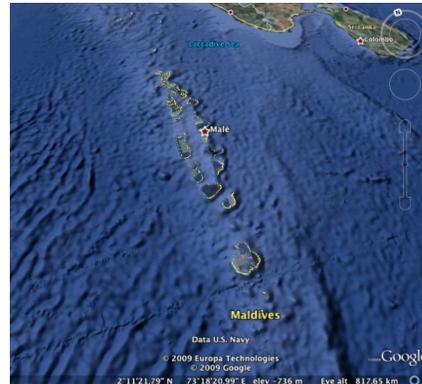

MASTER OF ARTS IN LAW AND DIPLOMACY PAPER

**CONCEPTUALIZING CLIMATE CHANGE MIGRATION: A LITERATURE
REVIEW AND ANALYSIS OF THE STATE OF THE FIELD AND ITS
IMPLICATIONS**



SUBMITTED TO PROFESSOR KAREN JACOBSEN

BY
EMILY NESHEIM

In full fulfillment of the MALD Paper Requirement

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Cover Page Maps

Upper Left

Map 1: Regional Perspective- Carteret Atoll, Papua New Guinea

Upper Right

Map 2: Regional Perspective- Republic of Maldives

Lower Left

Map 3: Regional Perspective-Alaska, United States

Lower Right

Map 4: Regional Perspective-Bangladesh

All cover page maps were accessed from Google Earth on April 15, 2009.

Acknowledgements

A special thank you to my thesis advisor, Dr. Karen Jacobsen, who provided invaluable guidance through every stage of this exercise. Also, to Dr. Elizabeth Ferris who cultivated my interest in exploring the subject.

Dedication

This thesis is dedicated to my Mother who helps me keep things in perspective; to my Father who always cheers me on; to my Godmother Shirley who provides constant encouragement; and to Theresa Tufaro, Marian Bassett, Christina Alfirev and Scott Dash, who were sources of on-going humor and support throughout our term at this institution.

Abstract

The purpose of this thesis is to explore the literature about the intersection of climate change and environmental processes, and human migration. While this topic is not new, there has been increased and intensive attention to the field within the past 10 years. Several patterns have emerged from the study and the discussion of this subject. One is the evolution of the literature from more general predictions about climate change, environmental events such as desertification and sea level rise, and population growth and migration, to more specialized studies on the direct impact of climate change and the environment on migration. At the same time, the few completed studies that have been conducted conclude inconsistent and conflicting results about climate and environment induced migration. This leads to the other pattern: diverging views on how to conceptualize the subject and its implications for the protection of climate change migrants, and on whether and how to create and implement policy to ensure protection. Thus, this state of the art review will track the discussions and provide some analysis of debates.

Table of Contents

Introduction	1
Chapter I:	
How Human Migration Relates to Climate and Environmental Changes	4
Climate Change Patterns and Impacts	4
The Linkages Between Climate Change and Migration	7
Chapter II:	
What Climate Change Migration <i>Is</i> and <i>Is Not</i> : Definitions and Predictions	17
Defining Climate Change Migration	17
Predicting Climate Change Migration	23
What Climate Change Migration Is Not	36
Chapter III:	
Current Climate Change Migration- Four Case Studies	37
Case 1: Carteret Islands, Papua New Guinea	37
Case 2: Republic of Maldives	42
Case 3: Alaska, United States	48
Case 4: Bangladesh	51
Methodology in Evaluation of Cases	58
Chapter IV:	
The Agendas <i>Behind</i> the Agenda	61
Human Security and State Security	62
Human Rights, Development and Humanitarian Assistance	65
Environmental Advocacy	68
International Politics	68
Chapter V:	
Protection Gaps and International Responses	72
Protection Gaps	72
International Responses	76
Conclusion	81
Bibliography	84
Diagrams	
<i>Diagram 1: Basic Model of Climate Change Migration</i>	4
<i>Diagram 2: Category I Climate Change Migration Model</i>	13
<i>Diagram 3: Category II Climate Change Migration Model</i>	16
<i>Diagram 4: The Larger Picture of Climate Change Migration</i>	34
Maps	

Cover Page

Map 1: Regional Perspective- Carteret Atoll, Papua New Guinea

Map 2: Regional Perspective- Republic of Maldives

Map 3: Regional Perspective-Alaska

Map 4: Regional Perspective-Bangladesh

Map 5: Carteret Atoll, Papua New Guinea 37

Map 6: Island of Male, Maldives 42

*Map 7: Alaska, United States-
Towns of Kivalina, Newtok, Shaktoolik, and Shishmaref* 48

Map 8: Bangladesh 51

Introduction

Human migration as a consequence of climate and environmental changes is not a recent phenomenon. Historically, it has been a manner in which people cope and survive in the face of environmental degradation and destruction. If this is the case, why has this matter drawn the captive audience of academics and think tanks, governments and policymakers, international aid and inter-governmental organizations within the past decade? In the attempt to understand the significance of this issue, why climate change migration has been subject to increasingly intensive scrutiny and study, this paper identifies and connects the scientific reports on climate change, scholarly interpretation of the implications of climate change on migration, and the policy debates on how to manage climate change migration.

One of the most significant barriers to understanding the full scope of this field is that there is little conceptual clarity on what climate change migration actually means. It is difficult to identify climate and environmental factors as the sole or even primary causes of displacement. Often, other factors such as economic livelihood considerations, social interactions, and political dynamics influence migration flows. Therefore, the notion of 'climate change migration' put forth in this paper establishes causal proximate links between climate change, environmental change, and migration.

The first chapter of this paper explores the theories and concepts in the literature about how climate change and environmental processes and events lead to migration. It is important to clarify that climate change is not the proximate cause of migration. Rather, changes in climate affect the environment and it is these environmental changes that are more closely associated with migration. The analysis will draw primarily from

scientific studies that indicate that climatic changes have the potential to drastically change the environment and alter significantly the physical landscape of human settlement. I will model these linkages in order to contend that climate change causes migration in only limited and specific manners.

The second chapter is divided into two parts. The first seeks to define climate change migration. Indeed, one of the things that make the study of this field particularly interesting and challenging is that there is no legal term and definition of a person who is displaced by environmental changes. Some agencies such as the International Organization for Migration (IOM) have working definitions. Others use variations of “environmentally displaced persons” and the legally incorrect term, “environmental refugees.” The other part looks at the predicted scale of climate change migration. It identifies different methods to analyze broad patterns of climate change migration, provides estimates regarding the number of climate change migrants within the next century, and explains key characteristics of climate change migration flows. Overall, this chapter addresses the difficulties of defining this field given the limited conceptions of the full breadth and impact of climate change migration.

The third chapter describes four case studies of current or imminent displacement on account of sea level rise. There are other environmental processes, such as desertification, and extreme weather events, such as cyclones, that cause displacement. However, this paper will focus on sea-level rise and its effects because they are clear causal factors of migration. I will use the examples of the Carteret Atoll in Papua New Guinea, the Republic of Maldives, Alaska, and Bangladesh as representative cases of displacement in regions that are low-lying or are otherwise susceptible to the effects of

sea rise. To indicate how climate change has profoundly affected the residents in these regions, each case study looks at the current state of the environment, as it relates to climate change, and its predicted impact on human migration.

