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## Environmental Degradation Due to Climatic Change: Effect on the National Security of Bangladesh

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### INTRODUCTION

1. Traditionally, the term 'security' refers to the effort to protect a population and its territory against organized force while advancing the state's interests through competitive endeavours. Threats typically have been perceived as military challenges and have been traditionally countered with armed forces. However, national security is not just about fighting forces and weaponry. In recent years, the concept of security has undergone through major changes. One of the most significant aspects of these changes is the increasing importance given to its multi-dimensional implications. Now, it encompasses the entire realm of social, economic, political, military, and environmental aspects with a view to attaining comprehensive security.

2. Bangladesh is facing a new dimension of catastrophe with the results of environmental degradation. Despite the rising awareness about the needs for protecting environment, environmental degradation already has cut a swathe through Bangladesh quite fast in the last four decades. The country's ecology is being ruined in the last few years. At some places the forests have been depleted, wetland has been destroyed, different species of flora and fauna have been vanished, wild life has been almost disappeared, biodiversity has been greatly affected, and air quality has been deteriorated.

3. Environmental degradation and protection is a major concern of recent days and the context of Millennium Development Goals (MDGs) which cumulatively resulted in a threat to the national security in terms of social, cultural, and economic aspects. There are various forms of environmental degradation in Bangladesh. However, to keep the scope of the paper limited, this paper would make an endeavour to understand the nature of environmental degradation in Bangladesh. Thereafter, the impacts of climate change on national security would be highlighted. In order to do that, security issues and remedial measures on national security would be discussed and analysed. Finally, considering the arguments and information of the experts and outputs of the research, few recommendations have been drawn.

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### CONCEPTS RELATED TO ENVIRONMENTAL DEGRADATION

4. Here are some of the main concepts and terms that have been used in the research paper for particular aspects. It is necessary to elucidate them for better analysis.

a. **Environmental Degradation.** Environmental degradation is the deterioration of the environment through depletion of resources such as air, water, and soil, the destruction of ecosystems and the extinction of wildlife.

b. **Climatic Change.** Climate change is the long-term significant change in the "average weather" that a given region experiences. Average weather may include average temperature, precipitation and wind patterns. It involves changes in the variability or average state of the atmosphere over decades to millions of years.

c. **National Security.** National security is simply the security of a nation. National security issues deal with the survival,

protection and welfare of a state, and its subjects. National security threats may be of both external and internal in nature.

d. **Geographic Location.** Bangladesh is a small country with a large population. It has special geographical feature with an area of about 1, 47,570 square kilometres (sq km) along with population about 140 million. The Bay of Bengal bounds with the country's 720 Km coastline in the south. Some parts of the country are within seismic zone. The geographic location and physiographic conditions of Bangladesh have made the country one of the most vulnerable to climate change, particularly to Sea Level Rise (SLR). Bangladesh is situated at the interface of two different geomorphologic features, with the Bay of Bengal to the south and the Himalayas to the north.

e. **Economic Profile.** In all measures of economic development, Bangladesh lies at the bottom i.e. Physical Quality of Life Index (PQLI) is 47 in 1992, Building and Wood Workers' International (BWI) is 40 in 1992, Human Development Index (HDI ) is 0.547 with a rank of 140 among 177 countries, Population below poverty line 45 per cent, and unequal distribution of resources.

f. **Social Status.** The term "social security" means any scheme or programme established by legislation, or any other mandatory arrangement, which provides protection, whether in cash or in kind, in the event of employment accidents, occupational diseases, unemployment, maternity, sickness, invalidity, old age, retirement, survivorship or death, and encompasses, among others, benefits for children and other family members, health care benefits, prevention, rehabilitation, and long-term care, as per the International Social Security Association (ISSA) Constitution.

g. **Climate and Natural Hazards.** Bangladesh has a humid, warm, and tropical climate. Its climate is influenced primarily by monsoon, partly by pre-monsoon and post-monsoon circulations.

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## **EFFECTS OF ENVIRONMENTAL DEGRADATION**

### **General**

5. The country is the largest deltaic plain in the world formed by a number of mighty rivers namely the Ganges, the Brahmaputra and the Meghna. Unique geographic and tectonic position as well as geomorphologic conditions have made meeting place of natural hazards especially due to climate change like SLR. The country has a very low and flat topography, except the northeast and southwest regions.

6. Major identified climatic and water related environmental degradations that occur in Bangladesh are: flood, tropical cyclone, tidal bore, tornado, river bank erosion, salinity, drought, earthquake etc. Floods, droughts and cyclones have occurred in Bangladesh over the centuries. Only six of the last 32 years (1960-1992) were disaster free.

