

Climate Change & its Impacts on Bangladesh

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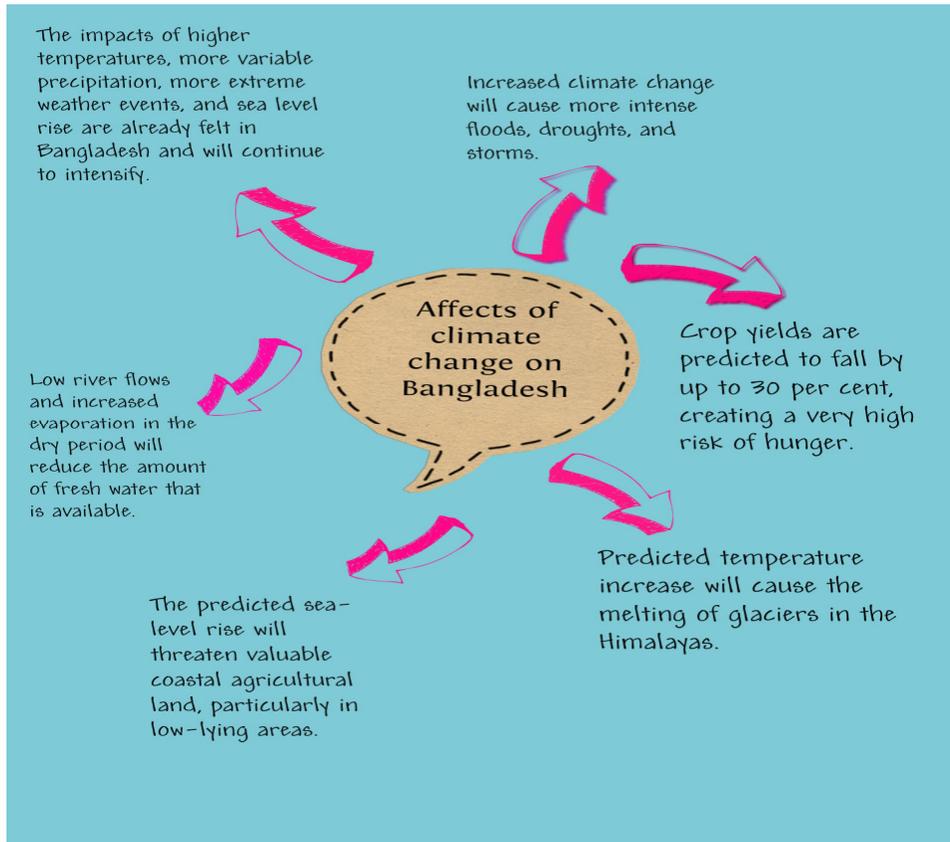
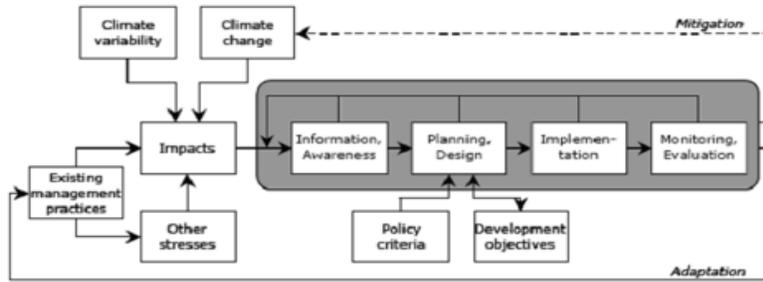
Introduction:

Bangladesh is one of the largest deltas in the world which is highly vulnerable to Natural Disasters because of its Geographical location, Flat and low-lying landscape, Population density, Poverty, Illiteracy, Lack of Institutional setup etc. In other words, the Physical, Social as well as Economic conditions of Bangladesh are very typical to any of the most vulnerable countries to Natural Disasters in the world. The total land area is 147,570 sq. km. consists mostly of Floodplains (almost 80%) leaving major part of the country (with the exception of the north-western highlands) prone to flooding during the rainy season. Moreover, the adverse affects of Climate Change – especially High Temperature, Sea-level Rise, Cyclones and Storm Surges, Salinity Intrusion, Heavy Monsoon Downpours etc. has aggravated the overall Economic Development scenario of the country to a great extent.

