

Impact of Global Warming: Perspective of Bangladesh

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Abstract:

Global warming is a buzzword in this current age. It is nothing but a modern threat for our existence. It is a phenomenon that is occurring since thousands of years. Third world countries like Bangladesh is one of the worst sufferers of this global warming. In this paper it will be discussed various impacts of global warming, some reasons for which the global warming is taking place, some steps that are already taken to resolve the issue and finally some recommendations to minimize the impact of global warming.

Keywords —global warming, climate change, Bangladesh, temperature rising, CO₂, fossils fuel.

I. INTRODUCTION

Bangladesh is a country of third world which is the deadly sufferer of global warming. Global warming refers to the gradual increment of earth’s average temperature that will result in permanent changes in our climate. There are many phenomena that makes these changes such as greenhouse gas, carbon dioxide (CO₂) emission, industrialization, deforestation etc. Due to global warming sea level is raising, glaciers are melting and floods are occurring and at the end average temperature of the earth is increasing. The aim of the report is to analyse the situation, find out the causes responsible for the problem, discuss about the projects and policies have been taken so far to mitigate the problem and some tentative solutions to overcome this problem.

II. SITUATION ANALYSIS

Despite the fact that Bangladesh contributes most minimal (just 0.3%) to the measure of outflow driving a dangerous atmospheric deviation, it is one of the most exceedingly terrible casualty of a

dangerous atmospheric deviation impacts. The country beat the Global Climate Risk Index, a

positioning of 170 countries most defenceless against environmental change [9].The global warming is one of the most elementary factor of climate change that has a devastating effect in many aspects of our life. These aspects are discussed below.

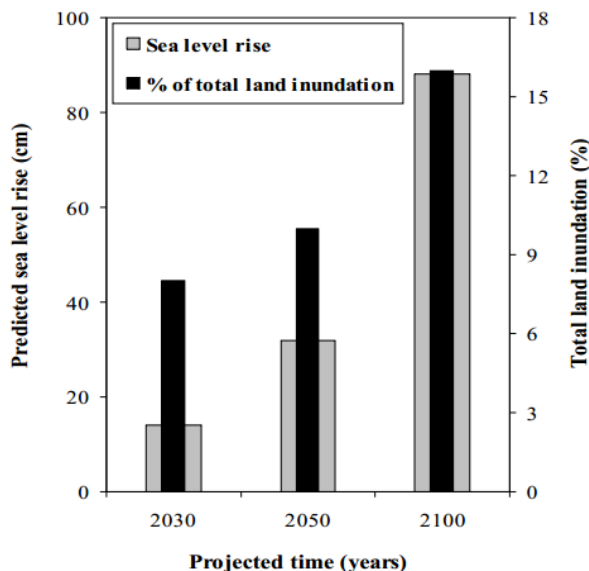
A. Drought

According to Banglapedia,” Drought a prolonged, continuous period of dry weather along with abnormal insufficient rainfall.” It occurs when there is less rainfall and shortage of water. Every year Bangladesh experiences a dry period for seven months, from November to May, when rainfall is normally low. At time for the sun's strong heat the surface water becomes vaporized and also for the global warming the underground water level is lowering day by day. As a result, due to the scarcity of water drought is taking place in Bangladesh especially the north western regions of the country. During this period about 2.7 million hectares of land in Bangladesh are vulnerable to annual drought

[7]. A strong drought can cause greater than 40% damage to broadcast *aus*. During the kharif season, it causes significant destruction to the *t.aman* crop in approximately 2.32 million hector every year. In the *therabi* season, about 1.2 million hector of agricultural land face droughts of different magnitudes [10].

