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Climate Refugees in Bangladesh
The Innocent Victims of Global Warming

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Abstract: *The impacts of global warming and climate change are worldwide. In Bangladesh during the past few decades, the effects of global warming have been evidenced in climate variability, change and extremes. More adverse impacts are projected for the coming decades, particularly for low-lying coastline and floodplain ecosystems which characterize Bangladesh. For Bangladesh they are most critical as large part of the population is chronically exposed and vulnerable to a range of natural hazards. Already, the human suffering and cost to development is massive to this country and its people are victims of human induced global warming. Therefore, Climate Refugee is defined as the people "affected" by a disaster as those suffering physical injury or illness, those made homeless or who required immediate assistance.*

To prevent dangerous climate change, we must address the interlinked challenge of energy for their sustainable development without adding more greenhouse gas (GHG) to the atmosphere. The world needs increasingly deeper GHG cuts -- between now and two to four decades. The US has a 33% global share of this responsibility-capability, the European Union 25.7% and China 5.5%. India's share is just 0.5%. International negotiations in the arena of climate change concentrates on future commitments. The globe is racing towards a tipping point beyond which no corrective action will work.

Frequent flooding, erosion and lower fertility of arable land has made the agriculture based Bangladesh economy dilapidated where majority of the population are farmers. Rural people, especially farmers, are being dispossessed of their holdings, become unemployed and poorer. Both men and women migration inside country has multiplied. The mass exodus is coming to the Dhaka City in the pursuit of work and livelihood. They, ultimately, ends up in the squalid slum houses of the big cities and lives a inhuman life. In the dialogue on 'Climate change, migration and environment in Bangladesh' Dr. Atiq Rahman in his keynote paper claimed that around 35 million people in Bangladesh have already become 'Climate Refugee'.

Decisions will need to be taken now. How to prevent dangerous climate? Who should limit their emissions, how much, and by when? Who should bear the responsibility of those already affected or support those at risk to minimize losses? There may be no simple solutions, as the problems and concerns are quite complex. Our common future rests in the hands of our collective leadership and political decisions.

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Introduction

A climate refugee is someone displaced by climate change induced environmental disasters. Such disasters are the result of incremental and rapid ecological change and disruption that include increased droughts, desertification, sea level rise, and more frequent occurrence of extreme weather events such as hurricanes, cyclones, flooding and tornados. A statistically significant correlation between environmental degradation including climate change was shown by Afifi and Warner (2007), controlling for the already established major drivers of migration. Others consider climate refugees as a subcategory of environmental refugees. A paper by Renaud, Bogardi *et al.* (2007) posed a conceptual framework to understand different categories of people on the move in response to environmental disruptions including climate change.

The term climate refugee is no longer seen as an appropriate term, and has now largely been replaced with *environmental migrant.* Many people have raised objections to the use of the term 'refugee' in a climate context as it becomes mixed up with the legally defined term in the Refugee Convention of 1951(which protects political refugees from persecution). This Convention classifies refugees as those who are fleeing from violence and political intimidation. In the *World Disasters Report 2001* published by the International Federation of Red Cross and Red Crescent Societies, more people are now forced to leave their homes because of environmental disasters than war. Estimates of climate refugees currently range from 25 to 50 million, compared to the official refugee population of 20.8 million[1].

The term 'Climate Refugee' was first used as far back as the eighties, see El-Hinnawi (1985), Jacobson (1988), and Tickell (1989). El-Hinnawi (1985) wrote, "[environmental refugees] are people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life.

Norman Myers of Oxford University has estimated climate change will increase the number of environmental refugees six-fold over the next fifty years to 150 million. The UN University's Institute for Environment and Human Security predicts that by 2010, there will be 50 million

[1] Perez, T., 'The Human Toll of Global Warming', Reuter, 7 December 2006.

'environmentally displaced people', most of them will be women and children. Australian climate scientist Dr. Graeme Pearman has predicted that a 2°C rise in temperature would place 100 million people 'directly at risk from coastal flooding' by 2100. The Intergovernmental Panel on Climate Change (IPCC) has suggested 150 million environmental refugees would exist by 2050. Because the actual phenomena of climate change affecting human movement has not yet been empirically, systematically addressed, the European Commission funded a research project "Environmental Change and Forced Migration Scenarios (EACH-FOR)" to investigate, measure, and create scenarios for future environmental change[2].

