

CLIMATE CHANGE IMPACT AND POLICY REGULATIONS WITH BANGLADESH PERSPECTIVE

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ABSTRACT

Climate change is now one of the biggest global problems, as its impacts on humans and the environment are terrible and prolonged. Almost all countries of the world are directly or indirectly affected by the adverse effects of climate change. Bangladesh is not immune to the adversities of climate change. Instead, the country is at a high risk of natural disasters due to its geographical location, low-lying landscape, population density, poverty, illiteracy, alternation in the pattern of seasons, poor infrastructures and so on, according to research. This paper will try to understand climate change impact of climate change from a Bangladesh Perspective. It will highlight national and internal policies, acts, regulations and initiatives to combat climate change.

Keywords: Climate Change, Impact, Bangladesh, Regulations, Initiatives.

1. INTRODUCTION

Climate Change is the most discussed issue in the present world, and it attracts the attention of people from all walks of people, locally and globally. Environmental scientists and activists are mainly concerned about rapid climate change. The climate is weather averaged over a long period, typically 25 to 30 years, in a particular area. Climate change has started endangering biodiversity, food and fresh water supply, impacting human health worldwide, especially in developing countries like Bangladesh due to low adaptive capacity.

Bangladesh, a country in South Asia, is most affected by climate change. This climate change dramatically impacts the country's agriculture, infrastructure, and way of life. This is mainly because of the country's geographical location, making it highly vulnerable to natural disasters. Bangladesh has a flat, low-lying landscape and lacks an institutional setup. Climate change is becoming a very crucial issue for the citizens and government of Bangladesh. More than 80% of the land is prone to flooding. About two-thirds of Bangladesh's population is engaged in agriculture so climate change will affect these farmers badly.

These natural disasters bring floods, cyclones, storms, extreme temperatures and drought into the country. Predominantly, the Northern regions of Bangladesh suffer due to severe temperature

problems.

The World Bank warns Bangladesh of suffering the worst climate change by 2100. The report estimates that the sea level will rise by 3 feet, and this will cause colossal flooding and the country's falling crops. It is also mentioned that this will cause poverty and inflation.

Objective

The broad objective of this article is to provide information on understanding climate change impacts in Bangladesh and to explore national and international initiatives to combat climate change impacts in Bangladesh.

2. METHODOLOGY

Information was collected from documents available mainly in the electronic database and on the websites of specialised agencies, using the terms' Climate Change. Other researchers' works were also undertaken and analysed, including a few leading Bangladesh daily newspapers. Information was also retrieved from the database (websites) of several national and international organisations. I acknowledge all concerned authors and organisations for using their data and information in this article.

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2.1 Understanding Climate Change (CC)

According to the Inter-governmental Panel on Climate Change (IPCC) definition, the climate in a narrow sense is usually defined as the "average weather" or, more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period ranging from months and thousands or millions of years. The parameters that determine the climate in a particular area are rainfall, humidity, wind, sunshine and temperature.

The definition of Climate Change in the Oxford Dictionary is "changes in the earth's weather, including changes in temperature, wind patterns and rainfall, especially the increase in the temperature of the earth's atmosphere that is caused by the increase of particular gases, especially carbon dioxide". Generally, Climate change refers to long-term changes in climate, including average temperature and precipitation. Earth's climate is changing, and this is causing great concern. The changes in the atmosphere have become one of the severe threats that the world faces today.

United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as *a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods.*

Climate change may be due to NATURAL INTERNAL PROCESSES or EXTERNAL FORCINGS or to PERSISTENT ANTHROPOGENIC CHANGES in the atmosphere's composition or land use.

Mostly human activities are responsible for climate change. Human-induced activities are burning fossil fuel, deforestation, leading of luxurious life, industrial activities etc. These activities enhance the emission of greenhouse gases (methane, carbon-di-oxide, sulfur-di-oxide etc.). Greenhouse gases emission to the extent that natural systems can now not assimilate these gases. As a result, the earth becomes warm and increases temperature, the melting rate of snow and ice in polar regions. Serious consequences will be rising sea levels, which will endanger coastal areas and small islands.

2.2 Causes of Climate Change

What causes the earth's climate to change?

- Changes in the atmosphere
- Natural processes
 - Volcanoes
 - Tectonic plate movement
 - Changes in the sun
- Human activities – any activity that releases "greenhouse gases" into the atmosphere.

What are greenhouse gases?