B. Sea Level Raising

Sea level raising refers that the rise of the water level of the sea. Sea-level rise is one of the most certain impacts of global warming [8]. Bangladesh has been ranked as the 3rd most vulnerable in the world to sea level rise in terms of the number of



people and in the top ten in terms of percentage of population living in the low elevation coastal zone [7]. A figure regarding this sea level raising effect due to global warming is given below-

Figure -1: Land area inundation due to projected Sea-level rise in Bangladesh

Data Source: WARPO, 2006

From an estimation (WARPO, 2006), it is predicted that about 14, 32 and 88 cm sea-level rise will occur at 2030, 2050 and 2100, respectively which may inundate about 8, 10 and 16% of total land mass of Bangladesh [6]. The rise in sea level is due to the expansion of ocean water as it warms, and to the addition of water from melting glaciers and ice sheets, both of which are consequences of global

warming [8]. According to the IPCC Fifth Assessment Report published recently, the sea-level of the Bay of Bengal is rising at a rate of 1.5 mm per year. Bangladesh with the Bay of Bengal on the South will be directly affected by the sea-level rise because of its low elevation. If the sea-level rises by 45 cm, a permanent loss of up to 15600 square kilometres of land is expected. If one-meter rise happens, around 14000-30,000 sq. km land are expected to be flooded, which means more than 20% of Bangladesh will be under water [11].

C. Flood

The most common water-related natural hazard in a deltaic floodplain such as Bangladesh is flood. Flooding usually begins in flashy rivers in the hilly areas during the pre-monsoon months of April and May. These flash floods take place suddenly and last for a few hours to a couple of days [2]. Flooding in Bangladesh is the result of a complex series of factors [2]. One of them is global warming. Because of global warming the temperature of the earth is increasing. As a result, the glaciers are melting quickly than previous. Such as the ice of Himalaya is melting rapidly and these melted ices are passing through the rivers of Bangladesh to the Bay of Bengal. In time of passing through the river, this vast amount of water sometimes causes flood to the nearby regions.

D. People's Diseases

The combination of higher temperatures and potential increases in summer precipitation could create the conditions for greater intensity or spread of many infectious diseases [1]. Climate change is expected to have wide-ranging consequences for human health. For the health of communities depends on sufficient food, safe drinking water, comfortable homes, good social conditions, and a suitable environmental and social setting for controlling infectious diseases [7]. One of the most responsible factors of global warming is CFC gases. These gases are so light by weight and easily goes upwards of the atmosphere and do chemical reaction with the Ozone layer of atmosphere that protects us from harmful cosmic rays and ultra-

violate rays. As a result, the ozone layer becomes damage and harmful cosmic rays, ultra-violate rays are entering in our world and results various kinds of diseases to the people.

E. Melting Glacier

Increasing earth's temperature results in the melt of the glacier rather than they pile up new ice. As a result, their total size is reducing gradually. Widespread increases in thaw depth are projected over most permafrost (frozen ground) regions [7]. According to NASA, the polar ice cap is now melting at the alarming rate of 9% per decade. Arctic ice thickness has decreased 40 % since the 1960s. Recently, European Research Agency has uncovered their exploration on ice melting in the Antarctica. In those disclosures, they have discovered that the present rate of melting of the ice in the Western Antarctica is two times more prominent than what was 4 years previously. The exploration finds that the Western Antarctica is losing 159 billion tons of ice for each year which may expand the ocean level by 0.5 mm for every year [9].

III. SITUATION MITIGATION MEASURES

Bangladesh is among the most vulnerable countries to flooding and climate change impacts. Bangladesh is fighting threats to communities hit hardest by weather extremes through helping people living in them adapt and survive [13]. In order to cope up with the tentative impact of global warming some policies and projects have been taken to minimize the problem. They are mentioned below:

USAID has taken some projects in Bangladesh in 2017 regarding the global warming and they are:

1. Provided training to over 75,000 people to be less dependent on natural resources through sustainable agriculture, aquaculture, and poultry rearing reducing pressure on sensitive habitats.

2. Reduced carbon dioxide equivalent greenhouse gas emissions by more than 1,200,000 metric tons.
3. Improved management of 945,190 hectares of forests and wetlands with the improved capacity and active participation of 30 community management organizations and 74 community-based organizations [12].

