

MAJOR IMPACTS OF GLOBAL WARMING IN BANGLADESH: LEGAL IMPLICATION WITH PRESENT SCENARIO

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Article information

Received: 09/2024

Accepted: 12/2024

Available online: 12/2024

ABSTRACT

The globe faces significant issues due to climate change caused by human activity, including global warming. Bangladesh's physical and socioeconomic characteristics make it highly vulnerable to the impacts of global warming. The legal framework in Bangladesh will significantly influence the potential responses to climate change. The Bangladeshi legal system is well-versed in addressing climate change-related issues such as flooding, inundation, and population relocation. However, global warming will probably worsen these issues in terms of scope. Therefore, it is essential to look for ways to improve legal institutions so that Bangladesh can help address both present and possible future issues. Bangladesh is located at the confluence of the Ganges, Brahmaputra, and Meghna (GBM) rivers, along with the hydro-meteorological and topographical features of the basins, making it particularly vulnerable to flooding, according to an Assessment on Community Flood Resilience in Jamuna Floodplain, an extreme flood event can liquidate up to 70% of the country, with an average annual flood covering 20.5% of the land. Bangladesh's economy suffers greatly from floods because of its low per capita income. The hydrology and water supplies of the GBM basins are expected to be significantly impacted by global warming brought by the amplified greenhouse effect, which potentially leads to more severe floods in Bangladesh. So, this research shall explore the legal ramifications of climate change in Bangladesh, highlighting the necessity of all-encompassing legal structures to tackle the complex issues brought about by temperature increases, sea level rise, and extreme weather phenomena.

Keywords: Global warming, socio-economic, inundation, confluence, hydro-meteorological, topographical.

1. INTRODUCTION

Global warming poses an extraordinary threat to the global environment, with its effects becoming increasingly evident. The phrase "global warming" also refers to rises in the mean temperature of the air and sea at the Earth's surface, notwithstanding the ocean's predominant role in energy storage. The temperature of the earth has increased significantly over the past few decades. An article from the IOMC World Medical Journal discussed the importance of global warming and discovered that the worldwide air and sea surface temperature has risen by around 0.8 °C (1.4 °F) since the turn of the 20th century with roughly two-thirds of this increase taking place since 1980. As a developing country, Bangladesh plays a crucial role in addressing this crisis, necessitating a thorough examination of the legal frameworks in place to combat global warming. Bangladesh faces limitations in climate-specific legislation and legal frameworks, with weak enforcement and limited adaptation strategies, despite international agreements like the Paris Agreement. So this research aims to provide a comprehensive analysis of Bangladesh's legal implications, with a focus on understanding the existing legal structures, evaluating regulatory effectiveness, identifying challenges, and proposing innovative

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legal solutions by analyzing the historical temperature data, ocean data as 90% of the energy accumulated between 1971 to 2013 due to global warming has been stored in the ocean according to the IPCC fifth Assessment Report (AR5), qualitative analysis in reviewing case studies and summarizing existing legal frameworks, identifying the strengths and weaknesses of Bangladesh's climate policy.

2. CONCEPTUAL FRAMEWORKS

2.1. Definition of Global Warming

The earth's temperature is gradually rising due to the hothouse effect, which is substantially brought on by the advanced attention of carbon dioxide, CFC, and other contaminants. And this miracle is known as global warming. Rising ocean situations, altered rainfall patterns, and ecological dislocations are all goods of global warming. To reduce the goods of global warming on the terrain and mortal society, mitigation strategies include cutting back on hothouse gas emigrations, switching to sustainable energy sources, and conforming to the changing climate. From the United Nations, we know that climate change refers to long-term shifts in temperatures and rainfall patterns. These shifts may be natural, but since the 1800s, mortal conditioning has been the main motorist of climate change, primarily due to the burning of fossil energies like coal, oil painting, and gas, which produces heat-enmeshing feasts. Article 1 of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) states that parties should:

- Protect the climate system for the benefit of current and future generations
- Do so in a way that's equitable and in accordance with their respective capabilities and common but differentiated responsibilities
- Acknowledge that human activities contribute to climate change
- Recognize climate change as a global concern.

And this kind of heat-enmeshing feast is the main reason for global warming. So, the term "global warming" refers to the dragging, long-term rise in the earth's atmosphere's average temperature caused by the hothouse effect, which occurs when heat from solar radiation is trapped in feasts from colorful mortal conditioning, similar to burning fossil energies or we can also say that the clear and nonstop rising of the Earth's climate system's average temperature is known as global warming.

The objective of the Study: The principle idea of the study is to identify and show the styles in the proposition and the practice of the legal provision of global warming in Bangladesh, keeping in view with public and transnational instruments. Other objects of the study are as follows:

- a. To assess the current legal fabric of global warming in Bangladesh, examining public and indigenous legislation, transnational agreements, and compliance mechanisms.
- b. To dissect the effectiveness of nonsupervisory measures in mollifying the impacts of climate change, considering both the quantitative issues and qualitative assessments of policy success.
- c. To identify legal challenges and gaps hindering comprehensive climate change mitigation strategies, including implicit conflicts of interest, enforcement issues, and nonsupervisory inscrutability.
- d. To dissect colorful emigration reduction strategies, technologies, and practices to inform the development of legal fabrics to achieve specific reduction targets.

