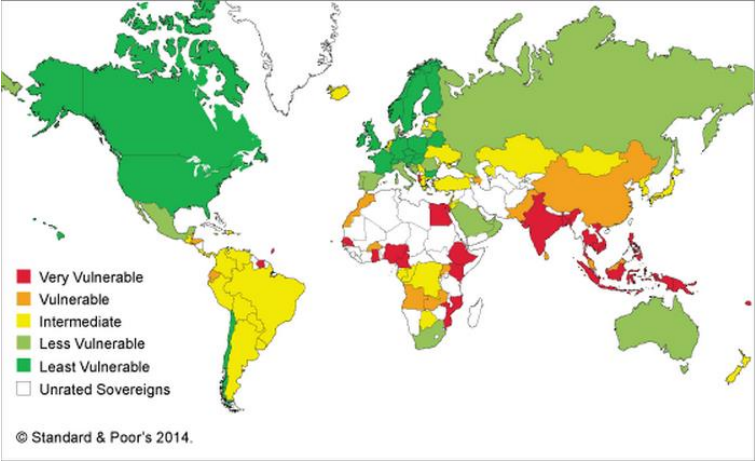


**The Effects of Climate Change on Migration and Sustainability in Developing Countries:
The Case of Bangladesh and Thailand**



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Introduction

Climate change is one of the world's most imperative issues, as it is currently responsible for overwhelming consequences that threaten our and future generations' life on this planet (**Rockstrom et al, 2009**). There is extreme inequality in the vulnerability to the effects of climate change between the developed and developing countries, with the developing countries carrying most of the burden (**Stern, 2007**). The developing countries inability to adapt to climate change causes many local populations to migrate away from their homes, either temporarily or permanently, in order to sustain (**Marchiori and Schumacher, 2009**). Two examples of this can be found in Bangladesh and in Thailand, where the changing climate has driven agriculturally dependent populations to migrate from their homes, to areas where they can seek income that is less vulnerable to the changing climate (**Islam et al. 2014; Marks, 2011**) Future climate induced migration is expected to increase dramatically in the future (**Marchiori and Schumacher, 2009**).

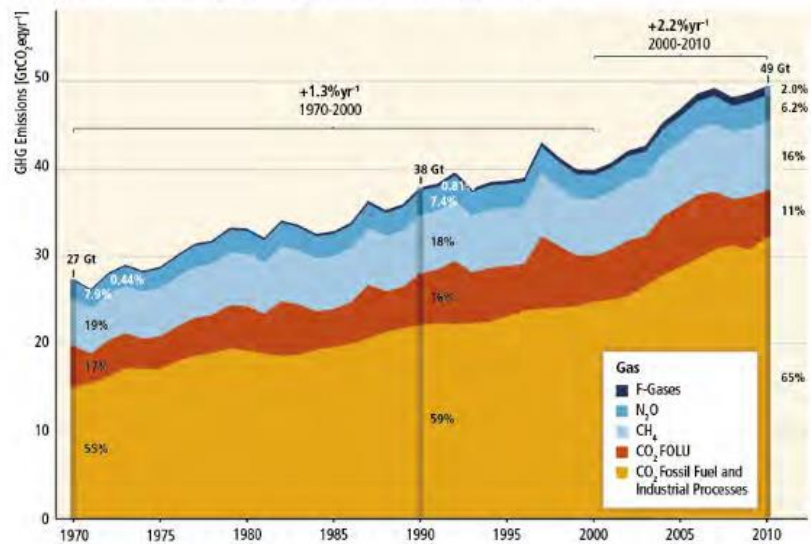
Climate Change

It is now an accepted fact among the scientific community that climate change is one of the world's most serious and pressing issues, requiring urgent response (Stern, 2007). Scientists are confident that rising levels of greenhouse gases (GHG) in the atmosphere are caused by human activity and are the main cause of climate change, which leads to global warming, severe weather conditions, sea-level rise, and decline in public health (USEPA, 2014). Additional predicted effects of climate change include land loss due to sea level rise, loss of biodiversity, productivity declines, warmer and drier climates or wetter regions, and more extreme weather

events (IPCC, 2007). These processes can have catastrophic consequences to the Earth's balance and can be detrimental to future human development (Rockstrom et al, 2009).