### **Floods**

7. The major trans-boundary rivers Ganges, Brahmaputra and Meghna drain all their water through Bangladesh. Heavy rainfall makes the country vulnerable to flash floods, rain-fed floods, river floods and tidal floods. The combined effects of the role played by these special geographical features have significance bearing effect on weather system of Bangladesh. Due to this weather system, Bangladesh has become the worst victim of natural calamities causing massive loss of lives and properties.

### **Cyclones and Storm Surges**

8. Tropical cyclone from the Bay of Bengal accompanied by storm surges is one of the major disasters in Bangladesh and worst sufferers of all cyclonic casualties in the world. Storm surge height in excess of 20 feet is not uncommon in this region. For example, the October 31, 1876 cyclone had a surge height of 30-40 feet and in November 12, 1970 the height was 20 feet. In fact, the 1970 Cyclone is the deadliest cyclone that hit Bangladesh coastline with a wind-speed of about 185 km per hour and associated storm surge of 20 feet. It was responsible for death of about 500,000 people.

### **River Bank Erosion**

9. River bank erosion is another important threat to Bangladesh. Behaviours of the Bangladeshi Rivers are very unpredictable and in some cases unstable. This has placed them at constant risk for erosion. It is most marked along the major rivers and their estuaries. A study concluded in 1991

reported that, out of the 462 administrative units in the country, 100 were subject to some form of riverbank erosion, of which 35 were serious and affected about one million people on a yearly basis. Around 10,000 hectares land is eroded by river per year in Bangladesh. Kurigram, Gaibandha, Jamalpur, Bogra, Shirajganj, Tangail, Pabna, and Manikganj districts lie in the erosion prone area along Jamuna River.

### **Sea Level Rise**

10. SLR is a threat to and major concern for low-lying Bangladesh, with the UN-sponsored IPCC reporting that the country could lose as much as third of its landmass by 2100. The study revealed that one meter SLR will affect the vast coastal area and flood plain zone of Bangladesh.

### **Earthquake**

11. Earthquake is trembling or shaking movement of the earth's surface. Bangladesh has been classified into three seismic zones. The north-eastern folded regions are the most active zones and belong to the zone-I and zone-III represent south-western part with least vulnerable to seismic risks. Ground condition (firm or soft) has not been taken into consideration. The earthquake record suggest that since 1900 more than 100 moderate to large earthquakes occurred in Bangladesh, out of which more than 65 events occurred after 1960. This brings to light an increased frequency of earthquakes in the last 30 years.

### **Drought**

12. Drought occurs when rainfall is absent for a prolonged period of time, causing earth to parch, wells to dry, underground water level to fall, crops to wither leading to crop failure, and scarcity of food for livestock. Bangladesh is at higher risk from droughts. Between 1960 and 1992, droughts occurred 11 times in Bangladesh.

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## **SECURITY ISSUES LINKED WITH ENVIRONMENT**

### **General**

13. Conventionally, the term 'security' is a secure condition or feeling. It is a broad issue that indicates safe status of the state and its citizen. However, recent literature on the subject, convincingly indicates that, security cannot be properly understood, nor can the issues related to it be comprehensively approached without due focus on such other factors as social, political, and economic. Some of the noted works on the security of the developing states have found poverty and socio-economic, under-development etc as important source of threats to security.

### **Economic Security**

14. Disasters triggered by natural events often raise poverty rates in the affected regions and destroy achieved development progress. The total amount of damage to economy, crops, and infrastructures due to degradations has been steady increasing which changes the composition of Growth Domestic Product (GDP). The changing pattern of the composition of the GDP over the past decade appears to reflect a society in transition.

### **Habitat Security**

15. Bangladesh is a small country of 147,570 sq km with a large population. The estimated population of the country, as of 1999, is about 150,448,339 with a population density of about 1,045 people per sq km as on July 2005. By 2025, it is expected to exceed 210,823,000 when the population density will raise about 1,200 persons per sq km. Population pressure due to environmental migration is creating habitat insecurity in the country. Currently, the urban population accounts for about 23 per cent of the total national population.

### **Food and Other Well-Being Security**

16. The 1996 World Food Summit defines the food security as "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs, and food preferences for an active and healthy life". The challenge of food security in Bangladesh is huge and has identified as an important factor contributing to its socio-economic stabilization and development. Food

insecurity is still a major problem mainly because of the lack of purchasing power and thus of access to produce food grain, especially for the ultra poor community. Due to the seasonal variation in agricultural employment and limited employment opportunities in non-farm sector, millions of people suffer from chronic and transitory food insecurity.