- ✓ Any gases that cause the "greenhouse effect!"
 - Carbon dioxide
 - Water vapour
 - Methane
 - Nitrous oxide

Greenhouse gases are the main human factor that affects the climate. Many gases come from fossil fuels such as oil, coal and natural gas to run vehicles and generate electricity for industries or households. When the atmosphere contains too many gases, the atmosphere and the earth become hotter, like in a greenhouse. The atmosphere holds on to too much heat instead of letting it escape into space, and **this causes global warming!**

2.3 What is GLOBAL WARMING?

Global warming, also called climate change, is the unusually rapid increase in the earth's average surface temperature over the past century, primarily due to the greenhouse gases released as people burn fossil fuels. The global average surface temperature rose 0.6 to 0.9 degrees Celsius (1.1 to 1.6° F) between 1906 and 2005, and the rate of temperature increase has nearly doubled in the last 50 years. Temperatures are sure to go up further.

3.1 Global Effects of Climate Change

The significant effects of climate change are as follows.

- ✓ Sea Level Rise (Melting Ice sheets and sea level rise)
- ✓ Heavy Rainfall across the globe
- ✓ Extreme Draught
- ✓ The decline in Crop Productivity
- ✓ Ecosystem is changing
- ✓ Hurricane/Cyclone
- ✓ Rise in Temperature
- ✓ Water logging/flood
- ✓ Carbon dioxide acidifies seawater

4.1 Understanding Climate Change in Bangladesh

Climate change in Bangladesh is a highly crucial issue. According to National Geographic, Bangladesh ranks first as the nation most vulnerable to the impacts of climate change in the coming decades. Bangladesh is the nation most vulnerable to global climate change, according to the German Watch's Global Climate Risk Index (CRI) of 2016. This is based on analysing the global impacts of significant climate events from 1990.

- Bangladesh is one of the most vulnerable countries because -
 - ✓ geographic location;
 - ✓ flat and low-lying topography;
 - ✓ high population density;
 - ✓ reliance of many livelihoods on climate-sensitive sectors, particularly agriculture and fisheries.
- Bangladesh is the worst sufferer
 - ✓ Negligible gas emissions - worst victim;
 - ✓ Bangladesh emits 0.40% (190 MtCO_{2e}) of GHG per year of the world total;
 - ✓ World emission: 47,599 MtCO_{2e} per year (Million Metric Tones of Carbon Dioxide equivalent) Source: USAID (<https://www.climatelinks.org>)

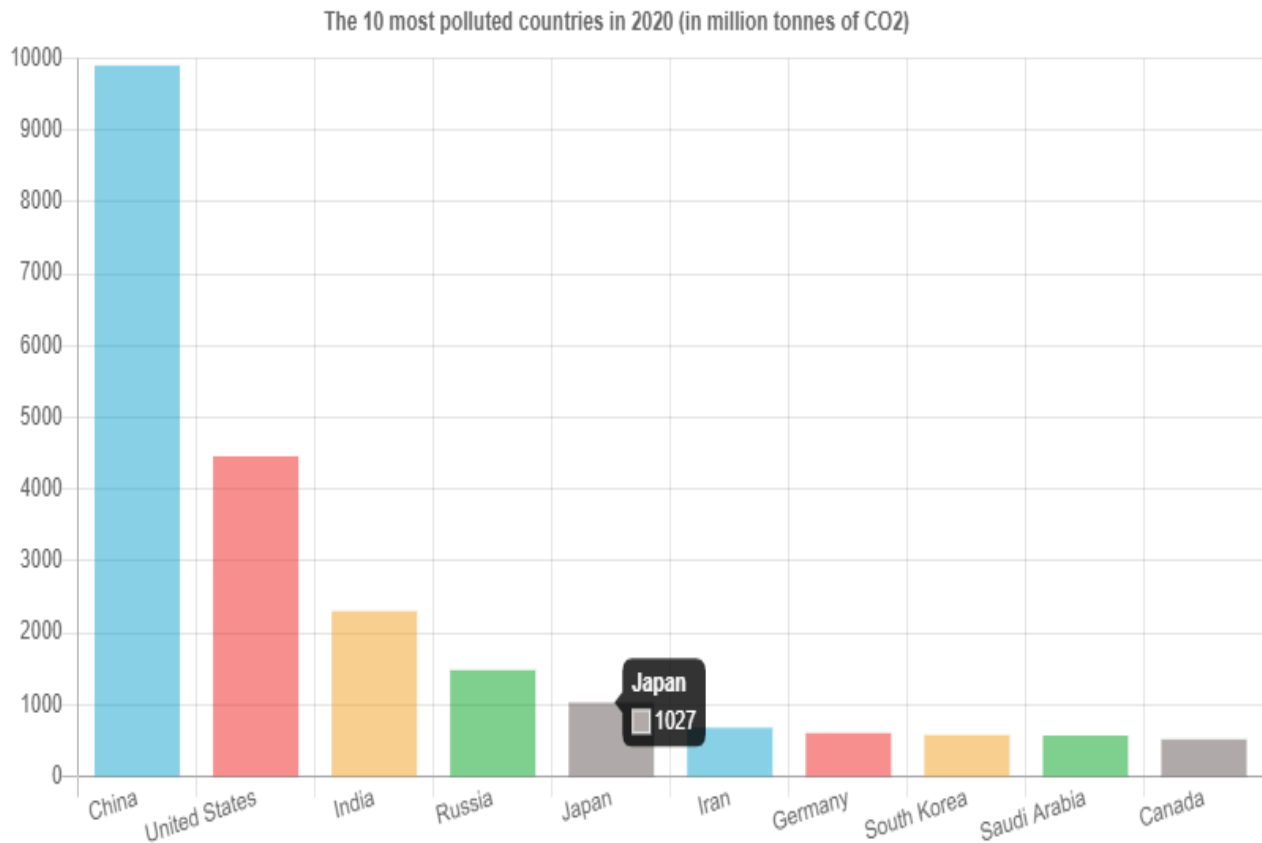
The three countries with the highest carbon dioxide (CO₂) emissions are, unsurprisingly, the three most industrialised countries in the World: **China, the United States, and India.**