A UN resolution in September 2015 adopted a plan of action for people, planet and prosperity in a new global development framework anchored in 17 Sustainable Development Goals (UN, 2015). [1]

2.2. Main Causes of Global Warming in Bangladesh

Global warming is a worldwide issue in the present day. The term "global warming" describes the gradational rise in the earth's average face temperature, which is substantially caused by mortal exertion amplifying the hothouse effect. The scientists also say that global warming is the reason for the enhanced hothouse effect, primarily caused by mortal conditioning. The burning of coal, oil painting, and natural gas for energy is a major source of carbon dioxide emigration. Deforestation also contributes, as the clearing of timbers for husbandry, logging, and civic development reduces the number of trees that can absorb and store carbon dioxide. Agrarian conditioning, beast digestion, rice civilization, and the birth and use of fossil energies release methane (CH₄) into the atmosphere. Agricultural and artificial conditioning also contributed to nitrous oxide (N₂O) emigration. Changes in Earth's climate system are reflected in several traits and expressions linked to

global warming. The following are salient features
 Rising Temperature Global temperatures are generally rising, which is the most conspicuous aspect.

Multitudinous time frames: ranging from monthly oscillations to long-term patterns, show this warming trend. **Melting Ice and Glaciers** Rising temperatures contribute to the melting of ice caps, glaciers, and polar ice wastes. This leads to rising ocean situations and affects ecosystems dependent on ice cover.

Sea Level Rise: The melting of ice and the thermal expansion of seawater due to warming contribute to rising ocean situations. This poses trouble to low-lying littoral areas and islets.

Ocean Warming: The Earth's abysses absorb much of the redundant heat caused by global warming. This results in ocean warming, affecting marine ecosystems, dismembering fish territories, and impacting rainfall patterns. **Extreme Weather Events** Global warming is associated with an increase in the frequency and intensity of extreme rainfall events similar to hurricanes, famines, heat swells, cataracts, and backfires.

Changes in rush Patterns: Changes in temperature and atmospheric rotation patterns contribute to shifts in rush, leading to altered downfall patterns and increased threat of famines or heavy downfall in different regions.

Variations in the Growth Seasons: Plant and agrarian growth seasons are impacted by global warming, which affects husbandry and food security. Crop product and distribution can be impacted by variations in temperature and rush patterns. **Ecosystem Disturbances:** Ecosystems and biodiversity are impacted by global warming, which results in variations in the distribution of species, patterns of migration, and the timing of natural processes (phenology). Because of the changing terrain, certain species may go defunct. It's essential to comprehend these traits in order to estimate the consequences of global warming and produce mitigation plans. Global sweat to alleviate global warming must include addressing the core causes by lowering hothouse gas emigrations and conforming to the changing climate.

2.3. Global Warming and Bangladesh

The Earth's climate system is constantly getting warmer, which is referred to as global warming. It is going to rank among the most serious humanitarian and environmental disasters for the foreseeable future. Global warming is no longer merely a theoretical concern. It's a problem that is observable everywhere. Over the past century, there has been a major increase in greenhouse gases such as carbon dioxide, methane, nitrous oxides, and chlorofluorocarbon (CFC) due to fast industrialization. According to a synthesis Report based on the assessment of climate change 2007 by (IPCC) [2] in 2007 CO₂ emissions were the main contributor to global warming, with a certainty level of greater than 90%. After the Synthesis Report (AR4), the fifth Assessment Report 5 (AR5) discusses recent research on climate change associated with 1.5°C global warming, highlighting the use of climate model simulations and attribution of observed climate changes. Since the AR5 did not prioritize the 1.5°C scenario, the IPCC Special Report on Global Warming of 1.5°C (SR15), released in 2018, provided a more comprehensive approach to examining the differences between 1.5°C and 2°C warming. SR15 drew from more recent literature and dedicated climate model simulations designed specifically for 1.5°C assessments. The IPCC found that carbon dioxide emissions from fossil fuel burning, cement manufacturing, and deforestation contribute to global warming, with Bangladesh being the worst affected country, contributing only 0.3%. The country tops the Global Climate Threat Indicator, a ranking of 170 countries most vulnerable to climate change, published in 2009 and collected by German Watch, a transnational non-governmental association that works on terrain and development issues [3]. Global warming is no longer merely a theoretical concern. It's a problem that is observable everywhere. Greenhouse gases such as carbon dioxide, methane, nitrous oxides, and chlorofluorocarbon (CFC) have increased dramatically over the past century due to rapid industrialization. In 2014 the unbearable temperature increased, which prompted many Dhaka residents to install air conditioners in their apartments. The excessive amount of electricity needed for air conditioners causes extra CO₂ emissions in the atmosphere during normal electricity generation, further warming the planet. Thus, the city is warming up cyclically. And then in 2023 'the maximum temperature in the country was recorded at 42.8 degrees Celsius