The fourth chapter examines how a variety of professional disciplines have drawn increased attention to and shaped the discussion on climate change migration. The sectors of human security, state security, humanitarian aid, development aid, environmental advocacy, and international politics have provided important ideas and perspectives to the field. While these contributions are important because they allow one to understand the subject in a wider context, it is also crucial to be cognizant of the underlying agendas and interests specific to these sectors. This section will identify how the subject of climate change migration supports, reinforces, and or advances their respective agendas, and what that means for policy and practice in this field.

The last chapter is also divided into two sections. The first explains the legal protection gaps for climate change migrants. There are international protection mechanisms for refugees and even a normative protection framework for internally displaced persons (IDPs). Yet, they do not provide sufficient protection for climate change migrants. The second details potential international policy responses and the political barriers in implementing protection measures that include climate change migrants. Even though one cannot prevent climate change migration, *per se*, I maintain that there should be continued and more thoughtful discussion about how to mitigate and manage the consequences of climate change migration.

Chapter I: How Human Migration Relates to Climate and Environmental Changes

This section relies on scientific reports accepted widely among the ‘international community’ and specifically, among national governments, to describe how climate change is predicted to lead to human migration. One part will explain briefly how others have defined what climate change is and means. With this framework in mind, I will present models to illustrate my understanding of the relationships among climate change, environmental processes, and migration. As mentioned in the introduction, climate change does not lead directly to and is not the proximate cause of migration. In this sense, there is no such phenomenon as climate-induced migration. Rather, it has or will produce environmental conditions that may lead to migration. I employ the following model that links climate change to the environment and to migration:

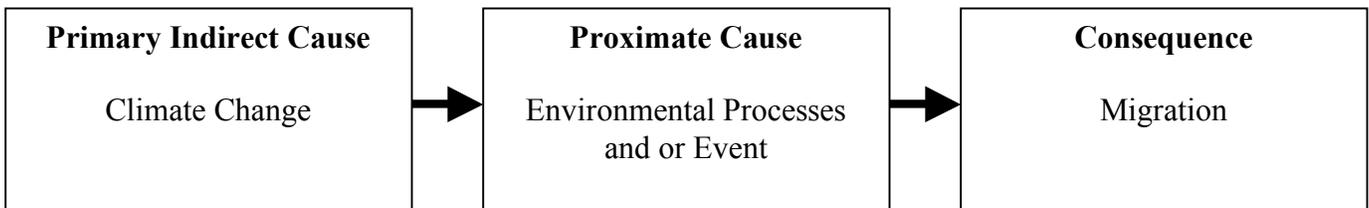


Diagram 1: Basic Model of Climate Change Migration

Climate Change Patterns and Impacts

The Intergovernmental Panel on Climate Change (IPCC)¹ contends that the warming of the climate system is unequivocal. For instance, eleven of the twelve years from 1995-2006 ranked among the twelve warmest years in the instrumental record of

¹ The Intergovernmental Panel on Climate Change (IPCC) is a scientific intergovernmental body that the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established in 1988. IPCC is composed of the governments of WMO and UNEP, and scientists who both contribute data and research, and review the findings from their peers. Because it achieves this level of attention, IPCC reports are cited widely among academics within natural science and social science fields and policymakers.

global surface temperature since 1850.² The Stern Review³ concurs with the IPCC report. The Review notes that the Earth has warmed by 0.7°C since between around 1900 and 2005.⁴ Furthermore, the Review predicts that between 2030 and 2060 pre-industrial levels of greenhouse gases will double, which will very likely result in a rise between 2-5°C in global mean temperatures.⁵ It will be the higher latitudes and continental regions that will generally experience temperature increases significantly greater than the global average.⁶ For instance, average Arctic temperatures have increased at almost twice the global average rate in the past 100 years. Furthermore, average Northern Hemisphere temperatures during the second half of the 20th century were *very likely*⁷ higher than

² Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 2008, (accessed October 10, 2008); available from http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf, 30.

³ The Stern Review on the Economics of Climate Change is a report submitted originally to the U.K. Prime Minister and the Chancellor of the Exchequer to assess the nature of the economic challenges of climate change and how the U.K. and the international community could respond to those issues.

⁴ *Stern Review: The Economics of Climate Change*, HM Treasury, UK, Cambridge University Press, 2006, (accessed August 23, 2008); chapters available from http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_Report.cfm. Part 2, 58.

It attributes the rapid change as a consequence the increase in greenhouse gases caused by human activities.

⁵ *Stern Review: The Economics of Climate Change*, Part 1, 2.

⁶ *Ibid.*, Part 1, 13.

⁷ As defined by the IPCC, where uncertainty in specific outcomes is assessed using expert judgment and statistical analysis of a body of evidence (e.g. observations or model results), then the following likelihood ranges are used to express the assessed probability of occurrence: virtually certain >99%; extremely likely >95%; very likely >90%; likely >66%; more likely than not > 50%; about as likely as not 33% to 66%; unlikely <33%; very unlikely <10%; extremely unlikely <5%; exceptionally unlikely <1%. Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 27.

during any other 50-year period in the last 500 years and *likely* the highest in at least the past 1300 years.⁸

It is important to remember that because changes can fluctuate in either direction, there are regions in the world that may experience cooling. As the Stern Review asserts, climate change may also weaken the Atlantic Thermohaline Circulation.⁹ This would mean that it would partially offset warming in both Europe and eastern North America, or in an extreme case lead to significant cooling.¹⁰ Climate change, therefore, usually refers to the temperature increases and occasionally, decreases measured over a long time period from past or current average levels.

Climate is a key factor in determining different characteristics and distributions of natural systems such as the cryosphere,¹¹ hydrology and water resources, marine and freshwater biological systems, terrestrial biological systems, agriculture and forestry.¹² Climate change has affected the physical and biological systems on all continents and in

⁸ Ibid., 30

⁹ The North Atlantic Thermohaline Circulation (THC) is the system where in the North Atlantic, the Gulf Stream and North Atlantic drift has a significant warming effect on the climates of Europe and parts of North America. The THC may be weakened; as the upper ocean warms and or if more fresh water (from melting glaciers and increased rainfall) is laid over salty seawater. Any sustained weakening of the THS is likely to have a cooling effect, though would offset only a portion of the regional warming. *Stern Review: The Economics of Climate Change*, Part 1, 15.

¹⁰ *Stern Review: The Economics of Climate Change*, Part 2, 15.

¹¹ As explained in the IPCC Fourth Assessment Report, the cryosphere includes mountain glaciers and ice caps, floating ice shelves and continental ice sheets, seasonal snow cover on land, frozen ground, and sea, lake and river ice.