World Bank-supported initiatives have resulted in a range of outcomes, such as:

1. Build 320 solar irrigation pumps benefiting 8,000 farmers.
2. Support 17,500-hectare block plantations and 2,000-kilometer strip plantations from flooding and saline intrusion.
3. Provide basic adaptive services for 40,000 families.
4. Offer trainings on alternative livelihoods for 6,000 poor households in 200 communities.
5. Construct 224 new cyclone shelters and repair 387 kilometres of embankment.
6. Publish research analysing impact of climate change in urban areas.
7. Provide 3.95 million remote households and rural shops with solar home systems, which increased access to electricity Install seven mini-grids to provide continuous electricity to 2,000 rural businesses and shops
8. Distribute clean, energy-efficient cook stoves to 750,000 rural women
9. Improve the availability of energy through electricity transfers in the Haripur, Siddhirganj and Narayanganj regions [14].

At a country level Bangladesh has already adopted various policies to address climate change and invested heavily in adaptation measures. It has invested in flood management schemes, coastal embankments, cyclone and flood shelters. Recently, it has prepared a Climate Change Strategy and Action Plan, which articulates clearly how

Bangladesh intends to scale up its effort to become resilient to climate change. The strategy entails six pillars. Namely –

Pillar 1: Food security, social protection and health. Activities under this pillar will focus on the needs of this group for food security, safe housing, livelihood, employment and access to basic services, including health [15].

Pillar 2: Comprehensive disaster management. Activities under this pillar will focus on further strengthening the existing comprehensive disaster management systems to deal with the increasingly frequent and severe natural catastrophes that are likely to occur as a result of climate change [15].

Pillar 3: Building resilient infrastructure. Activities under this pillar will focus on climate proofing existing infrastructure and building urgently needed infrastructure in order to deal with the likely short- and medium-term impacts of climate change in climate-risk areas including the coastal zone [15].

Pillar 4: Increasing the knowledge base. Activities under this pillar will focus on undertaking research to estimate the likely scale and timing of climate change impacts on different sectors of the economy in order to better plan future investment strategies; and on ensuring that Bangladesh is effectively linked to regional and national knowledge networks.

Pillar 5: Mitigation and low carbon development. Even though Bangladesh's contribution to the generation of greenhouse gases is very low, Bangladesh, will under this pillar, ensure a low carbon development and play a part in reducing carbon emissions [15].

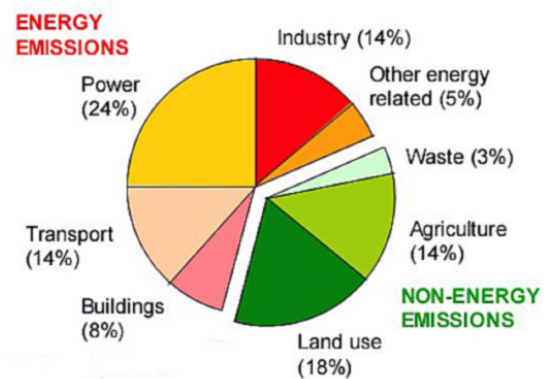
Pillar 6: Capacity building and institutional strengthening. To meet the challenge of climate change, the capacity of government ministries and agencies, civil society and the private sector will be strengthened [15].

IV. GAP ANALYSIS

If we consider about Bangladesh’s perspective regarding the global warming then it appears that the country is not responsible for the problem at all

but the worst sufferer of this problem. The problem can be so drastic that within couples of years when some part of country will be inundated permanently. There are some gaps, by minimizing those we can reduce the tentative damage of the most sufferer countries as like as Bangladesh. These gaps are discussed separately below:

A. Green House Gas



The Greenhouse Effect is a natural process through which various gasses and water vapor in the atmosphere affects the earth’s climate. It is so named because it acts like a glass greenhouse for plants by preventing the incoming heat from the sun from leaving causing warming of the earth just as the inside of a greenhouse warms [11]. The following figure is regarding the greenhouse gas emission in 2000.