Top 10 most polluting countries 2022

In 2020, global carbon emissions reached **32 billion tonnes of CO2 in the atmosphere**, a record likely to be quickly overtaken, as the projected trajectory of future emissions doesn't predict any decrease.

Therefore, the most densely populated and industrialised countries are at the top of the world's most polluted countries. The three countries with the highest CO2 emissions are:

1. China with 9.9 billion tonnes of CO2 emissions, mainly due to the export of consumer goods and its heavy reliance on coal;
2. The United States with 4.4 billion tonnes of CO2 emitted;
3. India with 2.3 billion tonnes of CO2 emitted.



Source: [BP Statistical Review of World Energy 2021/ https://climate.selectra.com/en/carbon-footprint/most-polluting-countries](https://climate.selectra.com/en/carbon-footprint/most-polluting-countries)

4.2 Climate Change and Bangladesh's Vulnerability

Bangladesh is most vulnerable due to climate change with the following events or issues.

- Sea Level Rise
- Flood

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- Cyclone and surge, tornado
 - Earthquake
 - Riverbank erosion
 - Landslide
 - Salinity intrusion
 - Drought
 - Lightning
 - Arsenic contamination
 - Food Security
 - Migration
 - Health
 - Human-induced hazards (*Fire, building collapse, oil and toxic chemical spills, health hazards, road accident, etc.*)

4.3 Climate Change Impact in Bangladesh

Bangladesh is already facing the adverse impacts of global warming and climate change. The following effects are being observed:

- Summers are becoming hotter
- Monsoon irregular
- Untimely rainfall
- Heavy rainfall causes water logging and landslides
- Very little rain in the dry period
- Increased river flow and inundation during monsoon
- Increased frequency, intensity and recurrence of floods.
- Crop damage due to flash floods and monsoon floods
- Crop failure due to drought
- Prolonged cold spell
- Salinity intrusion along the coast causes scarcity of potable water
- Coastal erosion
- Riverbank erosion
- Deaths due to extreme heat and extreme cold
- Increased mortality, morbidity
- Prevalence and outbreak of dengue, malaria, cholera and diarrhoea

Social Impact

- Breakdown of social harmony and cohesion.
- Increasing competition over scarce resources
- The collapse of the traditional leadership structure
- Increasing stress on the political leadership structure of the state

Climate change as a threat multiplier

- Climate change acts as a threat multiplier, causing widespread instability in socio-political settings.
- It heightens the existing social and political tensions and sometimes leads to new ones.
- Climate change opens up the opportunity for non-state actors to intervene and exploit the situation, thereby undermining the security and stability of the state to a great extent.