Intergovernmental Panel on Climate Change, *Fourth Assessment Report*, Cambridge University Press. 2007, (accessed August 25, 2008); available from http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

¹² Ibid., 83

most oceans.¹³ While the warming and cooling of Earth's temperature can profoundly affect these systems and can cause changes in the environment, not all of the changes will lead to migration. However, most studies agree that processes related to hydrological phenomena are the primary contributors to migration.

The Linkages Between Climate Change and Migration

While these scientific studies focus on how climate change will affect environmental processes, social scientists concentrate their efforts on whether and how those environmental factors will cause migration. The relationship between climate and migration is conceptualized and framed in terms of what rate- slowly or rapidly- that environmental processes occur. They may present themselves over a long period of time as slow-onset phenomena. Or, they may take place quickly as sudden-onset phenomena or disasters.¹⁴ These are the “climate drivers of migration.”¹⁵ However, how ‘slow’ and

¹³ C. Rosenzweig, G. Casassa, D.J. Karoly, A. Imeson, C. Liu, A. Menzel, S. Rawlins, T.L. Root, B. Seguin, P. Tryjanowski, 2007: Assessment of observed changes and responses in natural and managed systems, *Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds, Cambridge University Press, Cambridge, UK, (accessed September 9, 2008); available from: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter1.pdf>, 81.

¹⁴ A disaster, as defined by the International Strategy for Disaster Reduction (ISDR) is, “A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.” This signifies that the environmental process and or event overwhelm the capacity to manage it. The ISDR clarifies that a “disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.” It would imply that the environmental event does not necessarily have to be or result in a disaster, but rather a disaster is contingent on the context.

International Strategy for Disaster Reduction, “Terminology of disaster risk reduction,” (accessed October 18, 2008); available from <http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm>.

¹⁵ Oli Brown, “Migration and Climate Change,” *IOM Migration Research Series*, no. 31, 2008, (accessed August 11, 2008); available from

‘sudden’ are measured is not evident. As Elizabeth Ferris questions, how slow does the disaster have to take place for it to be ‘slow’? The timeframe, the denomination- years, decades, centuries or millennia-¹⁶ makes a difference. Whereas farmers may be able to cope with or adapt to inconsistent rainfall for decades, they may only be able to manage soil erosion for a few years.

Climate Drivers of Migration

There are two types of climate drivers of migration- environmental processes and environmental events. Environmental processes are slow onset changes such as sea level rise, salinization of agricultural land, desertification, water scarcity, and food insecurity. In contrast, environmental events are sudden and dramatic hazards such as monsoon floods, glacial lake outburst floods, storms, hurricanes and typhoons.¹⁷ It is important to note that while slow-onset changes occur over relatively long periods of time, when combined with other environmental factors, they can produce sudden onset phenomena. Therefore, the distinction between environmental processes and events is not so obvious.

Sea level rise is one of the most cited examples of slow onset processes. Levels are expected to rise due to two primary phenomena. The first is that warming is very

http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/published_docs/serial_publications/MRS-31_EN_correct.pdf, 17.

The International Organization for Migration (IOM) has produced several reports that apply the research on climate change and environmental degradation to migration, and comments on the implications of such migration.

¹⁶ Elizabeth Ferris, “Making Sense of Climate Change, Natural Disasters, and Displacement: A Work in Progress,” Presentation to Calcutta Research Group, Winter Course. December 14, 2007, (accessed August 1, 2008); available from http://www.brookings.edu/speeches/2007/1214_climate_change_ferris.aspx, 12.

¹⁷ Oli Brown, “Migration and Climate Change,” *IOM Migration Research Series*, 17-18.

likely to intensify the water cycle,¹⁸ which means increasing rainfall rates in some regions. Between 1900 and 2005, precipitation has increased significantly in eastern parts of North and South America, northern Europe and northern and central Asia.¹⁹ The second is that warming has led to the melting of glaciers.²⁰ The Stern Review predicts that if the Greenland Ice Sheet starts to melt irreversibly or the West Antarctic Ice Sheet (WAIS) collapses, sea levels will continue to rise.²¹ This could eventually threaten at least four million square kilometers of land, which today is home to five percent of the world's population.²² One result of melting glaciers is that it will increase the flood risk during the wet season and strongly reduce dry-season water supplies to one-sixth of the world's population, predominantly in portions of the Indian sub-continent, China, and the Andes. Also, there will be serious risks and increasing pressures for coastal protection in South East Asia and large coastal cities.²³ Moreover, sea level rise could also result in the complete submersion of many small island states in Asia and the Asia Pacific²⁴ as well as small islands in the Caribbean and the Pacific.²⁵

¹⁸ *Stern Review: The Economics of Climate Change*, Part 1, 2.

¹⁹ Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 30.

²⁰ International Organization for Migration, *Expert Seminar: Migration and the Environment*, International Dialogue on Migration, No. 10., IOM and UNFPA, 2008, 25.

²¹ *Stern Review: The Economics of Climate Change*, Part 1, 15.

²² *Stern Review: The Economics of Climate Change*, Part 2, 56.

²³ *Ibid.*

²⁴ International Organization for Migration, *Expert Seminar: Migration and the Environment*, 26.

²⁵ *Stern Review: The Economics of Climate Change*, Part 2, 56.

A combination of changing rainfall patterns and melting glaciers that results in flooding can manifest also as a sudden onset disaster. The Stern Review predicts that with a warming of 3° or 4° C, rising sea levels will result in tens to hundreds of millions more people flooded each year.²⁶ In addition to coastal flooding, sea level rise is predicted to affect mega deltas and low-lying areas.²⁷ Flooding may have significant implications for human migration given that approximately 44 percent of the world's population lives within 150 kilometers of the coast.²⁸

A rise in sea level can also lead to a sudden onset disaster when combined with other hydro-meteorological events. An IOM report asserts that faster or rapid onset climate change impacts are likely caused by inundation from sea level rise and tropical cyclones; flooding from extreme rainfall events; and destruction due to storms of transport, economic and building infrastructure. The difference in the type of migration that would result from slow and sudden disasters would be that rapid onset climate phenomena are likely to be related more readily to distress migration than slower onset causes.²⁹ Distress migration occurs when one has little or no meaningful choice other than to move. She is not ordered or physically compelled to move- by the use or threat of

²⁶ Ibid.

²⁷ Dominic Kniveton, Kerstin Schmidt-Verkerk, Christopher Smith and Richard Black, "Climate Change and Migration: Improving Methodologies to Estimate Flows," *IOM Migration Research Series*, no. 33, (2008), (accessed August 11, 2008); available from http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/published_docs/serial_publications/MRS-33.pdf, 27.

²⁸ International Organization for Migration. *Expert Seminar: Migration and the Environment*, 26.