in Chuadanga'[4]. According to scientific predictions, the world's average temperature will climb by 20C during the coming decades. The capital city of Dhaka has seen a 20C increase in temperature during the past 100 years, while the average temperature of Bangladesh increased by 0.60C, according to the Bangladesh Meteorological Department (BMD). The majority of Dhaka (65%) has temperatures that are 3–50C higher than the city's average, according to a study conducted by the Bangladesh University of Engineering and Technology (BUET). Over around 24 years, several of these locations have experienced a 6 0C temperature increase. The main contributors to Dhaka's extraordinary temperature rise include the city's growing car and public transportation populations, unplanned urbanization, and high population density. Due to the deteriorating quality of the air in Dhaka, the capital of Bangladesh, which ranks first in the world for worst air quality? Furthermore, the heavy reliance of densely populated cities on refrigerators and air conditioners contributes significantly to the atmospheric concentration of hydrofluoro carbon, which depletes the Earth's ozone layer. These gases have a 1600-fold greater capacity to trap heat than CO₂, making them more hazardous than CO₂" [5]. It is noteworthy that 'Bangladesh produces 22.71 billion burnt bricks a year burning not less than 3350 million cubic feet of fertile topsoil from its already scare agricultural land. According to the Soil Research Development Institute (SRDI), if the rate at which agricultural lands are disappearing from Bangladesh remains unchecked, the Country shall be left with no agricultural lands by 2070' [6]. Environmental scientists claim that Bangladesh is among the nations most impacted by global warming. Climate change is mostly to blame for Bangladesh's recent spate of significant natural catastrophes.

Followings are the top reasons for climate change and increasing global warming in Bangladesh.

a. Greenhouse Gas Emissions: According to a report of NDCs [7]. The overall amount of greenhouse gas emissions for the base year is 169.05 million tons of CO₂ equivalent (MtCO₂e). With 93.09 Mt CO₂e, or 55.07% of total GHG emissions, the Energy Sector contributes more than any other sector. It is followed by the Agriculture Forestry and Other Land Uses (AFOLU) (27.35%), Waste (14.26%), and IPPU (3.32%) sectors. In Bangladesh carbon dioxide emissions are mostly caused

by the burning of fossil fuels like coal, oil, and natural gas for energy generation which is the main reason for greenhouse gas emissions. Brick production, a traditional industry, and transportation also contribute to greenhouse gas emissions in Bangladesh. As an over-polluted country, Bangladesh is becoming one of the main sources of emission of greenhouse gases, carbon dioxide, methane gas, nitrous oxide, and so on.

b. Deforestation: Deforestation is a contributor to global warming. The clearing of forests for agriculture, logging, and urban development reduces the number of trees available to absorb CO₂ from the atmosphere. Deforestation decreases the planet's carbon sink and releases stored carbon back into the atmosphere, contributing to global warming. Burning trees for construction releases tons of carbon dioxide, but Bangladesh has a relatively small forest cover (around 16%). The amount of water in the soil, groundwater, and atmosphere is all decreased by deforestation. Soil cohesiveness is also diminished. Erosion, flooding, and landslides then transpire. 'A country should have 25 % forestland of its total area to get rid of environmental degradation. But we have only 16%. Approaching dangers are knocking at the door. So time has come to think about it and legal measures to arrest the deforestation trend in our country. Our children are growing up in a polluted environment. So the upcoming generation must be allowed to understand the bad impact of deforestation [8]. However, deforestation in Bangladesh does exacerbate the effects of global warming.

c. Agricultural Practices: In Bangladesh, the 'AFOLU [9] sector also includes emissions from forest land and carbon stock. 'Bangladesh's agricultural industry is anticipated to emit around 50 million tons of CO₂ per year, primarily through rice cultivation, fertilizer-induced field emissions, field residue burning, and livestock production, including manure management. Rice production emits the most in Bangladesh, accounting for roughly 62% of total agricultural emissions, followed by cattle, goats, and non-rice crops'[10]. The main reasons for greenhouse gas emissions in Bangladesh are agriculture and the energy sector, particularly coal-fired power plants. Methane and nitrous

oxide emissions from some agricultural practices, such as raising cattle and growing rice, are rather high. In flooded rice fields, organic matter breaks down to generate methane, and fertilized soils emit nitrous oxide.

- d. **Extreme Weather Events:** Increases in the frequency and severity of extreme weather events, such as floods and cyclones, are linked to global warming. These occurrences are common in Bangladesh and have the potential to seriously harm communities, agriculture, and infrastructure.
- e. **Industrial Activities:** Carbon dioxide and other greenhouse gases are released as a result of industrial processes and production. Bangladesh is one of the many developing nations where industrial expansion frequently depends on non-environmentally friendly energy sources.
- f. **Population Growth and Urbanization:** The rapid population growth and urbanization in Bangladesh have led to increased energy consumption and demand for infrastructure, contributing to higher greenhouse gas emissions. A growing population with rising temperatures puts more pressure on already strained resources like water. Urbanization can further exacerbate this as concrete surfaces increase runoff and decrease natural filtration. Climate change intensifies natural disasters like floods and cyclones. Densely populated urban areas are particularly vulnerable, with more people at risk from these events. Urbanization often leads to the "urban heat island effect," where cities are hotter than surrounding rural areas. This effect is worse with higher temperatures, making urban areas even more uncomfortable and potentially dangerous.