Bangladesh has got a population of around 150 million (2011) with a life expectancy at birth of around 63 years, and an adult literacy rate of 47.5%. The recent Human Development Report ranks Bangladesh number 140 of 177 nations. Bangladesh has an average annual population growth rate of around 2% (4.6% in urban areas), almost 75% of the population lives in rural areas and a population density of 954.4 (people per sq. km.). Bangladesh is predominantly Agricultural with two thirds of the population engaged in farming or Agro-based industrial activity mainly. The climate of Bangladesh can be characterized by High temperatures, Heavy rainfall, High humidity, and fairly marked three seasonal variations like Hot Summer, Shrinking Winter and Medium to Heavy Rains during the Rainy season.

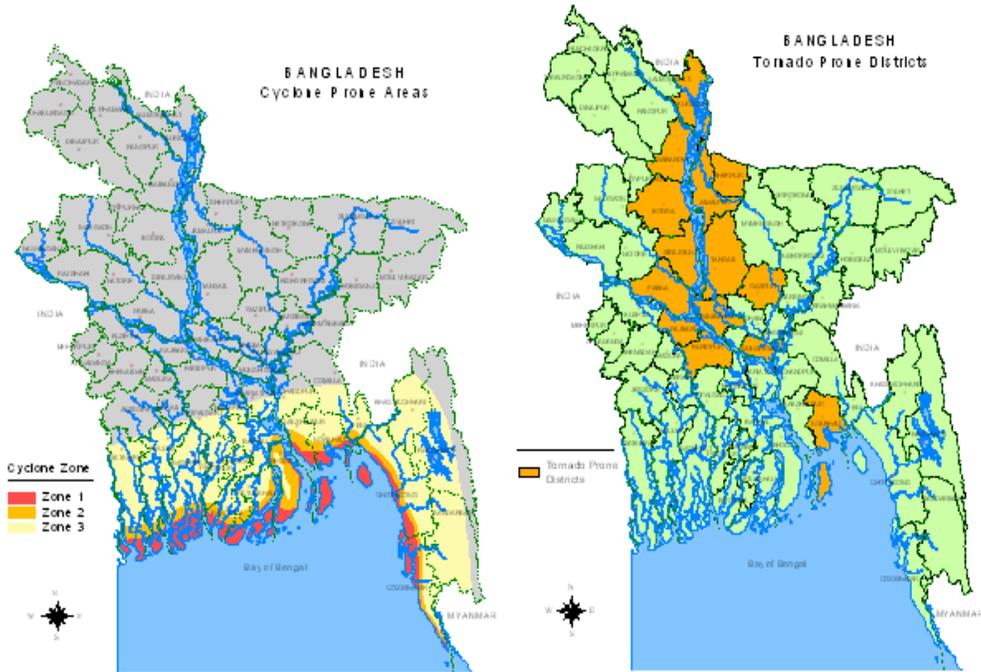
Climatic Impacts

Bangladesh experiences different types of Natural Disasters almost every year because of the Global Warming as well as Climate Change impacts, these are:



Floods / Flash Floods (Almost 80% of the total area of the country is prone to flooding).

Cyclones and Storm Surges (South and South-eastern Parts of the country were hit by Tropical Cyclones during the last few years).



Salinity Intrusion (Almost the whole Coastal Belt along the Bay of Bengal is experiencing Salinity problem).

Extreme Temperature and Drought (North and North-Western regions of the country are suffering because of the Extreme Temperature problem).

Sectoral Impacts

Agriculture and Fisheries

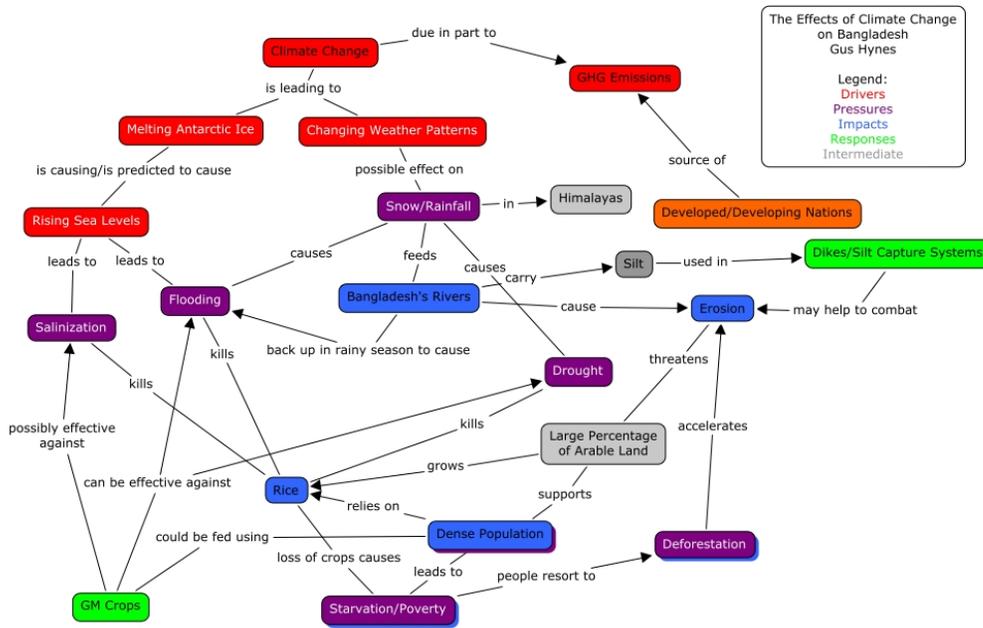
As already mentioned earlier, the economy of Bangladesh is based on Agriculture mainly, with two thirds of the population engaged (directly or indirectly) on Agricultural activities; although the country is trying move towards industrialization slowly during the last one and a half decade almost. So, the overall impact of Climate Change on Agricultural production in Bangladesh would be wide spread and devastating for the country's economy. Beside this, other impacts of Climate Change such as - Extreme Temperature, Drought, and Salinity Intrusion etc. are also responsible for the declining crop yields in Bangladesh. Temperature and Rainfall changes have already affected crop production in many parts of the country and the area of arable land has decreased to a great extent. The Salinity intrusion in the