²⁹ Dominic Kniveton, Kerstin Schmidt-Verkerk, Christopher Smith and Richard Black, "Climate Change and Migration: Improving Methodologies to Estimate Flows," 28.

force- as in for example, the case of refugees fleeing government persecution. However, migration is the only means of response and survival to sudden disasters.³⁰

Another significant environmental process and event is a drought. Climate change can also decrease rainfall rates. Increases in water stress and change in areas of arid and semi-arid land are likely to increase the risk of drought.³¹ For example, precipitation has decreased in the Sahel, the Mediterranean, southern Africa and parts of southern Asia.³² This has helped exacerbate desertification. Desertification, as an example of a slow onset phenomena is the process of aridification, or decreased rainfall and extended periods of drought.³³ The location where desertification is and is expected to be the most severe is in the Sahel, and more generally in Africa.³⁴

A third phenomenon in the climate system is increased variability and uncertainty of weather patterns. As the world warms, often unevenly among regions, the risk of abrupt and large-scale change in the system will increase. The Stern Review notes that, “warming may induce sudden shifts in regional weather patterns like the monsoons or El

³⁰ Definition drawn from the typologies of migration in- Ashley South, “Burma: The Changing Nature of Displacement Crises,” Refugee Studies Centre, Working Paper No. 39, Oxford Department of International Development, February 2007, 22.

³¹ Ibid., 27

³² Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*, 30.

³³ International Organization for Migration. *Expert Seminar: Migration and the Environment*, 26.

³⁴ The United Nations Economic Commission for Africa documents the effects of drought and desertification in Africa. It mentions the impact on migration on pages 12 and 13 of its report: *Africa Review Report on Drought and Desertification*, 2008, (accessed January 29, 2009); available from http://www.uneca.org/eca_programmes/sdd/documents/DroughtAndDesertification2008.pdf.

Nino. Such changes would have severe consequences for water availability and flooding in tropical regions and threaten the livelihoods of billions.”³⁵

Slow onset disasters affect land and natural resources. Perhaps the most important ramification is that for temperature increases above 3°C, global food production is very likely to decrease.³⁶ The interplay of desertification, erosion, soil salinization and water scarcity reinforces land degradation.³⁷ Degradation is likely to affect agricultural food production, and subsequent food security.³⁸ According to the Stern Review, the implication of declining crop yields, especially in Africa, is that they are “likely to leave hundreds of millions without the ability to produce or purchase sufficient food.”³⁹ This may lead people to migrate in search of other food sources. As one general example, agriculturalists who live in rural areas and are no longer able to subsist on crop production, and still have some resources, may move to urban centers that offer alternate livelihood opportunities. This exemplifies that climate variability has a variety of impacts on not only hydro-meteorological events such as rainfall, but also on land conservation.

For conceptual clarity, when an environmental process or event is the primary cause of migration, I will call this ‘Category I Climate Change Migration.’ As shown in the following model, as an indicator of climate change, temperature increase has led to

³⁵ *Stern Review: The Economics of Climate Change*, Part 2, 56.

³⁶ Kniveton, Dominic, Kerstin Schmidt-Verkerk, Christopher Smith and Richard Black, “Climate Change and Migration: Improving Methodologies to Estimate Flows,” 27.

³⁷ Norwegian Refugee Council, “Future floods of refugees” 2008, (accessed August 11, 2008); available from http://www.nrc.no/arch/_img/9268480.pdf, 16.

³⁸ Kniveton, Dominic, Kerstin Schmidt-Verkerk, Christopher Smith and Richard Black, “Climate Change and Migration: Improving Methodologies to Estimate Flows,” 27.

³⁹ *Stern Review: The Economics of Climate Change*, Part 2, 56.

glacial melting. The climate driver of migration is then the series of processes of sea level rise and subsequent flooding, the latter of which is the proximate cause of migration.

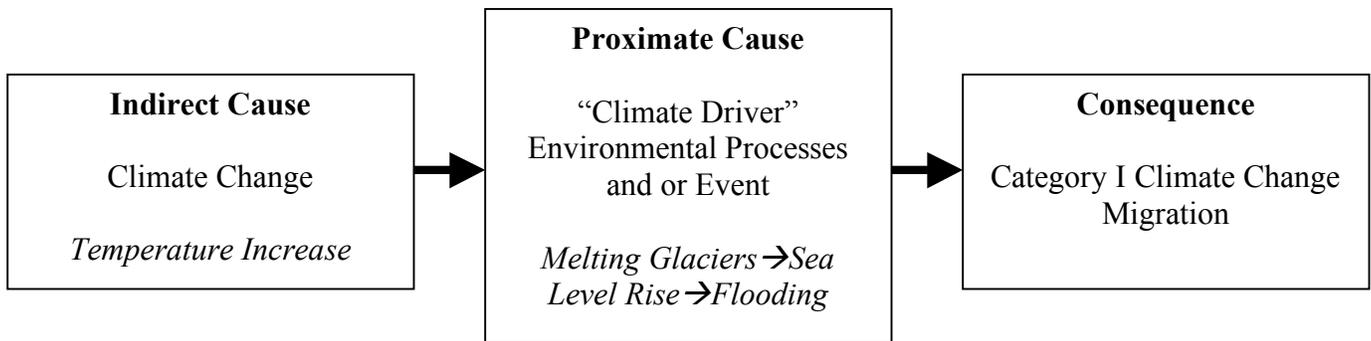


Diagram 2: Category I Climate Change Migration Model

At the same time, there are several intervening variables that exacerbate or mitigate the links between environmental processes, events and migration. Climate drivers of migration may operate in the context of a complex humanitarian emergency where political, social, and or economic processes also cause migration. One particular variable that is often added to relationship between climate change and migration is conflict. The Norwegian Refugee Council (NRC) envisions two types of causal relationships:⁴⁰

1. Climate change impacts on the environment → conflict → migration
2. Climate change impacts on the environment → migration → conflict

In regard to the first scenario, although it is not explicit in the NRC’s model, migration is a result of conflict, usually over competition for scarce of natural resources. Scarcity is a product of or is exacerbated by the effects of environmental processes and events. In respect to the second case, the effects of environmental events or process force people to migrate. If migration flows are large, they may be destabilizing by overwhelming the administrative apparatus of the state or the absorptive capacity of urban or rural areas.

⁴⁰ Norwegian Refugee Council, “Future floods of refugees,” 18-21.

Thus, migrant receiving areas become centers of endemic tension that periodically erupt in violence.⁴¹

Nonetheless it is important to recognize that there is little evidence of the generation of environmental ‘hotspots’ that have developed into war.⁴² According to Richard Black, it is difficult or impossible to isolate particular causes of conflict and migration, and to discern how the two relate exactly. He asserts that there is no simple causal link from environmental degradation to conflict to migration.⁴³ Tobias Hagmann is also critical of the connections that some make between environmental degradation and conflict. He questions whether the two can be causally linked. As such, the concept of environmentally induced conflict has proved elusive.⁴⁴ If one were to assume that the sole climate driver of migration is desertification, to what extent does it affect anyone’s decision to move or to lead to the conflict that induces migration? Do people really move because they are no longer able to sustain their livelihoods, or are they forced to move

⁴¹ Astri Suhrke, “Pressure Points: Environmental Degradation, Migration and Conflict.” Chr. Michelsen Institute. Paper prepared for “Environmental Change, Population Displacement, and Acute Conflict” workshop at the Institute for Research on Public Policy, Ottawa, June 1991, (accessed August 23, 2008); available from <http://www.cmi.no/publications/file/?1374=pressure-points-environmental-degradation>, 15.