Conflict Potentials

- The impacts of climate change can aggravate the country's various socio-economic problems and generate tensions and conflicts.
- Responses to disasters affect the redistributive capacity of governments and drain attention and capital away from other essential programs, like health, education, infrastructure, and security.
- This can lead to social tensions that are particularly likely to manifest through anti-governmental movements.
- Climate change results in increased poverty and widespread loss of livelihood, which is likely to have a substantial negative impact on the prospect of peace in the country.
- Loss of livelihood and the resultant deepening of poverty can serve as a recruiting ground for terrorist groups, resulting in a higher conflict risk.
- The consequences of climate change can generate large-scale migration, potentially leading to various problems and conflicts.

4.4 The cost of climate change is high:

- Average tropical cyclones cost Bangladesh about \$1 billion annually.
- By 2050, one-third of agricultural GDP may be lost due to climate variability and extreme events – a devastating figure as the agriculture sector represents around half of employment in the country.
- 13.3 million People may become internal migrants in the next 30 years due to climate impacts on agriculture, water scarcity, and rising sea levels, with higher effects on women.
- In severe flooding, GDP could fall by as much as 9 per cent.
- The costs of environmental degradation and natural disasters are predicted to rise over time, compounded by higher heat, humidity, and health impact.

(Source: <https://www.worldbank.org/en/news/feature/2022/10/31/key-highlights-country-climate-and-development-report-for-bangladesh>)

Climate change hits the poor earliest and the hardest. Because they are at the forefront of climate disasters and various risks. Climate change compounds poverty because many non-poor could be forced to be poor, and moderate poor may be extremely poor. The poor have the least capacity to take shocks and adapt to the adverse impacts of climate change. Thus, the poor are the most vulnerable to Climate Change impacts and disaster risks

4.6 International and National Initiatives to address Climate Change Issues

The Intergovernmental Panel on Climate Change (IPCC)

- IPCC was established in 1988 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO)
- IPCC provides the world with a clear scientific view of the current state of knowledge on climate change and its potential environmental and socio-economic impacts.
- As an intergovernmental body, the IPCC is open to all member countries of the United Nations and WMO.

The United Nations Framework Convention on Climate Change (UNFCCC)

- ✓ UNFCCC was established in 1994 to set an overall framework for global efforts to tackle the challenge posed by climate change.
- ✓ UNFCCC recognises that the climate system is a shared resource whose stability can be affected by industrial and other carbon dioxide emissions and other greenhouse gases.
- ✓ The Convention has 197 Parties (196 States and 1 regional economic integration organisation, EU).
- ✓ The UNFCCC's objective is to "stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".
- ✓ Under the treaty, several protocols and agreements were adopted.

Conference of the Parties (COP)

- Since the UNFCCC entered into force in 1995, the **Conference of the Parties (COP)** to the UNFCCC have been meeting annually to assess progress in dealing with climate change.
- The COP adopts decisions and resolutions published in reports of the COP. Successive decisions taken by the COP make up a detailed set of rules for practical and effective implementation of the Convention.
- The first UN Climate Change Conference was held in 1995 in Berlin. The 27th COP held in Sharm –Al Sheikh in Egypt in 2022.

UNITED NATIONS Sustainable Development Goal (SDG) 13

Take urgent action to combat climate change and its impacts

SDG 13 Targets

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- Integrate climate change measures into national policies, strategies and planning
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
- Implement the commitment undertaken by developed-country parties to the UNFCCC to a goal of mobilising jointly \$100 billion annually by 2020 from all sources to address the

needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalise the Green Climate Fund through its capitalisation as soon as possible

- Promote mechanisms for raising capacity for effective climate change-related planning and management in the least developed countries and Small Island developing States, including focusing on women, youth and local and marginalised communities.
- Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

Source: <http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-13-climate-action/targets/>

Bangladesh Government Responses to Climate Change

The following national policy documents developed by the Government of Bangladesh (GoB) have addressed the issues of climate change, including adaptation:

- **The Constitution:** through its 15th amendment, considered the issue of climate change, albeit implicitly. The constitutional amendment included the article in 'Part II: Fundamental Principles of State Policy and was passed accordingly: "18A. Protection and improvement of environment and biodiversity: The State shall endeavour to protect and improve the environment and to safeguard the natural resources, biodiversity, wetlands, forests and wildlife for the present and future citizens."
- **Vision 2021 and 2041:** Vision 2021 and 2041, which provides political directions to all national policy documents, states, "All measures will be taken to protect Bangladesh, including planned migration abroad, from the adverse effects of climate change and global warming."
- **Eight Five-Year Plan (SFYP):** Bangladesh's eight Five-Year Plan (FY2021-FY2025) provides strategic directions and policy framework as well as sectoral strategies, programmes and policies taking consideration of CC adaptation for accelerating growth and reducing poverty in the country.
- **National Adaptation Programme of Action (NAPA), 2005**
- **Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009**
- BCCSAP – 2009 is one of the first landmark documents among developing countries.
- **Bangladesh Delta Plan 2100:** Bangladesh Government has prepared a Delta Plan 2100 to face the adverse effects of climate change in Bangladesh.