coastal area is creating a serious implications for the coastal land that were traditionally used for rice production.

The fisheries sector has also experienced an adverse affect because of the impacts of Climate Change. The fisheries sector contributes about 3.5% of the GDP in Bangladesh and people depend on fish products in order to meet up majority of their daily protein requirements. There are around 260 species of fish in the country and almost all the varieties are sensitive to specific salt and freshwater conditions.

Water Resources and Hydrology

In a high-density country like Bangladesh, the effects of Climate Change on the Surface and Ground water resources will be very severe and alarming. Changes to water resources and hydrology will have a significant impact on the country’s economy, where people mostly depend on the Surface water for Irrigation, Fishery, Industrial production, Navigation and similar other activities.



Coastal Areas

Almost one fourth of the total population of the country live in the coastal areas of Bangladesh, where majority of the population are some how affected (directly or indirectly) by Coastal Floods / Tidal Surges, River-bank Erosion, Salinity, Tropical

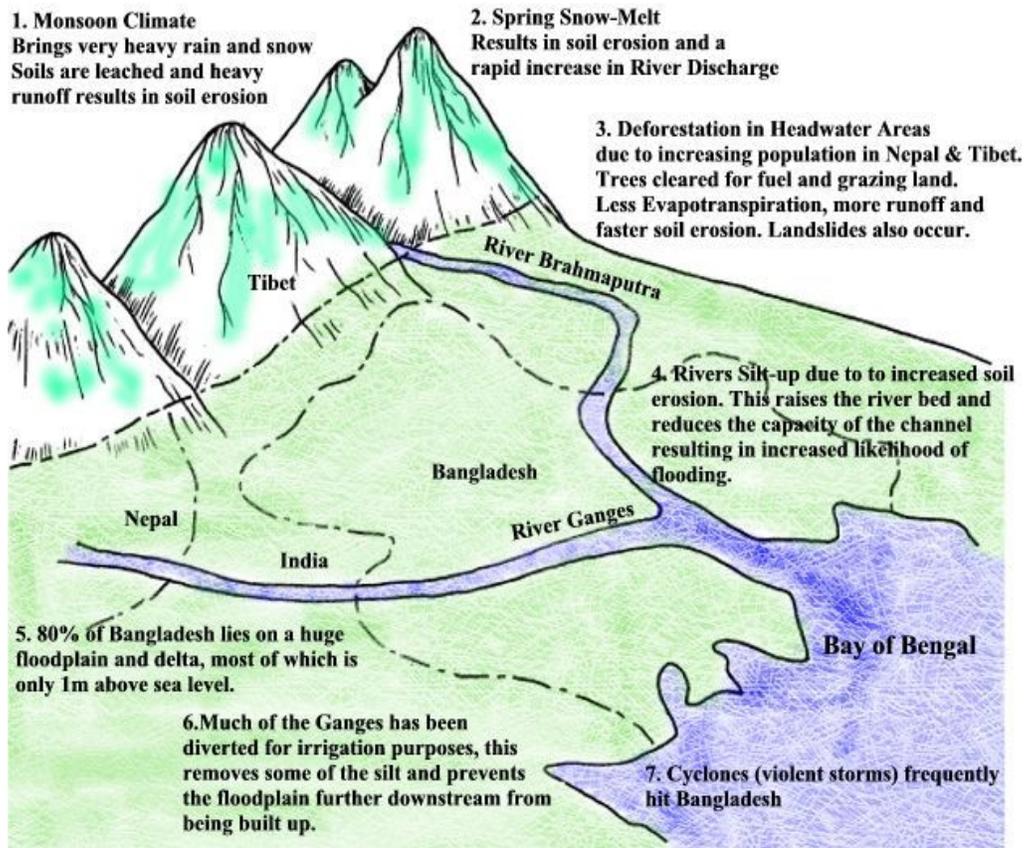
Cyclones etc. With the rise of Sea-level up to one meter only, Bangladesh could lose up to 15% of its land area under the Sea water and around 30 million people living in the coastal areas of Bangladesh could become Refugees because of Climate Change impacts. Agriculture, Industry, Infrastructure (School, Hospitals, Roads, Bridges and Culverts etc.), Livelihoods, Marine Resources, Forestry, Biodiversity, Human Health and other Utility services will suffer severely because of the same. Salinity Intrusion from the Bay of Bengal already penetrates 100 kilometers inside the country during the dry season and the Climate Change in its gradual process is likely to deteriorate the existing scenario to a great extent. Since most of the country is less than 10 meters above Sea level and almost 10% of the population of the country is living below 1 meter elevation - the whole coastal area is Highly Vulnerable to High Tides and Storm Surges. Moreover, the Bay of Bengal is located at the tip of the north Indian Ocean, where severe Cyclonic storms as well as long Tidal waves are frequently generated and hit the coast line with severe impacts because of the Shallow as well as Conical shape of the Bay near Bangladesh.

