NTS Policy Brief proceeds by outlining the country's major vulnerabilities. It then suggests that a broad framework of policy responses based on a human security approach to climate change-related challenges is needed, and makes a few recommendations that could help move the country along that path.

Coastal vulnerabilities

A large proportion of Bangladesh's land area lies less than 1m above sea level, making the country among the most vulnerable to increase in sea level. According to projections by the UN Intergovernmental Panel on Climate Change (IPCC), it will lose 17 to 20 per cent of its land mass by 2050 to rising oceans.¹ The latest World Bank report notes that such a scenario would result in water scarcity and

reduced crop yields as well as increased hunger and poverty.²

In the immediate term, the country's coast is highly vulnerable to natural disasters. Over the last 50 years, its coast has been hit by on average at least one cyclone or hurricane every 1.5 years.³ According to recent estimates, 14.6 million people in the coastal areas are vulnerable to inundation resulting from increased frequency of cyclone storm surges; by 2050, some 18.5 million will be affected under moderate climate change scenarios.⁴

Of concern is that these cyclones have been increasing in frequency and ferocity. In recent years, Bangladesh has been hit by more extreme cyclones on a regular basis, for example, Sidr (2007), Nargis (2008), Aila (2009) and Laila (2010). The changing climatic conditions have meant more severe flooding, and longer periods of standing water after a flood.

The storm surges from the cyclones, as well as the expected global rise in sea level, would cause water and soil salinity to rise. The increase in salinity during cyclone seasons has already had an immense ecological impact on the Sundarbans Reserve Forest located in southern Bangladesh.⁵ Cyclones also cause large-scale riverbank erosion, altering the morphology of a river and increasing river flow.

Sea level rise and cyclones and floods and their link to rise of water and soil salinity demonstrate the interconnectedness of the phenomena threatening Bangladesh. In addition to these physical impacts related to climate change, the country needs to also consider compounding factors coming from outside its borders, as elaborated below.

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Vulnerabilities as a lower riparian

The major rivers in Bangladesh originate in the Himalayas, and are part of three large river systems – the Ganges, Brahmaputra and Meghna. The catchment area of these systems totals 1.72 million sq km; Bangladesh, located at the downstream end, makes up only 7 per cent of that.

As a lower riparian, Bangladesh is vulnerable to climate change impacts in the Himalayas. Studies indicate that the Himalayan glaciers are melting at a rate much faster than ever seen before. Satellite pictures also show that the area's glacier tongues have retreated. Greater adverse effects can thus be expected, including abrupt flooding in the short term, and reduced availability of water from rivers and drought in the long term.

Also, with climate change likely to change water patterns, and cause a gradual decline in supply of water, upper riparian countries could start to look inward, focusing on narrow solutions. India has already unilaterally withdrawn water through dams and barrages upstream of Bangladesh, with serious negative impacts on the flow of the rivers in Bangladesh. Several embankments constructed in Tripura, India, have also caused changes to river flow; and the proposed Tipaimukh dam is yet another potential threat.⁶

Implications

The above vulnerabilities have implications for Bangladesh's security on several dimensions – water, health, food and the environment. These could in turn lead to yet another serious security risk: climate change-induced migration.

- **Water insecurity**

Without a regional transboundary water-sharing mechanism to manage distribution of water, Bangladesh is highly vulnerable to water scarcity as a result of decisions made regarding the 57 rivers it shares with its neighbours.⁷ Even in the case of India, with which it shares 54 rivers, Bangladesh only has one treaty – the 1996 Ganges water sharing agreement – and that treaty has not been fully implemented.

- **Food insecurity**

Climate change could lead to loss of substantial tracts of cultivable land to the sea. This, together with increased salinity of soil and water, could threaten agricultural production. In addition, monsoon patterns have changed as a result of increasing

temperatures, and this has already had a negative impact on food production, seriously threatening the livelihoods of many Bangladeshis.⁸ Agricultural scientists predict that the impacts of climate change will cause Bangladesh's rice production to decrease by 8 per cent and wheat by 32 per cent by 2050.⁹ Food such as vegetables, pulses and fish are also expected to be adversely affected by climate change and global warming.¹⁰ Bangladesh is already highly food insecure: nearly 30 million women and 12 million children under 5 suffer from micronutrient malnutrition.¹¹ The growing pressures from the climate change-related impacts discussed here mean that these numbers are set to increase further.¹²

- **Health insecurity**

Climate change-induced conditions have led to rivers and other sources not having enough water to supply the population; and this has prompted many Bangladeshis to depend more on groundwater, which has higher concentrations of arsenic. An article in *The Lancet*, a British medical journal, notes that half of the population of Bangladesh, up to 77 million people,¹³ have been exposed to arsenic contamination from water sources.