### **Health Security**

17. The combined effect of higher SLR, siltation of estuary branches, higher riverbed levels will gradually increase drainage and water logging problems and poses a threat to human health by increasing the potential for water borne diseases. Moreover water flow in lean period reduces the under-ground water level. Irregular seasonal rain and lack of fresh water reduces the ground water re-charge which in turn induce arsenic contamination. The health impacts of insufficient and impure water constitute another crushing burden on the poor. A large number of people are still deprived from proper health services.

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## **IMPACT OF ENVIRONMENTAL DEGRADATION ON NATIONAL SECURITY**

### **General**

18. Any thing causes or loses in different dimensions like physical, economic, social etc posed security threat directly or indirectly. In Bangladesh, climate and water related environmental degradation can trigger or exacerbate food shortages, water scarcity, destructive weather events, health hazards and spread of diseases, biodiversity loss, coastal land erosion, and human migration. Again, 'most important to survival and well-being' is the basic needs of human being.

### **Social Security**

19. Another perspective on the socio-economic scene of Bangladesh would suggest that the country is vulnerable to climatic variations and changes. Urbanization is increasing primarily in response to in-migration from rural areas, and urban infrastructural systems cannot keep pace with demand. As a consequence, one-third or more of the country's available labour time is unemployed and labour force is increasing rapidly in the face of sluggish economic growth.

### **Economic Security**

20. Economic decline is the most important and potential social effect of environmental degradation. Agriculture, which is one of the most important sectors of Bangladesh's economy, contributes about 30 per cent to its GDP and employs 65 per cent of the total labour force. Flood damages agriculture productions. Transport, communication and energy reticulation are essential infrastructural elements for constant economic growth and development. Together with water supply, they form the life-lines of a nation. The deltaic system of tributaries and distributaries, together with flooding of around one-quarter of the land area during the monsoon season, makes development and maintenance of infrastructural linkages across the country difficult. Periodic cyclones and severe floods result in some areas being isolated for days.

### **Habitat Security**

21. The fluctuating and decreasing river flows have not only disrupted the environment and economy of the country but also disrupted the social stability. Impact of climate change and other environmental degradation factors steadily render the low-lying regions of the country uninhabitable. Many of the displaced people will move inland, which will foment instability as the resettled population compete for sharing scarce resources with established residents. Others will seek to migrate abroad which will heighten political tension not only in South Asia but also in other countries as well.

### **Health Security**

22. Climate change will have a range of decisively negative effects on health during the next decades and respond or fail to respond to these health challenges will have a significant impact on the geopolitical landscape. In earlier decades, the emphasis was largely on water supply rather than on quality. But water quality has meanwhile progressively deteriorated due to increasing withdrawals for various uses, leaving insufficient stream flows to dilute the effect of pollutants during lean flow periods. Widespread contamination of groundwater with naturally-occurring arsenic has reduced the

percentage of the population with access to safe water.

### **Food and Other Well-Being Securities**

23. Food, clothing, housing, health and education are the basic needs of the people of Bangladesh. Environmental degradation in the form of flood, cyclone, and SLR affects the basic needs of large number of people of the country. Affecting basic needs, those degradations become a threat to food security and other well-being securities. Barrage, diversion, and obstruction in up-stream are the main cause of colossal damage to the agriculture of southern districts. Inundation, early flood, and water logged due to environmental degradation will damage the agriculture in haor area.

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## **REMEDIAL MEASURES TO MINIMISE THREAT ON NATIONAL SECURITY**

### ***Global Partnerships for Sustainable Development***

24. Bangladesh has demonstrated its commitment and should represent and voice the concerns of vulnerable countries in all the ongoing international processes to address climate and disaster risks worldwide. International support for adaptation to climate change is paramount since links between development and adaptation have implications for official development assistance. Bangladesh calls for consensus and urgent action to support for the following:

- a. The govt, development partners and private sectors all need to include as mainstream for climate risk management into their portfolio.
- b. Investing in adaptation and climate risk management is not additional, but is essential to safeguard well-being and development gains.
- c. Developing countries who are victims of climatic change have the right to compensate for damages as well as to prepare and reduce the risk through adaptation measures.

### **Regional Cooperation for Environmental Protection**

25. Cooperation among and within developing countries can play a vital role in helping each other address for Bangladesh, regional cooperation is essential to manage climate risks comprehensively. Indo-Bangladesh water dispute and the sharing of Ganga-waters are the central and the unfortunate part between Indo-Bangladesh relationships. Despite that, Bangladesh has taken the initiative within South Asian Association of Regional Cooperation (SAARC) countries to address shared concerns through cooperation and collaboration.