Addressing global warming in Bangladesh requires a combination of mitigation and adaptation strategies, including the transition to cleaner energy sources, sustainable land use practices, and measures to enhance resilience against the impacts of climate change. International cooperation is also crucial in addressing the global nature of the issue.

2.4. Global Warming and Its Impacts on Bangladesh

"Scientists say that if global warming continues at the same rate, a large area of Bangladesh will be swamped in the coming 100 times, and about 30 million people will come exile" [11]. Bangladesh is one of the most endangered coastal countries in the world due to global warming and climate change. The World Bank estimates that Bangladesh contributes only 0.40 percent of global greenhouse gas emissions. Regretfully, nevertheless, we will rank among the top ten nations impacted by climate change. Bangladesh is becoming more and more risky due to its location, population growth, poverty, and wanting social security. In 2019, the World Bank financed a transit project in the coastal Western Area Urban District which addressed risks posed by climate change. 'And because of the impact of numerous climate variables, such rainfall, and changes in the average temperature, the economic effect is progressively becoming more pronounced and may eventually outweigh efficient management' [12]. An environmental scientist says Bangladesh is one of the countries most affected by global warming; both natural and human factors are the cause of increasing global warming. 'Water vapor, carbon dioxide, methane, nitrous oxide, halocarbons are some greenhouse gases causing effect to the environmental shift' [13]. According to the Climate Risk Index 2021 "Despite producing only 0.56% of global emission changing our climate, Bangladesh ranks 7th on the list of countries most vulnerable to climate devastation' [14]. A government report shows that a whopping 90 million Bangladeshis which is about 56% of the population live in high climate exposure. The data also shows that from 2000 to 2019, Bangladesh suffered economic losses worth \$3.72 billion and witnessed 185 extreme weather events due to climate change"[15]. The major natural disasters that have been occurring in Bangladesh in recent times are mainly due to climate change. The following are the top goods in Bangladesh:

Sea Level Rising: Rising swells are growing trouble for people around Bangladesh. That's because a stunning two-thirds of the country is lower than 15 bases above ocean position. According to estimates, one in seven Bangladeshis will be dislocated due to climate change by 2050. In particular, Bangladesh may lose almost 11% of its land by then due to a predicted 19.6 inch (50 cm) rise in sea level, and up

to 18 million people may need to migrate as a result of sea level rise alone”[16]. Bangladesh is home to several rivers, making it one of the world's largest delta islands. Nineteen percent of Bangladesh's land will be submerged under the ocean if global temperatures increase by one degree Celsius. 55 million individuals will be impacted as a result. Bangladesh's sea level is rising at a rate of 7 mm per year, while the country's land level is rising at a rate of 5–6 mm per year. As a result, Bangladesh's coastal regions are experiencing a 1-2 mm/year rise in sea level. A study found that the water level might rise by 3.5 to 15 millimeters per ten years. It can yet reach 30 to 100 centimeters by the year 2100. Bangladesh is particularly vulnerable to sea-level rise due to its low-lying coastal geography. Rising sea levels can lead to increased salinity intrusion, threatening agricultural lands, and freshwater resources. Coastal erosion and submergence of land are ongoing challenges.

Cyclones and Extreme Weather Events: Cyclones and extreme weather events, like storms and floods, have been occurring more frequently and with greater intensity. These occurrences have the potential to cause extensive harm to houses, farms, and infrastructure, which could result in fatalities and loss of livelihoods [17]. These goods combined with the fact that the utmost of Bangladesh's home is low, flat terrain can make storm surges ruinous.

Temperature Extremes: Rising temperatures can lead to heat waves, affecting public health, agriculture, and water resources. Changes in temperature patterns can also impact ecosystems and biodiversity.

Frequent Storms and Floods: Scientists believe that rising temperatures will lead to further extreme rainfall worldwide, including stronger and further frequent cyclones in the Bay of Bengal. And rising swell will make any storm more dangerous because flooding will come more likely to accompany [18].” Changes in temperature and precipitation patterns can affect agricultural productivity. Floods, droughts, and salinity intrusion can damage crops, leading to food security concerns.

Ocean Storms: Ocean storms are usually caused by hot air and cyclones. Although other processes are active behind the formation of cyclones, the increase in water temperature is the main reason. Coastal districts in Bangladesh are hit hard by sea storms in

May-June every year. ‘As global warming increases, ocean water temperatures will also increase at an adding rate. Naturally, the intensity of ocean storms and tidal surges will also increase’ [19].

As soon as possible, the nation's riverine and coastal regions should begin the afforestation program. Consequently, there will be less river erosion and less severe sea storms. It is also necessary to stop deforestation simultaneously.