- **Environmental insecurity**

The ecological balance of forests in Bangladesh is under threat. For example, in the Sundarbans forest – a UN Educational, Scientific and Cultural Organization (UNESCO) heritage site and the world's largest mangrove forest – climate change-induced conditions are causing rapid loss of biodiversity.¹⁴

- **Climate change-induced migration**

The growing number of climate refugees is a major challenge for Bangladesh. Large numbers have been forced to leave their ancestral lands and homes because of radical changes in the environment and in climate conditions,¹⁵ such as riverbank and coastal erosion; permanent inundation; sea level rise; and other environmental disasters.¹⁶ The IPCC warns that environmental disasters may cause many to become homeless in the near future, and that that will increase the number of climate refugees in Bangladesh.¹⁷

As has been discussed, the effects of climate change are interlinked. As ocean temperatures increase, sea level rises. This leads to huge loss of land mass, and higher soil salinity. The greater salinity destroys cultivable lands and threatens food security, forcing people to migrate for their own survival. This causes population density to increase

in the available land, and leads to even more forced migration as well as the possibility of conflict during the migration.¹⁸ Women and children are the most affected by these pressures.

The problem is made more acute by Bangladesh's small geographical size and huge demographic pressure. Given these, it is unlikely that the country will be able absorb the large numbers that will be displaced. The Bangladesh government's national climate change strategy estimates that there will be more than 20 million climate refugees.¹⁹ Independent studies give higher estimates: between 30 to 35 million based on the current population size.

Under such conditions, displacement will result in migration towards India, which borders Bangladesh on all three sides. India has, in a unilateral decision, already fenced the border with Bangladesh and turned the area into one of the most lethal borders in the world. Indian border guards regularly shoot any Bangladeshi civilian coming near the fence. The number killed over the past decade is now over 1,300. With such an aggressive posture at the Indo-Bangladesh border, the possible migration of climate refugees from Bangladesh to India will most likely increase border tensions or even lead to conflicts.

Policy recommendations

As the preceding illustrates, climate change has serious security implications. The government of Bangladesh as well as non-governmental organisations (NGOs) and international environmental organisations should thus take immediate measures to ensure sustainable development and to craft a practical adaptation strategy. There are several areas that must be made a priority and these are outlined below.

- ***Develop national adaptation plan of action for climate change***

The government of Bangladesh has a national adaptation plan of action to reduce the threat of climate change. The country should focus on enhancing that plan through a comprehensive approach designed to ensure sustainable development through poverty eradication and greater attention to the well-being of vulnerable groups, especially those living in coastal areas.

- ***Strengthen flood-management embankments to reduce vulnerability to floods***

Bangladesh, being extremely flood-prone, needs to reinforce its embankments to reduce

flood impacts such as riverbank erosion and saltwater intrusion.

- ***Build coastal polders and cyclone shelters for climate refugees***

The number of internally displaced persons is growing at an alarming rate as a result of the severity of the impacts of climate change. The government of Bangladesh should take the necessary step of building coastal polders and cyclone shelters for climate refugees. The government also needs to have a rehabilitation plan for the displaced.

- ***Develop a climate change strategy and an action plan for crisis management***

Bangladesh needs to develop a climate change strategy for the proper management of environmental crises. This plan should include comprehensive measures to address the key aspects of climate change in the country. Specifically, the plan needs to tackle the severe climate change-related impacts that could lead to crises.

- ***Enhance water resource management***

The government should work on a new water resource management plan within the context of the emerging climate change-induced water conditions in the country. It also needs to work towards water sharing agreements with India and a water basin management mechanism for the Himalayan basin.

- ***Promote regional cooperation***

The management of climate change-induced impacts has a clear regional dimension. Bangladesh should immediately work with countries in South Asia to work out cooperation plans and mechanisms for issues such as climate refugees, transboundary water sharing and disaster management.

Conclusion

Climate change has become a major non-traditional security (NTS) threat in Bangladesh. Thousands of people in the country are suffering from the direct and indirect impacts of climate change, and the severity of the impacts is increasing significantly. The country's natural resources, and particularly its biodiversity, have come under substantial threat. Sea level rise due to global warming and the melting

of the ice in the Himalayas could by 2050 cause large areas of the country to be submerged. Environmental problems such as riverbank erosion and floods could exacerbate the impacts of such phenomena. The various environmental stresses could in turn lead to an alarming threat – a rise in the number of climate refugees in the country. Considering the seriousness of the impacts of climate change for Bangladesh, the government and relevant NGOs must adopt urgent/sufficient adaptation policies to deal with the environmental crisis.