Rafael Reuveny also argues that persons residing in “lesser developed countries” who migrate from affected areas (ostensibly environmentally degraded) may cause conflict in receiving regions. Rafael Reuveny, “Climate change-induced migration and violent conflict,” *Political Geography*, 26, (2007): 1.

Ashok Swain identifies the types of conflict that would take place between different actors. Ashok Swain, “Environmental Migration and Conflict Dynamics: Focus on Developing Regions,” *Third World Quarterly*, Vol. 17, No. 5, (December 1996): 967-970.

⁴² Richard Black, “Environmental refugees: myth or reality,” *New Issues in Refugee Research*, Working Paper No. 34, UNHCR, March 2001, (accessed August 23, 2008); available from <http://www.unhcr.org/research/RESEARCH/3ae6a0d00.pdf>, 9.

⁴³ *Ibid.*, 10

⁴⁴ Tobias Hagmann, “Confronting the Concept of Environmentally Induced Conflict,” *Peace Studies Journal*, Issue 6, (January 2005): 20.

because of conflict in the region? It is a difficult task to trace back the causal links in the chain of events. Climate change does present challenges to the “economies, social relations, and livelihoods” of states. Yet, one ought to be wary of the common connections made between the phenomena of climate change and open warfare.⁴⁵

Even if the proposed relationships between climate change, migration, and conflict are weak empirically, the point here is that there are external factors that impact and complicate the interaction between climate change and migration. Often these factors are related to human intervention and manipulation of environmental resources. The NRC suggests that in the overall context of a drought, impoverished populations will be forced to migrate, despite an abundance of rainwater, because available water resources are still “colonised by the powerful.”⁴⁶

I will refer to ‘Category II Climate Change Migration’ to account for these extraneous, yet contextually important variables. The model on the following page adds to the ‘Category I Climate Change’ model by including political, social, and economic factors that impact migration. It is possible that only economic concerns are the primary catalysts for migration. More likely, however, economic changes are likely embedded in broader political changes in a country. Moreover, migration may be a consequence of the confluence of all three; as mentioned previously, it may result from a complex humanitarian emergency.

⁴⁵ Idean Salehyan, “From Climate Change to Conflict? No Consensus Yet,” *Journal of Peace Research*, Vol. 45, No. 3, (2008): 317.

⁴⁶ Norwegian Refugee Council, “Future floods of refugees,” 16.

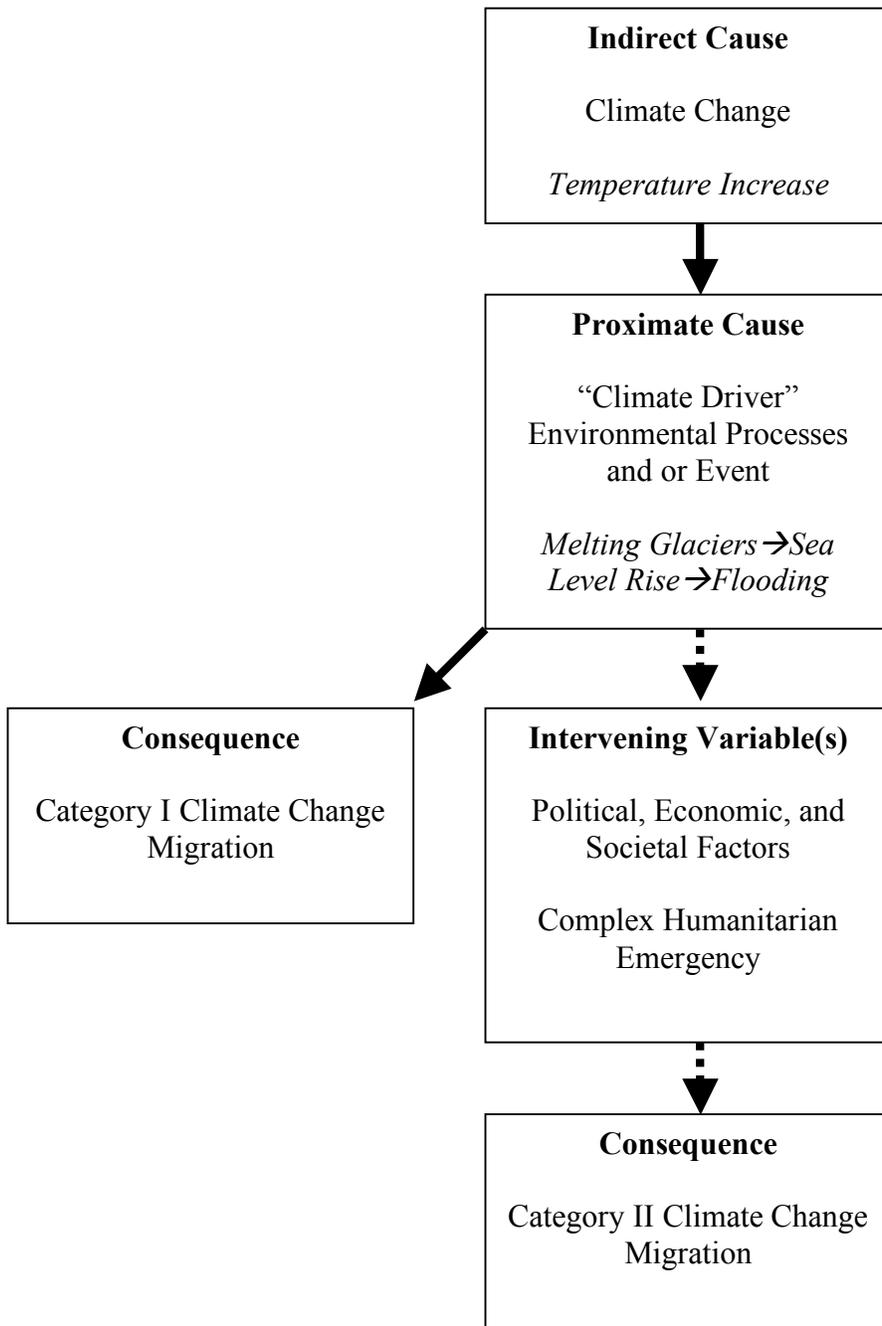


Diagram 3: Category II Climate Change Migration Model

Chapter II. What Climate Change Migration *Is* and *Is Not*: Definitions and Predictions

Whereas the first part of this paper explored how climate change and environmental factors are predicted to lead to migration, this chapter will focus on how social scientists and other academics have attempted to define those who migrate as a result of climate change and environmental processes. Then, I will describe who the affected populations are in relation to their location and in the context of population growth trends. Finally, I will explain what existing patterns of migration might predict for future climate change migration destinations.