3. LEGAL FRAMEWORK ON GLOBAL WARMING

3.1. Analysis of National Legal Framework on Global Warming

Global warming is an astronomical climate issue in Bangladesh. Where global warming is defined as the long-term rise of the earth's surface temperature by nature or by human activities, on the other hand, climate change can be defined as the long-term alteration of the earth's climate patterns including temperature and precipitation. So climate change and global warming are interrelated things. For the reason of climate change and global warming, the environment is getting polluted and we are facing disasters like storms, cyclones, heatstroke, and floods. For this reason, Bangladesh has made significant strides in implementing legal frameworks to address environmental concerns, including those related to global warming, such as;

Bangladesh Environment Conservation Act, 1995

According to the Bangladesh Environment Conservation Act 1995, environment means ‘the inter-relationship existing between water, soil, air and physical property and their relationship with human beings, and others animals, plants, and micro-organisms’[20]. and the ‘pollution means the contamination or alteration of the physical, chemical or biological properties of air, water or soil, including change in their temperature, taste, odor, viscosity or any other characteristics or similar other exertion which, by way of discharging any liquid, gassy, solid, radioactive or other substances into air, water or soil or any element of the terrain, destroys or causes injury or detriment to public health or to domestic, marketable, artificial, agrarian, recreational or other useful exertion, or which by similar discharge

destroys or causes injury or detriment to air, water, soil, beast, wild beast, raspberry, fish, factory or other forms of life.¹²⁰ to resolve global warming it is necessary to keep our environment pollution-free so that the temperature of the climate shall not increase and for this reason, the Bangladesh Conservation Act 1995 also gives some restrictions;

1. regarding vehicles which are the reason for emitting smoke (6)
2. manufacture and sale of the articles injurious to the environment (6A)
3. on cutting of hills (6B)
4. on production, import, storage, loading, transportation, etc. of hazardous waste. (6C)
5. On pollution by cutting or breaking ships (6D)
6. On matters related to wetlands. (6A)

So according to the said Act, 'A vehicle emitting smoke or gas injurious to health or environment shall not be operated nor shall such vehicles be switched on except for test-operation for stopping the emission of such smoke or gas'[21]. That means no vehicle shall be run which is the cause of releasing smock or gas and which is also harmful to our environment. After the vehicle emitting smock, manufacturing poly bags is one of the great reasons for environmental pollution because poly bags are not putrescent elements. Polybags are typically made from polyethylene, a type of plastic derived from petroleum. These bags can take hundreds to thousands of years to decompose naturally. As a result, they accumulate in landfills, water bodies, and other environments, contributing to visual pollution and harming ecosystems. And 'if the government is satisfied that all kind or any kind of polythene shopping bag, or any other article made of polyethylene or polypropylene, or any other article is injurious to the environment, the Government may, by notification in the official Gazette, issue a direction imposing an absolute ban on the manufacture, import, marketing, sale, demonstration for sale, stock, distribution, commercial carriage or commercial use'[22]. The same Act also said about the punishment, if anyone breaks the restrictions or violates any section of the Act. For example, according to the table in section 15 of the Bangladesh Environmental Conservation Act 1996, if anyone violates 6(1) of the said Act, In case of a first offense, a fine not exceeding taka 5 (five) thousand; in case

of a second offense, a fine not exceeding taka 10 (ten) thousand; in case of each subsequent offense, imprisonment not exceeding 1 year or a fine not exceeding taka 10 (ten) thousand or both. And in case anyone violates 6(A) that means manufactured, imported, or marked polythene shall be punished with imprisonment not exceeding 10 years or a fine not exceeding 10 lac taka or both. And if anyone sold, exhibited for sale, stocked distributed, commercially transported, or commercially used shall be punished with Imprisonment not exceeding 6 months or a fine not exceeding 10 thousand taka or both.

The Forest Act, 1927

In Bangladesh, the Forest Act, of 1927 is also applicable. It is the oldest act that works to protect our forest and reserve the forest and trees.

Section 29 of the said Act has said about protected forest. Section 30 says that the government has the right to issue reserve trees etc.

Section 32 of the Forest Act, 1927 has given the power to make rules for the protection of the protected forest to the government.

If the government makes necessary and strict rules to protect our forests, it can be an improvement instrument for our environment, and if we are successful in protecting our trees and forests it is possible to resolve the excessive temperature of the environment which is causing climate change and global warming.

Clean Air Act

The Clean Air Act was drafted by the Bangladesh Environmental Lawyers Association (BELA) in 2019. The Department of Environment (DoE) invited BELA to design a Clean Air Act for Bangladesh according to the activity report of BELA 2020. The purpose of the proposed Act is to prevent and control air pollution, enhance air quality, and safeguard both human health and the environment. But Bangladesh has not enacted any Clean Air Act yet.

¹²⁰ Section 2(b), *ibid*

The Air Pollution Control Rules, 2022

The Air Pollution Control Rules 2022 focuses on the aim to control, prevent, and reduce air pollution. Rule 7 of the said Act deals with the planning of prevention of air pollution. 'The director general or any officer authorized by him may recognize any object or product that pollutes the air as the major pollutant for the particular region'[23]. 'The director general can catalog the activities responsible for air pollution' [24] And whoever violates the rules of this act shall be punishable with imprisonment not exceeding 2 years or with a fine not exceeding 2 lakh taka or with both, according to the rule 17 of the Air Pollution Control Rules 2022.

'There are 4 laws relating to the conservation and pollution control;

1. Environment Conservation Act 1995,
2. The Environment Conservation Rules 1997,
3. Environment Court Act 2000,
4. The Bidi manufacture (Prohibition) Ordinance 1975'[25].