Objective of the Study: The objectives of this article are to;

i. depict the environmental migrant situation in Bangladesh; and

ii. identify the policy gap to accommodate the climate refugees in the national policy.

Methodology

The paper is based on secondary data and extensive literature review. The relevant data are derived from reports, journals, books, newspapers, publications of government and private organizations, and websites.

The First Climate Refugee

In 2005, half of Bhola Island in Bangladesh became permanently flooded, leaving 500,000 people homeless. The Bhola Islanders have been described as some of the world's first climate refugees. In 2007, a Bangladeshi scientist stated: "We're already seeing hundreds of thousands of climate refugees moving into slums in Dhaka". These refugees were fleeing flooded coastal areas. The inhabitants of the Carteret Islands in Papua New Guinea are also among the first climate refugees due to sea level rise attributed to global warming and climate change. Other inhabitants of low lying islands and Island states are also at risk. Tuvalu, Kiribati and the Maldives are especially susceptible to changes in sea level and storm surges.

Global Warming and Climate Change

Today, the time for doubt on the climate change has passed and established as the most specter threat for the human being. The United Nations Intergovernmental Panel on Climate Change (IPCC) has

[2] www.each-for.eu

unequivocally affirmed the warming of our climate system and linked directly to human activity. Climate change is a human development issue which erode human freedoms and limit choice that calls into question the enlightenment principle of human progress 'future look better than the past'. The Third Assessment Report (TAR) straightforwardly reconfirms that Bangladesh would be one of the worst victim of incidence and intensity of Hydro metrological disasters induced by climate alteration. Different socio-physical factors such as huge population density, high rate of urbanization, unique geo-spatial settings contribute to make Bangladesh more vulnerable for the adverse effect of climate change.

As global warming is accelerating rapidly many countries, ecosystems and people are suffering from its impacts. Global warming has affected our weather patterns and disrupted our variability and trends in climate. This is resulting in an increase in climate related extreme events like heavy rainfall, flood, cyclone, storm surge, etc. These claim thousands of lives, destroy billions of dollar worth of properties, and disrupt livelihoods of hundreds of millions of people. In 1991, the Intergovernmental Panel on Climate Change IPCC raised the alarm globally by presenting scientific findings on evidence of global warming, emission increase and climate change impacts. This resulted in a worldwide recognition that some serious actions are necessary to save our planet. In 1992 the UN Climate Convention led to the establishment of an inter-governmental process to identify and implement necessary response measures to curb global warming and address its negative impacts. The Convention led to the development of the Kyoto Protocol in 1997 which provides the mechanisms, targets and timetable for greenhouse gas emission reductions. To help vulnerable countries and people adapt to climate change and increase resilience, additional support was also agreed. Since then, ten years have passed. From an environment challenge, climate change emerged and established as a challenge to development, poverty reduction efforts, livelihood options, biodiversity, and human security. However, in terms of progress made in reducing greenhouse gas emissions, the report card is disappointing. Convention commitments to addre s current impacts and future risks from global warming through support for reducing vulnerability and adaptation measures is yet to materialize in a manner that will match current and future priorities. Funding through the creation of the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF) under the Convention has been fractions of the amount required as priority by the poorest and vulnerable countries. The Adaptation Fund

under the Kyoto Protocol is yet to demonstrate its potential to mobilize financial resources to match priority investments to reduce vulnerability, adapt and increase resilience. For almost a decade or so, the negotiation process has been pursuing to include all major countries that may have a role with regard to a collective global effort.

In 2006, Sir Nicholas Stern, in his review, Economics of Climate Change demonstrated that the cost of inaction now, in both greenhouse gas emissions reductions as well as adapting to climate change, will result in damages and losses of many proportion. Science has confirmed that the future impacts of global warming and climate change will have severe and far reaching consequences for today's generations and many more to follow. The fourth Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC AR4), published in 2007, outlines climate changes impacts in six main areas; ecosystem, food, water, health, coasts and industry. The IPCC AR4 also recognized that the developing countries and the poorest people will suffer the most from the climate change. People of the developing countries are more vulnerable to climate change than the developed nations because of their unfavorable geography, limited assets and greater dependence on climate-sensitive sources of income.