Defining Climate Change Migration

In the discourse regarding the intersection of climate change and migration, there is a lack of clarity about how to define the affected populations. At this time, there is no internationally recognized *legal* or even an *official* term and definition of a person who migrates on account of climate change and environmental factors. However, there are several *working* terms and definitions that academics and some organizations employ when referring to this population.

One typology relates to the conception that climate change and the environment produces “refugees.” The root of the current debate about terminology appears to have begun with the work of Essam El-Hinnawi who used the term “environmental refugees” in 1985. The term became popularized in the 1990s and since then others have continued to reference it. Most notably, Norman Myers has used the term “environmental refugees” to describe people who are susceptible to population pressures and poverty, can “no longer gain a secure livelihood in their homelands because of drought, soil erosion, desertification, deforestation and other problems,” and therefore seek sanctuary

elsewhere.⁴⁷ As recently as February 2007 at an expert seminar on “Migration and the Environment,” participants used the term “environmental refugees” to describe disaster refugees or those who are “fleeing the worst.”⁴⁸

However, the use of “refugees” in this context is incorrect, legally. The term in this case does not carry the same significance as it is found in the 1951 Refugee Convention. According to the Convention, a refugee is someone who,

“owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.”⁴⁹

Most significantly, the persecution element in the refugee definition is not met in the term, “environmental refugee.” Most international human rights lawyers and academics do not consider climate change and environmental processes as grounds of persecution. The reasoning of this stems from the traditional view of persecution; it results from a deliberate act and does not occur as an act of omission. Therefore, people cannot claim refugee status on account of those factors. The NRC does leave open the possibility that those who are forced to migrate and whose displacement relates to climate change impacts are not automatically excluded by the 1951 Refugee Convention

⁴⁷ Norman Myers, “Environmental Refugees: An Emergent Security Issue,” Paper presented at 13th Economic Forum, Prague, May 22, 2005, (accessed August 23, 2008); available from http://www.osce.org/documents/eea/2005/05/14488_en.pdf. 1.

⁴⁸ The seminar was organized by IOM with the co-sponsorship of the United Nations Population Fund (UNFPA). International Organization for Migration, *Expert Seminar: Migration and the Environment*, 23.

⁴⁹ United Nations High Commissioner for Refugees, *Convention and Protocol Relating to the Status of Refugees*.

definition. The justification is that while environmental factors are not a ground of persecution, they could be considered a limited *form* of persecution. The NRC acknowledges that, “persecutors may use, as is often done in conflicts, environmental destruction to undermine people’s livelihood.” Environmental destruction could then be considered an active form of persecution.⁵⁰ This is reminiscent of “ecocide,” which is the intentional destruction of human environments to strategically relocate a target population during armed conflict or war.⁵¹ Other forms of the argument are that governmental persecution or governmental acquiescence to persecution takes the form of government participation in environmental crises. It is at this intersection of governmental involvement in environmental crises that enables climate change migrants to be “brought within the protections of the Convention refugee definition.”⁵² A last reason could be that these persons suffer persecution either by the government or at the government's acquiescence because of their membership in a particular social group. The social group would be described as “persons powerless to stop large-scale environmental degradation.”⁵³ While these conceptions may link generally environmental changes to the charge of ‘persecution,’ they still do not isolate the role of climate change in causing migration.

⁵⁰ Norwegian Refugee Council, *Future floods of refugees*, 39.

⁵¹ Diane C. Bates, “Environmental Refugees? Classifying Human Migrations Caused by Environmental Change,” *Population and Environment*, Vol. 23, No. 5 (May 2002): 472.

⁵² Brooke Havard, “Seeking Protection: Recognition of Environmentally Displaced Persons Under International Human Rights Law,” *18 Villanova Environmental Law Journal* 65, (2007): 4.

⁵³ *Ibid.*

In any case, the term “refugee” is incomplete because it does not account for those who do not cross an international border. For those who move within their country of origin, they remain internally displaced. This connects to the second typology of “displaced persons.” According to the Guiding Principles on Internal Displacement,

“Internally displaced persons are persons or groups of persons who have forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violations, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized border.”⁵⁴

This applies only to those who remain within the borders. It does include those who are displaced by natural disasters, but does not refer to climate change. Furthermore, the Guiding Principles are a set of norms and not a treaty, and therefore states are not legally bound to implement the Guiding Principles into domestic law, as treaties require.

A third typology is “migrants.” This encapsulates a variety of terminology. The general term ‘migrant’ describes a person who moves, but does not necessarily connote someone who is forced to move on account of an event, such as flooding. In the context of Hurricane Katrina, the United States government used the term ‘evacuee’ to describe those who fled from the storm. But as Chris Kromm and Sue Sturgis assert, the term is incorrect technically in that context because the “tens of thousands of people left homeless by the storm were never actually evacuated from the affected area.”⁵⁵

At the IOM and United Nations Population Fund (UNFPA) expert seminar, participants also accounted for “environmentally motivated migrants.” These are people

⁵⁴ United Nations, *Guiding Principles on Internal Displacement*.

⁵⁵ Chris Kromm and Sue Sturgis, Hurricane Katrina and the Guiding Principles on Internal Displacement-A Global Human Rights Perspective on a National Disaster, *The Institute for Southern Studies and Southern Exposure*, No. 1&2, Vol. 36. (January 2008): 6.

who “pre-empt the worst” by leaving before environmental degradation results in the devastation of their livelihoods and communities. The individuals may leave, either temporarily or permanently, a deteriorating environment that could be rehabilitated with proper policy and effort. An alternate way to classify this group is as “economic migrants.”⁵⁶ Similarly, the seminar produced the term, “environmentally forced migrants.” They are defined as those who are “avoiding the worst” due to a loss of livelihood. The loss could be a consequence of sea level rise or loss of topsoil and their displacement is mainly permanent.⁵⁷

The IOM itself employs the working definition of “environmental migrants” who are,

“persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad.”⁵⁸

Yet, this definition does not account for the role of climate change in migration.

Therefore, the IOM has also defined “*climate change migrants*” as,

“persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment as a result of climate change that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad.”⁵⁹

⁵⁶ International Organization for Migration, *Expert Seminar: Migration and the Environment*, 22.

⁵⁷ Ibid.

⁵⁸ Dominic Kniveton, Kerstin Schmidt-Verkerk, Christopher Smith and Richard Black, “Climate Change and Migration: Improving Methodologies to Estimate Flows,” 33.

⁵⁹ Ibid.

This definition of “climate change migrants” corresponds with the notion of Category I Climate Migration where climate change is the primary driver of migration.

Though it is simple conceptually to distinguish between climate-induced migration and environment-induced migration in this manner, it is often more complicated. For Andrew Morton, Philippe Boncour and Frank Lazcko, “environmental migrants” are “individuals, communities, and societies who choose, or are forced, to migrate as a result of damaging environmental and climatic factors.” The category could include those who are forced to leave disasters such as flooding, and farmers abandoning degraded land and migrating to urban centres in search of alternative livelihoods.⁶⁰ This iteration does not isolate climate change from environmental factors as a cause of migration, and may suggest that the two cannot be separated in all cases.