These Acts work for the prevention of environmental pollution. According to the 'Bangladesh Country Environment Analysis of World Bank, due to alarming levels of air pollution, over 2.72 lakh premature deaths in Bangladesh in 2019'[26]. For to prevent this polluted environment it is necessary to follow the implications.

Bangladesh Climate Change Strategy and Action Plan 2009 (BCCSAP)

In 2009, Bangladesh formulated the Bangladesh Climate Change Strategy and Action Plan to address the challenges posed by climate change and to ensure protection against climate change and natural disasters. The climate change action plan basically is a 10-year program (2009-2018) to build the strength and resilience of the country to fit the climate change challenges upon the country's long history of sensitive climate.

Bangladesh Environmental Lawyers Association (BELA)

A field survey conduct upon the Bangladesh Environmental Lawyers Association. BELA is a non-governmental organization (NGO) in Bangladesh that advocates for environmental justice and works

to strengthen environmental law enforcement in the country. Founded in 1992, BELA has been at the forefront of legal advocacy to address environmental issues, including pollution, deforestation, loss of biodiversity, and unsustainable development practices.

When I talked to Mr. Tanmay Sannayal the co-coordinator of BELA (Rajshahi Branch) he told me that there are 210 laws regarding environmental law in our country but those are not effective. Their NGO works for the environment and the Environmental Law, they aim to protect the environment by filing public interest litigation on the High Court Division to hold both private and public entities accountable for environmental violations, addressing issues like river pollution, deforestation, air pollution, and illegal land use. BELA works closely with local communities that are directly affected by environmental degradation. This community-centric approach allows people to see BELA as an ally in protecting their rights to a healthy environment. They ensure to provide legal assistance to people who otherwise would not have the means to challenge polluters or unsustainable development projects. BELA is a key player in drafting and advocating for environmental laws and policies, they drafted the Clean Air Bill in 2019, which aims to combat air pollution in Bangladesh, particularly in urban areas like Dhaka. The Clean Air Bill sets a maximum penalty of 10 years imprisonment or a fine or both for violating the law governing air pollution.

So according to their coordinator, the core activities of BELA are:

- a. filing litigation upon the complaints of the common people concerning the environment.
- b. Use legal channels and community outreach to pursue ongoing legal actions.
- c. Advocating for changes in the environmental legal regime.
- d. Filing appeals, applications, and memorandums to the high court so that the changes could be executed.
- e. Updating plans, and strategies to protect the environment.
- f. Drafting environmental policy and laws.

3.2. International Legal Framework in Bangladesh

Bangladesh is greatly affected by the greenhouse effect which causes global warming and climate movements. This changing climate and climate disaster takes Millions of lives. So to protect our environment Bangladesh has recognized some international conventions, protocols, agreements, and Acts. Such as

The United Nations Framework Convention on Climate Change 1992 (UNFCCC)

The United Nations Framework Convention on Climate Change, 1992 is the 1st international instrument that deals with climate change since 1992. Bangladesh signed the convention as a party on 9 June 1993 and ratified it on 15 April 1994. The main objective of this Convention is 'to achieve stabilization of greenhouse gas emission in the atmosphere at a level that would prevent hazardous anthropogenic interference with the climate system'[27]. It also obligates its state parties according to article 3 of UNFCCC to undertake precautionary measures and promote sustainable development to tackle the problem of climate change. And also to promote and cooperate in the development, application, and diffusion including the transfer of technologies and practices to control and reduce anthropogenic emission of the greenhouse effect, under Article 4 of the UNFCCC.

Kyoto Protocol on Climate Change, 1997

The Kyoto Protocol on climate change was adopted in 1997. The protocol sets targets for 37 industrialized countries and the European community for reducing greenhouse emissions which is the main reason for global warming. It aims to stabilize the reconstruction of greenhouse gases in the atmosphere in order to prevent dangerous anthropogenic meddling with climate change. This protocol serves many purposes starting from the awareness about global warming. And it also legally binds its members to help fight global warming. Making policies to reduce global warming and applying the protocol policies is also a part of this protocol. It wants to establish an adaptation fund for minimizing the impacts of global warming.

Paris Agreement on Climate Change, 2015

The Paris Agreement is a fairly binding transnational convention on climate change. It was espoused on 12 December 2015 by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France. It came into force on 4 November 2016. 'The agreement sets out a global action plan to limit global warming'. There are some points of the Paris Agreement, according to Composition 2 of UNFCCC;

- a. Holding the increase in the global average temperature to well below 2°C above pre-industrial situations and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial situations.
- b. adding the capability to acclimatize to the adverse impact of climate change and foster climate adaptability and low-hothouse gas emigration development in a manner that doesn't hang food products.
- c. give backing to developing countries to alleviate climate change, strengthen adaptability, and enhance capacities to acclimatize to climate change.

Glasgow Treaty, 2021

'The Glasgow Climate Pact, adopted at COP26 in November 2021, aimed to accelerate global climate action and maintain the Paris Agreement's goal of limiting global warming to 1.5°C. Key aims included reaffirming the 1.5°C goal, phase-down coal, and fossil fuels, mobilizing \$100 billion per year in climate finance, supporting vulnerable countries in adaptation efforts, finalizing Article 6 of the Paris Agreement, requiring annual reviews and accountability, and accelerating climate action by cutting emissions by 45% by 2030 and reaching net-zero emissions by 2050. The agreement also emphasized the need for financial support for vulnerable countries [28].