Islands disappearing in the coast:

Because of climate change, a sea level rise of 0.5 meter over the last 100 years has already eroded 65% landmass of 250 square kilometer Kutubdia, 227 square kilometers of Bhola and 180 square kilometer of Sandwip islands. Over the past 100 years, the once 1,000 square kilometer island into a small 21 square kilometer landmass. In case of any further sea level rise, islands like these and the entire coastal area would be hit hard resulting in billions of dollars of losses in GDP, economic downturn, ecological damage and livelihood assets and options.

Some of the impacts could be in the form of new challenges and other could emerge as old threats made more severe by climate change. For instance, along with other extreme weather events like flooding and tropical cyclone, sea level rise is an impending threat to the coastal areas in Bangladesh, which has long and densely populated coastlines with many low-lying remote islands. In the severe climate change scenario, sea level rise poses an existential threat that would inundate 18 percent of total Bangladesh's land impacting 11 percent of the country's population. Intergovernmental Panel on Climate Change (IPCC) had predicted that 17.5% of

Bangladesh's landmass could be lost beneath the waves and approximately 20 million people will become ecological refugees[3]. Salt water intrusion from sea level rise in low-lying agricultural plains, along with other hazards, could lead to 40 percent decrease in food grain production and would increase forced migration to the urban slum areas[4]. The Intergovernmental Panel on Climate Change (IPCC), the international science body that regularly produces assessment reports on climate change, suggested 200 million environmental refugees would exist in the world by 2050. In this projection, the impacts of climate change, including coastal flooding, shoreline erosion and agricultural degradation were seen as major factors contributing to bulk of environmental refugees. Estimate shows that with just a one to two degree increase in temperature would force physical dislocation of more than 35 million people in Bangladesh by 2050[5].

Bangladesh Faces Climate Change Refugee Nightmare

Bangladesh is recognized worldwide as one of the countries most vulnerable to the impacts of global warming and climate change. This is due to its unique geographic location, dominance of floodplains, and low elevation from the sea, high population density, high levels of poverty, and overwhelming dependence on nature, its resources and services. The country has a history of extreme climatic events claiming millions of lives and destroying past development gains. The people and social system have knowledge and experience of coping with their effects—to some degree and extent. Variability in rainfall pattern, combined with increased snowmelt from the Himalayas, and temperature extremes are resulting in crop damage and failure, preventing farmers and those dependent from meaningful earning opportunities. In a changing climate the pattern of impacts are eroding our assets, investment and future. This stands for families, communities and the state. Global warming and climate change threatens settlements and the number of people displaced from their land due to riverbank erosion, permanent inundation and sea level rise is increasing rapidly every year.

Rapid global warming has caused fundamental changes to our climate. No country and people know this better than Bangladesh, where millions of people are already suffering. Sudden, severe and catastrophic floods have intensified and taking place more frequently owing to increased

[3] BBC News Online, Dt. 24 January 2000

[4] The Daily Independence, Dt. 11 July 2009

[5] The Daily Independence, Dt. 11 July 2009

rainfall in the monsoon. Over the last ten years, Bangladesh has been ravaged by floods of catastrophic proportion in 1998, 2004 and 2007. Bangladesh suffered two massive floods and a cyclone last year that together killed about 4,500 people, made at least two million homeless and destroyed 1.8 million tonnes of rice, the country's main staple. Even without the additional threat of global warming, the country's future is under pressure from a rising population and shrinking farmland. The country lost a third of its agricultural land to accommodate more people as the population rose from 75 million in 1971.

Heavy downpour over short spell has resulted in landslides. Cold spell claims human lives as well as damage crops. Droughts often affect even coastal districts. Bad weather keeps the coastal waters risky for fishing expeditions. Damages and losses due to climatic extremes like floods, cyclones, tornados, and droughts are phenomenal to the victims as well as the state. These are early signs of global warming effects. In the future, millions of people will lose their land and houses. Their survival will be threatened Sea level rise in the coming decades will create over 25 million climate refugees. This is twice the entire population of the Netherlands.