Bangladesh, which has 156 million people (July 2009 est.) and the area is 144,000 sq km including 10,090 sq km of water, so the total land is 133,910 sq km. Bangladesh is one of the most vulnerable places to climate change. As the sea level slowly rises, this nation that is little more than a series of low-lying delta islands amid some of Asia's mightiest rivers – the Ganges, Jamuna-Brahmaputra and Meghna. Bangladesh has more than 150 rivers cross Bangladesh and almost all rivers flows close to the danger marks during flood time. Experts said that major rivers like Jamuna and Padma could overflow at anytime if heavy rainfall occurs and continues for a week.

Floods have wreaked havoc in Bangladesh throughout history. Major flooding recorded in recent years occurred in: 1987, 1988, and 1998; the most recent one occurred in 2007. According to government statistics, 298 people died and 10,211,780 people were badly affected by it. 56,967 houses were damaged by the floods up to 13 August 2007. In 2004, around 30 million Bangladeshis affected by flood, and more than 40% of the capital city, Dhaka were the underwater.

Weather experts says this year 2009, Bangladesh have a huge probability of over flooding, because of very short winter and global warm.

Some Causes of Flooding in Bangladesh



Forestry / Biodiversity

Bangladesh has a wide diversity of Ecosystems including Mangrove forests at the extreme south of the country. The “Sundarban” a World Heritage, is the largest Mangrove Forest in the world, comprising 577,00 ha of land area along the Bay of Bengal. A total of 425 species have been identified there, the most significant is the famous Royal Bengal Tiger. Therefore, Climate Change impacts will have negative effects on the Ecosystem of the Forest recourses in Bangladesh while the Sundarban is likely to suffer the most.

Urban areas

Cities and Towns situated along the Coastal belt in Bangladesh are at the Front line of Climate Change related Disaster impacts and could experience a severe damage directly because of the Sea level Rise and Storm Surges at any time. Direct impacts may occur through the increased Floods, Drainage congestion and Water logging as well as Infrastructure Damage during extreme events. The important Urban sectors that suffered severely by the previous floods in Bangladesh include Urban Infrastructure, Industry, Trade, Commerce and Utility services etc. As consequence, it hampered usual productivity during and after major floods and hence increased the vulnerability of the urban poor by many folds. It should be mentioned here that, around 40 per cent of the urban population in Bangladesh lives in the Slum and Squatter settlements of the major cities which are highly prone to Disaster risk during Flooding further.

Vulnerable groups

The Urban poor are therefore directly at the risk of Natural Disasters being enhanced by the impacts of Climate Change - especially in the absence / shortage of the necessary Infrastructure as well as Employment opportunity for them in the major cities of the country. In Bangladesh, Women are especially Vulnerable because of the Gender inequalities in the Socio- economic and Political institutions. During the 1991 Cyclone and Storm surge in Bangladesh, the death rate in case of women was almost five times higher than the men. Because men were able to communicate with each other in the public spaces, but the information did not reach most of the women timely.