The Environmental Change and Forced Migration Scenarios (EACH-FOR) project of the European Commission also distinguishes between environmental migrants and environmental displacees. The distinction rests on the voluntary or forced nature of migration. Whereas environmental migrants are “those who chose to move voluntarily from their usual place of residence primarily due to environmental concerns or reasons,” environmental displacees are “those who are forced to leave their usual place of residence, because their lives, livelihoods and welfare have been placed at serious risk as a result of adverse environmental processes and events.”⁶¹ The project identifies for both

⁶⁰ Andrew Morton, Philippe Boncour and Frank Lazcko, “Human security and policy challenges” in *Forced Migration Review, Climate Change and Displacement*, Refugee Studies Centre, University of Oxford, October 2008, Volume 31, (accessed September 25, 2008); available from <http://www.fmreview.org/climatechange.htm> and <http://www.fmreview.org/pdf/FMR31/FMR31.pdf>, 5.

⁶¹ Environmental Change and Forced Migration Scenarios, “Environmentally Displaced Persons: Working Definitions for the EACH-FOR Project,” Environmental Change and Forced

categories, the primary reason for one to move is a “situation of objective environmental degradation or change.”⁶² It need not be the sole reason for displacement, but it must be one of the main forces of movement. It does not mention the role of climate change, but it could be implicit in environmental degradation.

The differences among the presented typologies suggest that there is no common conception of what climate change migration means. Very few definitions acknowledge the specific interactions between climate change and the environment, and migration. Therefore, most are not useful in describing the phenomenon actually described in this paper. One must not conflate the issues of climate change and environmental change. Nonetheless, while clarity of definitions is important, this discussion on semantics is only one small component of understanding climate change. Walter Kälin notes that the focus should be on a “thorough analysis of the different contexts and forms natural disaster induced displacement can take.”⁶³ The next section will explore the predictions of the scale and scope of climate-induced migration.

Predicting Climate Change Migration

There are several different sets of data that help develop or inform what the picture of climate change migration will look like in the future. One pertains to the rate of displacement as a function or consequence of the climate drivers of migration. A way to

Migration Scenarios, October 11, 2007, (accessed August 28, 2008); available from http://www.each-for.eu/documents/Environmentally_Displaced_Persons_-_Working_Definitions.pdf, 2.

⁶² Ibid.

⁶³ Walter Kälin, “The Climate Change-Displacement Nexus,” Presentation to ECOSOC Panel on Disaster Risk Reduction and Preparedness: Addressing the Humanitarian Consequences of Natural Disasters, July 16, 2008, (accessed August 25, 2008); available from http://www.brookings.edu/speeches/2008/0716_climate_change_kalin.aspx?p=1.

conceptualize the subject is to determine under what stages of environmental degradation are migration likely to occur.

The IOM states that migration may occur at less advanced stages of climate change. One theory is that as environmental degradation causes earning capacity of households to decline, household members may resort to temporary, internal or cross-border migration for work in order to generate supplementary income transfers through remittances. For instance, if drought impacts negatively crop production, a farmer will be unable to harvest and sell sufficient crops for his subsistence. The decline in earning capacity may impel him to send either himself and or other members of his household to pursue alternate employment opportunities, usually on a temporary basis.

Migration may also occur at advanced stages of environmental changes. In this scenario, environmental degradation may “undermine local habitats and livelihoods.” The once temporary migration now turns into more permanent migration. In the hypothetical (and highly generalized) case of the farmer, the drought has now rendered his land unsuitable for any crop production. Despite the fact that he has migrated to a different region and gained temporary employment, he has realized that he will have to stay and continue to work, and that he and his household will have to refocus completely their livelihood strategy.

Mentioned previously, a third possibility is that migration occurs due to extreme environmental events such as natural disasters.⁶⁴ This means that with relatively little preparation and planning, persons are forced to relocate on account of events such as

⁶⁴ International Organization for Migration, *Discussion Note: Migration and the Environment*, November 1, 2007, (accessed August 11, 2008); available from http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/microsites/IDM/worksh_ops/evolving_global_economy_2728112007/MC_INF_288_EN.pdf, 2-3.

cyclones, hurricanes, or rapid flooding. Cyclone Nargis and Hurricane Katrina are two examples that resulted in internal displacement. As a caveat to these descriptions, IOM recognizes that climate change may not always be the cause of environmental degradation. Arguably it is more difficult to attribute these types of events to climate change. Yet, it does not discount the possibility of the causal relationship between climate change and extreme weather events.

A second set of considerations regards the extent or magnitude of displacement. There are several predictions for number of people to be displaced by climate and or a combination of climate and environmental factors. These predictions vary widely, both along timeframes and the estimated number of persons to be displaced. According to Norman Myers, already in 1995, there were at least 25 million “environmental refugees,” compared with 27 million traditional refugees.⁶⁵ He notes that all have abandoned their homelands on a semi-permanent or permanent basis, with “little hope of a foreseeable return.”⁶⁶ While he draws from several sources to arrive at this estimate, Myers’ methodology for formulating this figure is not evident. For instance, he mentions that seven million people in Sub-Saharan Africa who were “semi-starving due primarily environmental factors” migrated in order to obtain relief food.⁶⁷ Still, even based on his definition of the issue, I am not sure if this necessarily falls in the category of

⁶⁵ The “traditional refugees” are those “fleeing political oppression, religious persecution and ethnic troubles.”

Norman Myers, “Environmental Refugees: a growing phenomenon of the 21st century,” *Philosophical Transactions of the Royal Society, London B: Biological Sciences*, April 29, 2002; 357(1420) (accessed August 25, 2008); available from <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1692964&blobtype=pdf>, 1.

⁶⁶ Ibid.

⁶⁷ Ibid.

“environmental refugees,” let alone climate change migration. The estimates count displacement, but do not necessarily disaggregate the causes of displacement.

The timeframe for the short-term appears to be measured in next few years. In 1995 Myers anticipated that the number of “environmental refugees” would double by the year 2010, and increase steadily.⁶⁸ Furthermore, in 1995 the United Nations University Institute for Environment and Human Security (UNU-EHS) predicted that by 2010 as many as 50 million people will be “escaping the effects of creeping environmental deterioration.”⁶⁹ Again, this estimate is not disaggregated by causes of environmental degradation. As of 2009, barring a massive disaster, which these estimates do not predict, there will not be 50 million “environmental refugees” in a year or even within five or ten years. In hindsight, these figures are overestimated. This is not so much a criticism, but rather a point of consideration to evaluate climate change migration predictions for the future.

The timeframe for the medium-term is the next few decades. Myers predicts that there could be as many as 200 million people “overtaken by sea-level rise and coastal flooding, by disruptions of monsoon systems and other rainfall regimes, and by droughts of unprecedented severity and duration.”⁷⁰ Oli Brown calculates that this would mean a

⁶⁸ Ibid.