Majid, 65, a victim of the annual floods that ravage Bangladesh, has been forced to move 22 times in as many years. He lives on Batikamari Island on the Jamuna River, 300 km (180 miles) north of Dhaka and fears his remaining days will be spent on the run from the river, which is constantly creating and retaking land, depending on the season. There are millions like him. Some have found temporary shelter, mostly on other islands in the rivers that emerge when water levels drop during the summer.

Experts say a third of Bangladesh's coastline could be flooded if the sea rises one metre in the next 50 years, creating an additional 20 million Bangladeshis displaced from their homes and farms. This is about the same as Australia's population[6].

James Hansen, director of the US-based Nasa Goddard Institute for Space Studies, says Bangladesh's entire population will become environmental refugees by the end of the century because its entire landmass will be under water. Government officials and NGOs estimate about 10 million people are already threatened by annual floods and storms damaging riverine and coastal islands.

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[6] International Institute for Environment Development

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Bangladesh must move on in its pursuit to develop and strive as a nation, taking into account its vulnerability, susceptibility and capacity to manage climate risks and adaptation. In this respect, the government has taken bold steps to prepare and respond to the challenge already on us. To help the country and its people build necessary capacity and resilience, regional and international cooperation is essential. Major rivers that draws freshwater and sediment from upstream basin to the Bay of Bengal going through Bangladesh originate in neighboring countries and water flow during both summer and dry period is critical for agriculture and food and drinking water security. According to Mohammad Aminul Islam Bhuiyan, the top bureaucrat in the government's Economic Relations Division, Bangladesh needs $4 billion to build embankments, cyclone shelters, roads and other infrastructure in the next 15 years to mitigate the threats[7]. However, in September 2009, the Bangladesh government launched a campaign against rich countries, saying that they needed to cough up billions of dollars to help it, one of the poorest nations in the world, fight climate change. Britain, the only country to respond thus far, pledged £75 million, and called on all nations to thrash out a new global warming agreement[8].

Responding to the Challenge

Sustainable Development is understood as improvement in well-being of people, environment and economy. Development must ensure reducing the risks posed by climate change to people's lives ad livelihoods. Development itself serves as a key to adaptation by enhancing resilience and increasing capacity to respond effectively to climatic challenges. On the other hand, adaptation is vital for development and progress and reduces costs of natural disasters. Ultimately, adaptation to climate change requires economy wide planning and regional cooperation. The links between development and adaptation has implications for official development assistance (ODA), both in terms of scale and focus. Equity warrants assistance from developed countries as main source of polluters who should compensate for the costs incurred to climate change victims in developing countries particularly the poor and already vulnerable suffering for what they are not responsible.

1. Global response and expectation

Adaptation to climate change is already an urgent priority for Bangladesh - as one of the poorest and most vulnerable countries. Reducing the risks posed by climate change to people's lives and livelihoods and to national

[7] Reuters, 14 April 2008

[8] The Daily Star, 27 December 2009

development processes is our top priority. Bangladesh and its people can become less vulnerable if sustainable development and other goals address and integrate climate risks.

International support for adaptation to climate change is paramount since links between development and adaptation has implications for official development assistance, in scale as well as focus. Adaptation to climate change will add a massive burden to Bangladesh's budgets and development assistance. In this regard, commitments made already to double international aid flows by 2010 must be delivered. Climate Change Negotiations provide a unique platform for the global community to come together and work towards protecting the global commons and ensuring a common future. It should be re-emphasized that the UNFCCC process and funds are essential to support capacity building, identifying and addressing urgent and immediate priorities.

Key expectation from the global community is that equity is ensured, justice delivered, and commitments are adequate and in time while compensating climate victims, climate refugees, and helping those vulnerable to cope with climate challenges. Climate risk management and adaptation is a survival as well as development concern. The international community should ensure an equitable regime that proactively applies "precautionary" and "no regrets" principles while funding adaptation needs and priorities.