Anthropogenic greenhouse gas emissions have substantially increased since the beginning of the industrial era. Driven by global economic and population growth, concentration of carbon dioxide, methane, and nitrous oxide have reached a level higher than they have been over the last 800,000 years (IPCC, 2014). The increase in total GHG emissions from 1970 to 2010 is shown in the graph below:

Figure 1: Total Annual Anthropogenic GHG Emissions 1970-2010

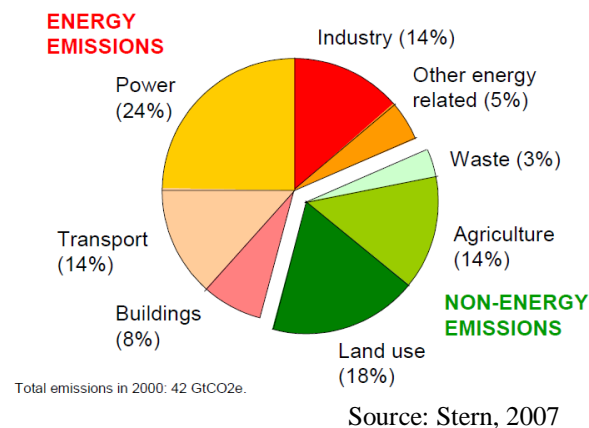


Source: IPCC, 2014

Themore greenhouse gases accumulate in the atmosphere, the morethey will prevent the sun's radiation from escaping Earth's atmosphere. This process leads to a warming of overall temperatures on Earth, which is projected to reach anywhere between 2°C and 6°C over the next century (Marchiori and Schumacher, 2009).

The main sources of global GHG emissions are the energy and transportation sectors, land use, the agricultural sector, and the industrial sector. All sources of total global GHG emission are detailed in the following chart:

Figure 2: Total Emissions in 2000 by Sector



Studies show that continued emission of greenhouse gases at current rates will result in further warming as well as in enduring changes in all aspects of our climate. The possibilities for severe and permanent impacts will increase, for people and for ecosystems. Restraining climate change and its effects requires persistent and substantial reductions in greenhouse gas emissions which, along with adaptation, can reduce some of the prevailing risks (IPCC, 2014).

Inequality in the Effects of Climate Change

The overwhelming projection is that the “poorest countries will be especially hard hit by climate change, with millions potentially pushed deeper into poverty” (Stern 2007, p.487). Though the poorest countries are likely to be hit the hardest, it is not them, but the developed countries, that are responsible for most of the GHG emissions. For example, the European Union, North America, and Japan collectively emit almost 60% of annual global emissions, even though they account for only 16% of the world population. Furthermore, North America, Europe,

Japan, and China collectively account for approximately 65% of the total world energy use, compared to the least-developed countries who account for only 5% of total world energy use (Marchiori and Schumacher, 2009).

Climate Change Induced Migration

As indicated above, the adverse effects of climate change in developing countries paired with country's inability to mitigate or adapt to these effects can often lead to migration brought about by environmental factors. There are several cases that suggest that climate migration is already a widespread occurrence. For example, droughts in the USA displaced more than 30,000 people in the 1930's, the 2004 tsunami in Indonesia displaced 500,000 people, and droughts in Burkina Faso and Sudan from 1968–1973 displaced around 1,000,000 people (Marchiori and Schumacher, 2009).

Climate Change Induced Migration in Bangladesh

Write at least 4 pages

Since the 1970's, Bangladesh has experienced both gradual environmental change such as land erosion and salinity intrusion, as well as a number of extreme weather events such as floods and tropical cyclones. The extreme weather events in Bangladesh have been shown to induce temporary migration, while gradual effects lead to long-term or permanent migration (Islam et. al., 2014).

Climate Change and Migration in Thailand

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Thailand is one of the biggest rice producers and exporters in the world, with over 40% of the population relying on agriculture as their means of income. As farmers consume 70% of Thailand's water supply, climate change effects such as drought, flooding, and changes in rainfall put a major stress on the agricultural sector, and threaten food security in the entire country. Up to date, there is an estimated loss of 0.7 million tons of rice due to flooding. In addition to agricultural yields, climate change in Thailand has also put a strain on livestock production as a result of overwhelming heat, poor food quality, and diseases. The devastating drought in 2010 caused water levels in the Mekong River to fluctuate, which changed the local fish population drastically and threatened the livelihood of local fishermen (Marks, 2011).

Comparison

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Conclusion

As human induced climate change continues to cause more frequent and intense weather events, a rising number of people are likely to migrate away from their homes, seeking arable land, or simply a place that will allow them to live their lives with sufficient access to food, water and health, without the constant threat of flooding, droughts, sea-level rise, land erosion, or devastating storms (Marchiori and Schumacher, 2009; Islam et. al., 2014). Developing countries' increased vulnerability to climate change, paired with political instability, poor governance, and

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