Notes

¹ Malathi Nayak, 'Threat of climate-change disasters looms large for Bangladesh', *The Washington Post*, 6 February 2011, <http://www.washingtonpost.com/wp-dyn/content/article/2011/02/05/AR2011020500183.html>

² See: Faruque Hasan, 'Climate change and Bangladesh', *The Daily Star*, 28 November 2012.

³ Farooq Sobhan, 'Speech on "Non-traditional security threats to Bangladesh"', 10 July 2012, <http://www.bei-bd.org/images/publication/whc50c59a4272418.pdf>

⁴ 'Bangladesh, Maldives front runners in adapting to climate change impacts: WB', *The Daily Star*, 8 December 2012.

⁵ See: Asiful Basar, 'Water security in coastal region of Bangladesh: Would desalination become a solution to the vulnerable communities of the Sundarbans?', *Bangladesh e-Journal of Sociology* 9, no. 2 (2012): 32–3, http://www.bangladeshsociology.org/Water_Security_in_Coastal_Region_of_BangladeshBEJS_9.2_Final_new_.pdf

⁶ See: Asif Reza Akash, 'Vulnerable Bangladesh: Water insecurity', *The News Today*, 9 September 2011, http://www.newstoday.com.bd/index.php?option=details&news_id=38240&date=2011-09-09

⁷ Ibid., 31.

⁸ Fatima Siraj, 'Bangladesh – Striving for food security', *South Asia Global Affairs*, October 2012, <http://www.saglobalaffairs.com/back-issues/1319-bangladesh-striving-for-food-security.html>

⁹ M. Abdul Latif Mondal, 'Challenges to our food security', *The Daily Star*, 23 November 2010.

¹⁰ Ibid.

¹¹ 'Bangladesh: Unemployment, food prices spur growing hunger', *IRIN*, 22 July 2010, <http://www.irinnews.org/Report/89920/BANGLADESH-Unemployment-food-prices-spur-growing-hunger>

¹² Ibid.

¹³ Maria Argos et al., 'Arsenic exposure from drinking water, and all-cause and chronic-disease mortalities in Bangladesh (HEALS): A prospective cohort study', *The Lancet* 376, no. 9737 (2010): 252–58, [http://dx.doi.org/10.1016/S0140-6736\(10\)60481-3](http://dx.doi.org/10.1016/S0140-6736(10)60481-3)

¹⁴ Dewan Muhammad Humayun Kabir and Jakir Hossain, *Resuscitating the Sundarbans: Customary use of biodiversity & traditional cultural practices in Bangladesh* (Dhaka: Unnayan Onneshan – The Innovators, 2008), http://www.forestpeoples.org/sites/fpp/files/publication/2010/08/resuscitating_sundarbansapr08eng_0.pdf

¹⁵ See: Md Shariful Islam, 'Climate refugees and violent conflicts: A Bangladesh perspective', *New Age*, 14 May 2011, http://newagebd.com/newspaper1/archive_details.php?date=2011-05-14&nid=18656

¹⁶ Nayak, 'Threat of climate-change disasters'.

¹⁷ See: 'Bangladeshis under threat of climate-change induced migration', *Xinhua*, 29 November 2012, http://www.china.org.cn/environment/2012-11/29/content_27270955.htm

¹⁸ See: William Alex Litchfield, 'Climate change induced extreme weather events & sea level rise in Bangladesh leading to migration and conflict' (ICE Case Studies no. 229, December 2012), <http://www1.american.edu/ted/ice/Bangladesh.html>

¹⁹ Ministry of the Environment and Forests (MoEF), *Climate Change Strategy and Action Plan 2009* (Dhaka: MoEF, 2009), 17, http://www.moef.gov.bd/climate_change_strategy2009.pdf

About the Author

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In 2009, the Centre was chosen by the MacArthur Foundation as a lead institution for the MacArthur Asia Security Initiative, to develop policy research capacity and recommend policies on the critical security challenges facing the Asia-Pacific.

The Centre is also a founding member of and the Secretariat for the Consortium of Non-Traditional Security (NTS) Studies in Asia (NTS-Asia). More information on the Centre can be found at www.rsis.edu.sg/nts.

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The RSIS Centre for NTS Studies, NTU, was inaugurated by the ASEAN Secretary-General, Dr Surin Pitsuwan, in May 2008. The Centre maintains research in the fields of Food Security, Climate Change, Energy Security, Health Security as well as Internal and Cross-Border Conflict. It produces policy-relevant analyses aimed at furthering awareness and building capacity to address NTS issues and challenges in the Asia-Pacific region and beyond. The Centre also provides a platform for scholars and policymakers within and outside Asia to discuss and analyse NTS issues in the region.