2. National Response

The Government of Bangladesh considers climate change as a priority concern and is committed to take urgent and long term actions to reduce the vulnerability of its people and risks to national development. Recognizing the dimensions of the challenge, the government has taken steps for climate resilient development. The country is well set to address long-term measures in the national development planning and implementation process through relevant policy and institutional uptake. In this respect, the urgent task is to ensure the relevant policy makers and decision makers, development managers and professionals, local government authorities, research and academic institutions, development service providers and extension agents, development partners, etc., identify, integrate and address climate risks in their plans and actions. Very recently, a project addressing coastal afforestation from those listed as priorities for Bangladesh in the country NAPA has been approved by the GEF from the Convention LDC Fund.

A Climate Change Cell

To address current impacts and manage future risks of climate change and variability at all levels in all stages toward a climate resilient Bangladesh, the government has established the Climate Change Cell. The Cell provides the central focus for the Government's climate change related work, operating as a unit of the Department of Environment (DoE). Its objective is to enable the management of long term climate risks and uncertainties as an integral part of national development planning.

The Climate Change Cell has established a mechanism that facilitates management of long-term climate risks and uncertainties as an integral part of national development planning. The Cell also facilitates strengthening the capacity of the professionals, practitioners, policy makers to reduce unacceptable risks and improve preparedness for climate change impacts.

National Adaptation Programmes of Action (NAPA)

As an outcome of the climate change convention, National Adaptation Programmes of Action (NAPAs) provide a process for Least Developed Countries to identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change. Bangladesh was among the first countries to prepare and submit its NAPA with the UNFCCC Secretariat in November 2005. The Climate Change Cell has a mandate to continue the NAPA process and facilitate implementation of NAPA. Some of the projects proposed in NAPA need to start without delay to provide vital feedback to the relevant implementing agencies and potential donors for long term planning. Adaptation Measures as Prioritized in Bangladesh NAPA are as follows:

Adaptation Measures as Prioritized in Bangladesh NAPA

Intervention measures:

- Promoting adaptation to coastal crop agriculture to combat salinity intrusion through maize production under Wet Bed No-tillage Method and Sorjan systems of cropping in tidally flooded agro-ecosystem.
- Adaptation to agriculture systems in areas prone to enhanced flash flooding - North East and Central Region through no-tillage potato cultivation under water hyacinth mulch in wet sown condition, and vegetable cultivation on floating bed.

- o Promoting adaptation to coastal fisheries through culture of salt tolerant fish especially in coastal areas of Bangladesh.
- o Adaptation to fisheries in areas prone to enhanced flooding in North East and Central Region through adaptive and diversified fish culture practices.
- o Construction of flood shelter, and information and assistance centre to cope with enhanced recurrent floods in major floodplains.
- o Reduction of climate change hazards through coastal afforestation with community focus.
- o Providing drinking water to coastal communities to combat enhanced salinity due to sea level rise.
- o Enhancing resilience of urban infrastructure and industries to impacts of climate change including floods and cyclone.

Facilitating measures:

- o Capacity building for integrating Climate Change in planning, designing of infrastructure, conflict management and land-water zoning for water management institutions.
- o Exploring options for insurance and other emergency preparedness measures to cope with enhanced climatic disasters (e. g. flood, cyclones and drought).
- o Mainstreaming adaptation to climate change into policies and programmes in different sectors (focusing on disaster management, water, agriculture, health and industry).
- o Inclusion of climate change issues in curriculum at secondary and tertiary educational institution.
- o Climate change and adaptation information dissemination to vulnerable community to raise awareness.
- o Promotion of research on drought, flood and saline tolerant varieties of crops to facilitate adaptation in future.
- o Development of eco-specific adaptive knowledge (including indigenous knowledge) on adaptation to climate variability to enhance adaptive capacity for future climate change.

Climate Change Strategy and Action Plan

More recently, Bangladesh has released its Climate Change Strategy and Action Plan (CCSAP), which identifies 6 pillars for action on climate change: food security, social protection and health; disaster management; infrastructure; research and knowledge; mitigation; and institutional development. In this case a significantly more demanding sum of $5 billion over the next 5 years is nominated. The Government of Bangladesh has established a National Climate Change Fund, with an initial capitalization of $45 million.