Women Fighters

Future Projection of Climate Change Impacts in Bangladesh

1. Crop production & food security

Rainfall patterns are changed due to climate change – crops yields are expected to drop significantly. Crop production will decrease 30% in 2100. Production of rice & wheat will reduce 8.8%, and 32% within 2050 respectively.

2. Salinity

There are 13% areas are salinity at Bagerhat, Khulna & Sathkhira, the southwestern coastal districts of Bangladesh at present which will increase 16% in 2050 and 18% in 2100.

3. Coral Bleaching

Corals are vulnerable to thermal stress. If the sea surface temperature increases 1-3° C then corals bleaching will occur frequently.

4. Mangrove Forest

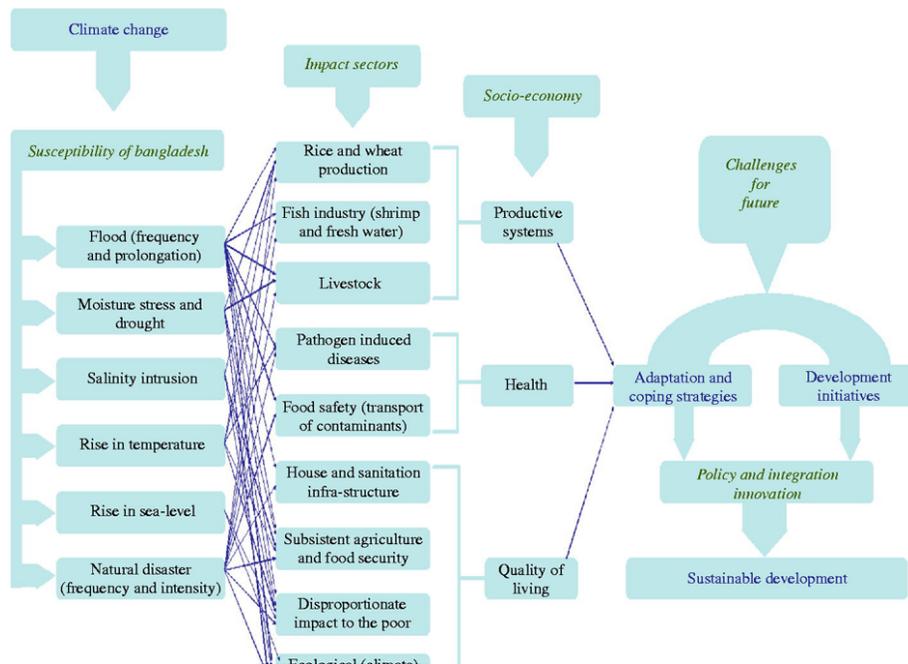
About 75% area of mangrove forest, Sundarban (60007 Sq. km) will submerge if the sea level will increase 45 cm. If the sea level rise 1 m then the islands of Bay of Bengal and whole Sundarban will destroy including its fauna & flora.

5. Fisheries

- Death rate of shrimp's fingerlings will increase if the water temperature is more than 32°C (CEGIS).
- Diseases of fish may increase.
- Carps culture may reduce due to saline water intrusion in the ponds and open water bodies.
- Production of sweet water fish will shrink and extinct if the sea level rise.

6. Climate Refugee or Migration

In Bangladesh every year, rivers engulf enormous agriculture fields and homesteads, makes the peoples homeless. Those who have no way to live in the locality, migrate to urban areas and live in slum with unhygienic conditions.



7. Health

- More floods are contaminating water. Increasing water borne diseases such as cholera, diarrhoea etc.
- More droughts are decreasing food production. Increasing malnutrition.
- More greenhouse gases are increasing air pollution. Rising respiratory diseases.
- Rise of temperature will favor for pest and pathogen that will increase dengue, malaria, diarrhea etc.
- Injuries, disabilities, psychosocial stress and death are becoming severe for more floods, fires, droughts, heat waves & cyclones.
- High salinity in water will affect human health.

8. Sea Level Rise

If the sea level rise –

- Low-lying non-embankment coastal area may be completely inundated.
- It will increase the risk of coastal salinity.
- Scarcity of saline free drinking water will increase highly

- Current agricultural practices will change.

9. Increased Evaporation

Global average water vapor concentration and precipitation are projected to increase during the 21st century.

10. Biodiversity

If the global temperature rises by 2° Centigrade, 30% of all land species will be threatened by an increased risk of extinction.

Let's protect our lovely planet as the safe home for our future generation..Let's not think 'Climate Change' as an individual problem for any country or nation, it's our common issue, we've to face efficiently as 'Citizens of the Global Village' from now on..!

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