### **National Development Planning**

26. Refocusing the strategy for environmental protection requires the strengthening of institutional bodies and empowerment of people. The value of human, land, water, and other assets depends on technologies that improve the productivity of those assets thereby generating adequate return and income. Globalization can bring significant benefits of technological advancement, and market access through improved connectivity and information. Industrial investment need to be increased and sick or closed down industries should be restarted to eliminate the poverty and unemployment problem.

- a. **Understanding Climate Risks.** To understand climate impacts and risks, some one needs to know about the occurrence, vulnerability and possible impacts. For example a farmer would like to know the likely rainfall patterns while planning his crop calendar, preparing his land, sowing, harvesting.
- b. **Managing Climate Risks.** Building adaptive capacity to climate change and managing climate risks will be addressed through mainstreaming of climate risk into sustainable development strategies. To do this successfully requires awareness and understanding of climate change issues.
- c. **Adaptation Research.** Climate Change Cell can facilitate key research actions to fill gaps of knowledge in addressing adaptation to climate change and its impacts on people's lives and livelihoods. It should explore new adaptation options for the community to adapt with the impact of climate change, sharing experiences with relevant stakeholders on good practices and variability.
- d. **Meteorological and Hydrological Information.** Relevant agencies have start cooperating and collaborating on climate

information. The Meteorological department is working with water sector agencies.

- e. **Sharing Knowledge Through Services Networking.** Climate Change Cell under should compile, generate, archive, manage data, information and knowledge, and provide support and services in making knowledge based decision to all stakeholders.
- f. **Resources Availability for Eradicating Poverty.** Most of the poor live in rural areas. The urban-rural gap remains large, inequitable and inefficient, with deleterious impacts on the environment. Govt should also take necessary step to reorient the policies of donor agencies and developing countries towards poverty reduction for sustainable development with fewer resources.
- g. **Corporate Responsibility.** Harnessing the power of corporations and encouraging their cooperation are two key areas for building environmental security. Multinational corporations should play an influential role in advancing environmental protection by shaping technological advances, commercialization of products and technologies.
- h. **Raising the Economic Status of Women**Raised economic status of women may lead to decrease the family size.
- j. **Awareness.** Increase awareness among vulnerable communities, agencies, professionals and practitioners at different levels.

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## CONCLUSION

27. This scarcity eventually creates a threat on basic needs of the people of the country. Potential reduction of surface flows in rivers during dry season will cause salinity ingress throughout the coastal areas. Climatic change will have far reaching impacts on biophysical environment of the country, people's livelihood, and national economy. Climatic change is a security problem for some states and people. The crux of the problem is that national security discourse and practice tends to appropriate all alternative security discourses no matter how antithetical.

28. Environmental degradation in turn affects patterns of resource use, and can have the potential of locking poverty into a downward spiral. Due to climatic degradations soil becomes exhausted, yields decline, forcing habitat to migrate, and posing serious threat to the health security. Security can also serve as an integrative concept which links local, national and global levels of environmental change and response.

29. Environmental change is a security risk making it a military as well as a foreign policy problem. It's a threat to sovereignty rather than global commons problem. Harnessing the power of corporations and encouraging the cooperation are two key areas for building environmental security. Often, nationalist sentiment can become the enemy of rational solutions for national futures. One can also envisage a scenario of socio-political refugee situations which overwhelm local services and, by their very existence, generate resentment and violence in the receiving areas.

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## RECOMMENDATIONS

30. Bangladesh is more vulnerable to the impacts of environmental nightmares. Yet our policy makers and scholars seem to be less serious about this issue. We need proper institutional framework to formulate national environmental policy which can be effective to meet the challenges of environmental degradation. To address these burning problems, the study suggests following policy recommendations.

- a. The national security consequences of climate change should be fully integrated into national security and national defence strategies.
- b. Basic dimensions of the environmental crisis need to be fully recognized and grasped by the policy maker for appropriate institutional, legal approach, and empowerment of people.
- c. Ministry of Foreign Affairs may be given the special responsibility to address the issue of global and regional environmental challenges with an impetus on carbon trading, and funds for climate justice to build the capacity and resiliency to better management of climate impacts.
- d. More cooperation among the SAARC countries in economic, environmental, intellectual, and political field would be a best method of resolution of threats and conflicts.

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e. Our development policies and programmes in the past were growth oriented, with little or no consideration for environmental impacts. All major projects should be scrutinized before final approval to minimize their adverse environmental effects. f. Govt should launch a mass awareness programme to sensitize the public about the impacts of environmental degradation and corporate social responsibility.