Remaining Challenges

The discussion of climate change adaptation in Bangladesh tends to give little thought to migration. There is little mention of migration in the National Adaptation Programme of Action or in the CCSAP. For example, in the CCSAP, the problem of climate change migration is acknowledged, but there is little discussion of what needs to be done to minimize potentially negative effects from migration. Migration is not mentioned, either, specifically in the discussion of social protection programmes in the CCSAP.

In situations where adaptation efforts are not sufficient to prevent migration, facilitation of the migration process might be important to minimize negative impacts. The UNDP (2007) has identified this as an important area and has specifically noted that development of skills for potential migrants to ease their move and transition to a new location will be important. To the extent that climate change migrants follow the trend of movement to cities, the need for skill development is heightened by the higher returns to skills in urban areas (Lucas 2004). Migrants also need to be equipped with information (for example, on travel costs and setting up in a new location) to undertake the move with minimal effort and cost; previous work has found that

Bangladeshi migrants are often ill-informed and this has allowed unscrupulous agencies to take advantage and charge exorbitant fees. There might also be a role for financing resettlement costs. If 5 million people were to move as a result of sea level rise over the next century, recent resettlement experience suggests that rehabilitation costs for these people could total about $ 5.2 billion[9] .

[9] International Organization for Migration (IOM), 2004

International migration will depend on whether other countries are prepared to receive migrants from Bangladesh. Developments on this front are not promising: in 2002 India began construction of a fence along the Indian-Bangladesh border to stop smuggling, trafficking and illegal immigration, but which also serves the purpose of controlling the flow of future forced climate migrants[10]. Increased migration flows also heighten the potential for conflict between Bangladesh and India.

The United States Should Come Forward

The developed countries are responsible for the climate change. According to a statistics, the USA's per head Carbon dioxide emission rate is 20 times more than Bangladesh that creates greenhouse effect. The United States, as the largest contributor to global warming (accounting for 25 percent of the world's carbon pollution), has a moral responsibility to lead the global effort to curb this phenomenon. The United States can use its economic and technical strength to transform this daunting challenge into an opportunity for innovation.

Greenhouse gas emissions are changing the Earth's climate, which causes natural disasters to grow more severe and more frequent, often creating a new wave of refugees fleeing climate change. In the Philippines (2006) 40,000 people displaced by typhoon is only one of the examples of necessary relocation due to natural disasters. Rising sea levels, increasing desertification, weather-induced flooding, and other environmental changes, will likely displace many more hundreds of millions of people. The British-based aid and development charity Oxfam estimated the number of people affected by climatic disasters would rise by 54 percent to 375 million people a year on average by 2015, based on data on similar disasters since 1980.In the report, 'The Right to Survive' it warned that humanitarian aid spending and the way it was allocated was far from prepared to meet the challenge[11].

Accidents of geography have caused the countries least able to prevent climate change to become the most vulnerable to its earliest effects. Developing countries bear minimal responsibility for climate change because they have little industry and produce relatively small amounts pollution. But their populations–often the poorest of the world's poor–are more likely to occupy dangerous locations, such as coast lines, flood plains, steep slopes, and settlements of flimsy shanty homes. The

[10] International Organization for Migration (IOM), 2008a

[11] The Daily Star, 22 April 2009

governments of these poor countries therefore carry the largest burden associated with climate refugees though they are already failing to meet the basic needs of their citizens and are ill-equipped to recover from disasters.

We can already see the effects that global warming has on some island nations. The inhabitants of the Carteret Islands were the first climate refugees forced to relocate due to sea level rise attributed to global warming. The Papua New Guinean government authorized a total evacuation of the islands in 2005. Estimates show that by 2015 Carteret will be largely submerged and entirely uninhabitable.

Floods and other weather-related disasters have also caused nearly 10 million people to migrate from Bangladesh to India over the past two decades, creating immense population pressures. A one-meter rise in sea level–a widely predicted consequence of global warming due to an increase in the average temperatures by 2.5 to 10.4 degrees Fahrenheit over the next 40-50 years–will, in turn, inundate three million hectares in Bangladesh, and displace another 15-20 million people.