Enactment of Climate Change Trust Fund Act, 2010

- Establishment of Climate Change Trust Fund (CCTF) and Climate Change Trust Fund Board.

- ✓ *Establishment of a climate change unit under the ministry of environment and forest and climate change focal points in different ministries.*
- ✓

Bangladesh Climate Change Resilience Fund (BCCRF)

- ✓ BCCRF was signed in May 2010, Managed by GoB, Trustee World Bank (WB)
- ✓ Objective; Implementation of BCCSAP
- ✓ Implementation by GO line agencies
- ✓ PKSF is the lead implementation agency and produces separate operating procedures for grants for the NGOs
- ✓ Support the development of grassroots communities to increase their resilience
- ✓ Bangladesh is active in addressing climate change issues.
- ✓ The climate change cell (CCC) was established in 2004 under the Department of Environment.
- ✓ CCC has been working for climate change mainstreaming, capacity building, knowledge management, modelling, awareness building and adaptation research.
- ✓ Bangladesh regularly submits national communication to the UNFCCC.

5. CONCLUSION

The impact of climate change is affecting the marginalized populations of various countries the most. We have also observed the climate crisis's impact in the recent past. Where our coastal areas will become uninhabitable should be our concern so we can leave a livable Bangladesh for our future children. Climate change is a global problem, and international action is needed to solve this. Governments of various countries must ensure the ban on fossil fuels by providing legal protection. The human rights of climate refugees caused by climate change must be guaranteed through international law. International obligations to provide legal recognition, protection and assistance to climate refugees should be negotiated. All countries should be forced to implement the 2015 Paris Agreement, and every country must implement its commitment to reduce global temperature to 1.5 degrees Celsius. Above all, the government of every country should be proactive in creating public awareness about climate.

REFERENCE

- Ali, Anwar "Climate Change Impacts and Adaptation Assessment in Bangladesh", *Climate Research*, Vol. 12, 1999, pp. 109-116.
- Linkov, Igor and Bridges, Todd S. "Climate: Global Change and Local Adaptation", Springer, The Netherlands, 2011.
- Parry, M.L. et al. "Effects of Climate Change on Global Food Production under SRES Emissions and Socio-economic Scenarios", *Global Environmental Change*, 14 (2004), pp. 53-67.
- Rana, SM M. et al. "Changes in Cyclone Pattern with Climate Change Perspective in the Coastal Regions of Bangladesh", *Environmental Research, Engineering and Management*, 2011, No. 2 (56), pp. 20-27.
- Sumi, Akimasa et al. "Adaptation and Mitigation Strategies for Climate Change", Springer, New York, 2010.

IPCC (2014) Summary for Policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

Anik, Sawon Istiak and Khan, Mohammed Abu Sayed Arfin "Climate Change Adaptation through Local Knowledge in the North Eastern region of Bangladesh", *Mitig Adapt Strateg Glob Change*, (2012)17, pp. 879-896.

Bhuiyan, Md. Javed Abdul Naser and Dutta, Dushmanta "Assessing Impacts of Sea Level Rise on River Salinity in the Gorai River Network, Bangladesh, *Estuarine, Coastal and Shelf Science*, 96 (2012), pp. 219-227.

Brouwer, Roy et al. "Socio-economic Vulnerability and Adaptation to Environmental Risk: A Case Study of Climate Change and Flooding in Bangladesh", *Risk Analysis*, Vol. 27, No. 2, 2007, pp. 313-326.

Hannigan, John A. "Environmental Sociology-A Social Constructionist Perspective", ROUTLEDGE, New York, 1995.

Islam, Md. Monirul et al. "Limits and Barriers to Adaptation to Climate Variability Change in Bangladeshi Coastal Fishing Communities", *Marine Policy*, 43 (2014), pp. 208-216.

Karim, Mohammed Fazlul and Mimura, Nobuo "Impacts of Climate Change and Sea-level Rise on Cyclonic Storm Surge Floods in Bangladesh", *Global Environmental Change*, 18 (2008), pp. 490-500.