4. CASE STUDIES ANALYSIS AND FINDINGS

Most of the time cases concerning environmental issues are cognizant as Public Interest Litigation (PIL) cases. In Bangladesh PIL cases are instituted in High Court Division through writ petition. Basically, PIL is instituted to protest the activity of the public bodies or individuals who are polluting the environment and violating the environmental law. In the present day, many PIL cases are pending before the High Court Division of the Supreme Court. In Bangladesh, PIL has been initiated by NGOs rather than individuals. In the instance of NGO environment, BELA is the pioneer one for whom the High Court Division prohibited environmental pollution in 1994 during the Dhaka city corporation election. In Bangladesh, PIL was allowed for the 1st time by the judiciary of Bangladesh in 1994. The 1st PIL case was called **Dr. Mohiuddin Faruque vs. Bangladesh** [29] which was concerned with environmental protection. The fact of the case was about the nuisance pollution during the election campaign in 1994. In Public Interest Litigation (PIL) cases pertaining to environmental protection, the superior judiciary has issued directives and granted injunctive relief against various forms of pollution: industrial, vehicular, riverine, illegal filling of flood plain zones, water, and air; violation of construction law; pollution from brick fields, environmental hazards associated with shrimp cultivation; destruction of hits; gas explosion without Environmental Impact Assessment (EIA);

and protection from hazardous wastes. Here are some cases concerning environmental pollution which may cause excessive emission of carbon dioxide and greenhouse gas.

4.1. Case Studies Concerning Environmental Law within Bangladesh

Case Study 1

BELA vs. Bangladesh and others [30] BELA filed a writ petition on the high court division to challenge the establishment and operation of the listed brick manufacturing fields in Barishal. The petition was filed in 2007 and the high court issued a nisi rule calling upon the respondent to show the cause of the establishment of a brick manufacturing field which is illegal and also a violation of the Bangladesh

Conservation Act 1995, the Brick Burning Control Act, 1989, the Smoke Nuisance Act 1905, and The Penal Code 1860.

Case Study 2

Dr. Mohiddin Faruque vs. Bangladesh and others [31]. This case was against industrial pollution. The petitioner and the advocate of the case Syeda Rezwana Hasan prayed for relief from the matter of industrial and factory pollution situated all around Bangladesh. The Department of Environment Pollution Control had been conducting a survey and found that ecological imbalance was happening continuously due to various industrial wastes in the air and water. Rather, the data indicated that there were more and more industrial projects and units polluting the environment throughout Bangladesh. According to the court, the petitioners qualified as persons aggrieved under Article 102 of the Constitution since they were registered as an association with the intention of pursuing legal action to safeguard environmental systems and because they were highly involved in this area of public interest.

Case Study 3

Dr. Mohiuddin Faruque vs. Bangladesh and others [32]. This case is another case concerned with a writ petition arguing that vehicle emissions of hazardous smoke and noises threatened Dhaka City's environment and its inhabitants' health. The petitioners found that, according to the legal standards set by laws on air and noise pollution levels, many vehicle motors were faulty and unfit for traffic and operated without a pollution-related fitness instrument or with an instrument that was wrongfully awarded. Also, petroleum products used by vehicles in Dhaka contained dangerous substances conceivably affecting the residents' health. The Ministry of Environment and Forest also refocused that the pollution in major metropolises of Bangladesh negatively affected foreign investment and tourism. The court set up the relier failed to duly apply the regulations to control the air and terrain pollution situations and ordered preventative measures to increase its goods.

Case Study 4

Abu Jafar Md. Nurul Islam Vs. Department of Environment [33]. This case serves as an example of how Bangladeshi law governs the process of obtaining an environmental clearance certificate. The Department of Environment's operational challenges in controlling industrial pollution will be more clearly explained to the people.

Case Study 5

In our country one of the main reasons for increasing carbon dioxide emissions is deforestation. The increased carbon oxide emission causes global warming. International organizations such as the IPCC (2007) have identified Bangladesh as the sixth most vulnerable country to climate change compared to other developing countries. 'Deforestation reduces the content of water in the soil and groundwater as well as atmospheric moisture' [34]. **Bangladesh Environmental Lawyers Association (BELA) Vs. Bangladesh and others** [35] a writ petition was filed by BELA to protect our Sundarbans to the high court division in 2004. BELA was seeking special protective measures to protect and conserve the 9285 sq km of Sundarban as an Economically Critical Area. The petition was filed against the Ministry of Environment and Forest (MoEF), and the Department of Forest. According to the petition, the Ministry of Land is seizing the disputed land in order to carry out its project illegally, despite strong objections from the Forest Department as well.

'As Sundarbans is among the world's largest continuous mangrove forest blocks. Bangladesh's mangrove forest ecosystem is currently in a precarious state. The environment has suffered significant harm as a result of the overuse of natural resources, anthropocentric influences, and negative natural processes. An increasing number of people and limited alternatives for alternative livelihoods provide a significant risk to the mangrove forest'[36]. It is important to protect Sundarban to protect our environment and economic system.