The climate refugee problem will intensify as global warming increases, potentially yielding between 150 million and 200 million refugees as early as 2010. Despite the scale of the problem, no one is really addressing the needs of these refugees, and much of the discussion about them has been limited to defining their official legal status–whether they should be officially classified as refugees or not.

Inaction in the face of mounting evidence could cost billions of dollars and many innocent lives. Economist Sir Nicholas Stern released a report showing that global warming could shrink the global economy by 20 percent. But taking action now, to curb climate change, would cost just one percent of global gross domestic product and ultimately gives countries a huge return on their investments through the creation of new technologies, industries, and jobs.

The United States must implement a bold program that both advances emerging technologies and makes greater use of existing alternative energy resources. With support from the federal government, bio-fuels can have a tremendous positive impact on curbing our need for oil and ameliorating the global pollution that threatens the world's most vulnerable people.

The federal government should also provide greater financial and technical assistance to help vulnerable countries prepare for climate change. Global funding to help poor countries adapt to climate change was only $0.02 billion in 2005, compared to $80 billion in subsidies to oil companies.

The U.S. must also implement a Plan for Global Warming Preparedness, which would include mapping out vulnerabilities via a National Global Warming Community Impact Assessment, and create state-level global warming preparedness plans.

The United States can make a great positive impact on the global climate by investing in new technologies, providing financial assistance to help prepare poorer nations, and mapping out a national preparedness plan. These three different approaches will help curtail global warming and diminish the growing population of climate refugees. Inaction is an option we can no longer afford.

Concluding Comments

The link between climate change and migration is far from straightforward. Impoverished Bangladesh is one of the lowest emitters of harmful carbon dioxide, but one of the worst affected by climate change. Experts predict that there will be 20 million more migrants by 2050 because of an increase of extreme weather conditions caused by climate change. Professor Atiq Rahman, a highly acclaimed Bangladeshi climate specialist, said richer nations will be forced to open their countries up to climate refugees as land becomes scarce in the densely populated nation. "Bangladeshis are already being displaced because of climate change. It's not happening in the distant future. It's happening now," he says. "Being displaced is just one of the problems of rising sea levels. People will lose their livelihoods; food security will be under threat and so will water security"[12].

There is a continuum of examples, ranging from situations where climate change might have primacy in the decision to move to others where it is just one of a number of associated social, political and economic reasons for migration. Frank Biermann, professor at Vrije University's Institute for Environmental Studies in Amsterdam, said, "The system is moving further away from meeting the needs, and the countries that are becoming more restrictive (on migration) are those who are largely responsible for global warming". The professor argues that long-term strategies like

[12] www.independent-bangladesh.com

moving people away from high-risk coastal zones could avert a crisis later.

We must act now to create an action plan that addresses the potentially devastating human toll of global warming. Collective actions are necessary now to understand risks and take actions. International efforts and regional co-operation in planning responses to climate change must act urgently to avoid what is unmanageable and manage the unavoidable. The case of Bangladesh, one of the first and major victims of human induced global warming and climate change, should be taken seriously and addressed collectively.

Climate refugees already exist and it is the moral imperative of the international community to try to ameliorate their situation. A formal extension of refugee status will be an important first step for providing a baseline of international assistance and the mix between temporary and permanent migration also needs further exploration. The IPCC also has confirmed in their report of the fourth assessment that global warming is accelerating rapidly, impacts are already evident, and urgent actions must take place now as projections clearly defines a roadmap of worsening impacts over the coming decades. The UN Climate Change Secretariat has recently made available a report which summarizes the financial requirements to support both adaptation and mitigation requirements over the next few decades. Sufficient and collective actions to combat global warming and climate change must take now, without further delay. Millions are already suffering. The poor of this world are already victims and will suffer most from unavoidable global warming and adverse future impacts.

Our hands hold our future. We must secure the well-being and development of Bangladesh by making the people and country resilient, through necessary resource and support, both internal and external. Together, we must address this challenge and demonstrate our environmental integrity to the human race.

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