Figure- 2: Sector share of GHG emissions in 2000 Data Source: Stern, 2007

Here energy emission refers the CO₂ (some non CO₂) in industry and other energy sources. Whereas non-energy emission refer the CO₂ emission in land use and agriculture and waste. In the figure it is shown that we emit greenhouse gas mainly for power that is 24%. Besides, transport, agriculture, industry, land is are also responsible for greenhouse gas which is in between 18% to 14%. They tap heat in atmosphere that makes our earth warmer.

B. CO₂ Emission

Carbon dioxide (CO₂) is a major gas that comes out from human activities. It is mainly created from industries, burning fossils fuel, motor vehicles, brick field. USA and EU are mainly responsible for CO₂ emission. Their emission rate is also very high. Carbon dioxide, a greenhouse gas preserves all types of heat that is emitted in the earth even the surface heat. As a result the earth becomes warmer gradually for the atmospheric concentrations of these gases [16].

C. Deforestation

Deforestation means the process of cutting or burning down trees in a massive scale in any region for human purposes. It often results in damage to the quality of the land. Forests play an important role in the climate system. They are a major reservoir of carbon, containing some 80% of all the carbon stored in land vegetation, and about 40% of the carbon residing in soils [7].

D. Industrialization

Industrialization is the process in which a society or country (or world) transforms itself from a primarily agricultural society into one based on the manufacturing of goods and services [5]. These industries often discharge the gases those are responsible for global warming such as CO₂, NO_x, SO_x etc. Thus, the global warming happens.

E. Burn of fossils fuel

Fossil fuels are natural resources such as coal, oil and natural gas. Burn of fossil fuel powers our vehicles and industries. Burning of it also produces electricity that we use every day. Burning fossil fuel creates CO₂, CO, CH₄, SO_x and NO_x. They are trapped in ozone layer and increase the Earth's temperature. Thus, global warming occurs.

V. RECOMMENDATION

In order to keep ourselves away from such drastic effect government need to take some precautionary measures. It is the right time for us to stand in front of it. There are some recommended solutions to prevent the threat such as –

- ❖ All government departments must acknowledge the importance of climate change and analyse the impacts for their sector. Disaster planning and risk reduction strategies must account for the new challenges of climate induced disasters [17].
- ❖ Government should explore methods for construction of embankments to protect communities from saline water intrusion and tidal surge. Communities should be involved in routine maintenance of embankments [17].
- ❖ Government should provide support to farmers in their use of alternative technologies in the agriculture sector. Strategies such as floating gardens, fish cultivation cages, adjustments to the cropping calendar, flood tolerant paddy cultivation, and alternative crops and livestock that are resilient to climate change, all should be promoted [17].
- ❖ Specific health and sanitation measures will need to complement alternative livelihood strategies if a widespread deterioration in health is to be avoided [17].
- ❖ Government should take steps to stop the deforestation and take projects on planting more trees especially in the areas where droughts are taking place regularly [17].
- ❖ Government should take necessary steps to make bio fuel available to everyone and social awareness should be raised in this regard. Peoples should be urged to use the bio fuel in lieu of burning the fossil fuels in future [17].
- ❖ Policy makers must start planning now to protect the infrastructure and settlements of the rural poor in the region of the Ganges-Brahmaputra-Meghna mega delta and identify whether mass migration can be avoided [17].

By adopting those measures, we can pave the way of nice, happy & peaceful environment as well as

our life. So, these measures should be implemented as soon as possible.

VI. CONCLUSION

This paper has discussed about the situation, gaps and some recommendation for Bangladesh to cope up with the global warming [9]. Climate change will affect Bangladesh extremely [18]. Because of its being financially poor, it has extreme limitation in funding [18]. Besides for less skilled local force, Bangladesh could not handle the effect of global warming efficiently and effectively [18]. Though the Government of Bangladesh has taken different measure to face the challenges of the global warming, for being a developing country, it cannot manage the required funds for keeping it safe from global warming [9]. The developed countries of the world should come forward to help the poor countries in this respect. Moreover, NGOs, the Government of Bangladesh and the civil society should act together to raise awareness among the mass people about global warming, its reason, mitigation and adaptation techniques [9]. The recommended steps should be taken to reduce the possible damage of Bangladesh due to global warming.

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