4.2. The Findings of the Study

In closing, the threat of global warming is a problem that eventually may threaten the very survival of the planet and even now it threatens global security and severely test the international legal process. And this chapter provides a quick look back and a window into the current effort to reduce the greenhouse effect and resolve the problem of global warming by the implications in Bangladesh. In Bangladesh increasing temperature is a big issue amongst the people in Bangladesh. Global warming is, by its nature, a problem involving all of national and international society, as both emitters of greenhouse gases and as victims of the consequences of these emissions. As such, its solution also must be global, and involve all of international society. While all states may contribute to global warming, the volume of that contribution, and the attendant responsibility, are not equal. But as a developing country, Bangladesh is not much working on this matter. As we know there are 210 laws regarding environmental justice in our country but among them, just a few regulations are practiced within Bangladesh. Although Bangladesh has a number of Environmental laws its enforcement is often weak. Environmental protection laws need sterner enforcement in Bangladesh. It is safe to say that Bangladesh is one of the most polluted countries in the world, with an average annual concentration of fine particulate matter (PM2.5) of 83.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The safe level of PM2.5 concentration is $5 \mu\text{g}/\text{m}^3$, according to the World Health Organization. Bangladesh has a rapidly growing number of vehicles, which contributes to air pollution in major cities like Dhaka and Chattogram [37].

According to the NGOs related to environmental protection and justice like BELA, the want of awareness about environmental issues like the greenhouse effect and global warming, the causes of the environmental issues, and the problems that may happen in the future because of these issues are absent in the people. In Bangladesh, people are not concerned about the regulations because of the weak enforcement methods. The environmental justice system is also weak, cases related to the environment are pending in the court, and the court orders are not followed. Since the late 19th century, the average surface temperature of the earth has grown by roughly 2 degrees Fahrenheit (1 degree Celsius), mostly due to increased atmospheric emissions of carbon

dioxide and other human activities. The impact of global warming in Bangladesh is an extremely crucial issue and Bangladesh is one of the most vulnerable nations to the impacts of Global climate change and global warming in the coming decades. If the global temperature rises by 2° Centigrade, 30% of all land species will be threatened by an increased risk of extinction. So, it is important to reduce those problems by law so that our upcoming generation will not suffer from this issue.

4.3. Recommendations

Improving the environmental condition and reducing global warming in Bangladesh by law is a complex task that involves a combination of policy changes, increasing public awareness, making laws related to global warming, and enforcement of laws and regulations. Here are several strategies for the improvement of environmental situations and global warming;

- a. Establishing clear and strong implications regarding global warming in Bangladesh.
- b. Ensure the strong enforcement of the implications all over the nation.
- c. Implicating laws concerning global warming.
- d. Protect our mangrove forest.
- e. Appoint an active group from the Department of the Environment that shall work on the environmental situations and global and inform the higher authority about the problems.
- f. Making governmental NGOs which shall be concerned about the environment.
- g. Providing training to the staff of the Department of the Environment to deal with the general people to inform them about the situation of increasing temperature.
- h. Doing environmental campaigns by which people shall know about global warming. And also motivate people to plant more trees.
- i. Developing the punishment of the violations of the environmental laws.
- j. Ensuring the trial and the punishment of the offenders under the laws.
- k. Promoting clean air and a clean environment.
- l. Protecting the plantation trees and the mangrove by-laws so that the air pollution and the amount of carbon dioxide shall be reduced.
- m. Increasing public awareness about global warming and its consequences.
- n. Improvement of the laws of global warming

is a multifaceted endeavor that requires cooperation from lawmakers, correctional authorities, advocacy groups, and the public. The ultimate goal should be to reduce global warming and, the greenhouse effect and make a pollution-free nation.

- o. Collaborate with developed countries to create global agreements and policies that effectively address climate change. Ask for help regarding any advanced technologies that they used. Collaborate with developed countries for any financial support for action on climate change.
- p. Industries must provide a yearly inventory of their greenhouse gas emissions.

5. CONCLUSIONS

In conclusion, the subject of global warming and its implications is intricate and multidimensional, posing significant issues regarding the environment. The cause of global warming the regulations, and the punishment which are practiced regarding this have been discussed in this chapter. Bangladesh should place the accent on capacity building and disaster management, institutional and infrastructure strengthening, development of research, and low carbon technologies to create an inclusive and truly wide mitigation strategy. Governments should develop national action plans on climate change adaptation and assign a fixed proportion of national budgets to check on the effects of climate. Engagement in the formative debate on the issues of technology and product transfer should be encouraged. Numerous of the worst climate impacts could still be avoided by holding global warming below 1.5°C, as emphasized in the Glasgow Climate Pact adopted at COP26. The pact underlines the urgent need for critical action to mitigate climate risks and adapt to their impacts, especially in sectors like agriculture, water resources, and coastal infrastructure. With an advanced population and rapid-fire industrialization, Bangladesh should be on its way to developing a low-carbon path given it originally receives significant fiscal and specialized support from the transnational community, public pretensions of profitable growth and social development aren't hampered. So the reduction of this environmental problem is important to our environmental justice.

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