⁶⁹ United Nations University Institute for Environment and Human Security, “As Ranks of “Environmental Refugees” Swell Worldwide, Calls Grow for Better Definition, Recognition, Support,” (accessed October 31, 2008); available from <http://www.ehs.unu.edu/article:130?menu=3>.

⁷⁰ Norman Myers, “Environmental Refugees: a growing phenomenon of the 21st century.”

However, it is not evident where this data comes from and how it was derived. For a summary of the estimation of future “environmental refugees” per Norman Myers, and methodologies for predicting environmental migrations, see: Robert Stojanov, “Environmental

“ten-fold increase on today’s entire population of documented refugees and IDPs.”⁷¹ Brown notes that by 2050, “one in every 45 people in the world would have been displaced by climate change.” Citing a United Nations Environment Programme prediction, Brown acknowledges that there could be 50 million ‘environmental refugees’ in Africa alone by 2060. The most extreme estimates come from Christian Aid. In an overwhelming and perhaps unhelpful contention, it purports that nearly a billion people could be displaced permanently by 2050. Climate drivers such as droughts, floods and hurricanes would account for only 250 million migrants.⁷² Therefore, according to Oli Brown, the number of climate change migrants is estimated to be closer to 200-250 million people by the mid-21st century.⁷³ Similar to the concerns raised in the discussion about Myers’ predictions, the methodology of how these numbers does not appear to be rigorous. In fact, Myers has acknowledged that his estimates required “heroic extrapolations.”⁷⁴ Given this, it is not apparent completely to what extent climate change will actually impact human migration.

Moreover, while it is interesting to know the upper bounds of the potential

Migration-How can be Estimated and Predicted? Found in “Globalisation and its Impact to Society, Regions and States,” 2006, (accessed January 29, 2009); available from http://www.vos.cz/imdr/documents/EM-How_can_be_predicted.pdf.

⁷¹ Oli Brown, “The numbers game,” 8.

⁷² Christian Aid, “Human tide: the real migration crisis,” May 2007, (accessed January 29, 2009); available from http://www.christianaid.org.uk/Images/human_tide3_tcm15-23335.pdf.

⁷³ Oli Brown, “The numbers game” in Forced Migration Review, *Climate Change and Displacement*, 8.

⁷⁴ Ibid.

scale of migration, what are the practical implications of this? How does the ‘international community’- states, international aid agencies, intergovernmental and nongovernmental organizations- start to think and plan for this? The United Nations High Commissioner of Refugees (UNHCR) estimates that globally there were 11.4 million refugees and 26 million persons affected by conflict-induced internal displacement in 2007.⁷⁵ If the ‘international community’ already has difficulty managing the protection concerns of these populations, how is it ever, in the next few decades no less, going to handle the challenges of a predicted population that is 20 times larger than the current number of refugees? These estimates are not entirely helpful, other than to spark discussion and perhaps spur movements in environmental and migration policies within the ‘international community.’

The long-term, in least in regard to climate change predictions, reaches into the next century and further. However, there seem to be no corresponding estimates of climate change migration for this time span. More generally, with an unspecified timeline and accounting of displacement, the UNU-EHS notes that sea level rise, expanding deserts and catastrophic weather-induced flooding have already contributed to large permanent migrations and could eventually displace hundreds of millions. The UNU-EHS recognizes that the number of people fleeing untenable environmental conditions may grow exponentially.⁷⁶

⁷⁵ United Nations High Commissioner for Refugees, *Global Appeal, 2009 Update*); accessed January 28, 2009); available from webpage <http://www.unhcr.org/home.html>, 7.

⁷⁶ United Nations University Institute for Environment and Human Security, “As Ranks of “Environmental Refugees” Swell Worldwide, Calls Grow for Better Definition, Recognition, Support.”

A third element that accounts for the scale of climate change migration is population growth. While this connection is not always made evident, it is important to acknowledge the ‘numbers behind the numbers;’ that population growth may be reflected in the predictions. According to the United Nations, the world’s population is projected to grow from 6.1 billion in 2000 to 8.9 billion in 2050.⁷⁷ This could mean that in addition to the climate drivers, a world population, by virtue of its anticipated large size, contributes at least partly to the predicted magnitude of climate change migration. This paper is not about population pressures, but it is important to consider this variable as a driver of migration that interacts with climate change. The two may not be easily extracted from the other as causes of migration in the future.

A fourth consideration is where people will be located. The United Nations predicts that most of the demographic changes until 2050 will take place in the less developed regions. These regions will grow 58 percent over 50 years, as opposed to 2 percent for more developed regions. Less developed regions will account for 99 percent of the expected increment to world population in this period. Yet in the long run, overall population growth in the less developed regions is expected to slow down.⁷⁸ In any case, there will be population pressures in “developing” countries that will impact migration flows.

In the 2007 State of the World Population Report, UNFPA notes that in 2008, more than half its human population, 3.3 billion people, will be living in urban areas. By

⁷⁷ United Nations. Economic and Social Affairs, *World Population to 2300*, 2004 (accessed November 1, 2008); available from <http://www.un.org/esa/population/publications/longrange2/WorldPop2300final.pdf>, 4.

⁷⁸ *Ibid.*, 4

2030, this is expected to increase almost 5 billion. In the 20th Century, the urban population grew from 220 million to 2.8 billion. In the next few decades, there will be an “unprecedented scale of urban growth in the developing world.” For example in Africa and Asia, the urban population will double between 2000 and 2030. By 2030, the towns and cities of the developing world will make up 80 per cent of urban humanity.⁷⁹ These predictions on locations suggest that there will be pressures on certain populations even without the presence and impact of climate change. Therefore, urbanization may also interact with climate change migration flows.

A fifth component is the expected trajectory of human migration flows or patterns as a result of environmental processes and events. In the context of climate change migration, “most forced migration will probably be internal and regional.”⁸⁰ Jean-Francois Durieux notes that, “it will be a rare occurrence that ‘global warming’ produces large-scale and sudden displacement across international borders.” Moreover, in most cases, the “displacement will be gradual, spread over lengthy periods and possibly involving many ‘stopovers’, including within the country of origin.”⁸¹ Migration is expected to remain at the national level because international migration is likely to remain an expensive endeavor. For instance, in the case of migration from Africa, it requires significant resources to travel from the continent to Europe or North America,

⁷⁹ United Nations Population Fund, *State of the World Population 2007*, (accessed November 1, 2008); available from http://www.unfpa.org/swp/2007/presskit/pdf/sowp2007_eng.pdf, 1.

⁸⁰ Norwegian Refugee Council, “Future floods of refugees,” 31.

⁸¹ Integrated Regional Information Networks, “Nowhere to run from nature,” May 23, 2008, (accessed July 15, 2008); available from <http://www.irinnews.org/report.aspx?ReportId=78387>.

and especially to cross international borders. Although it is possible that there will be a rise of trans-continental migrants from the Sahel region of Africa, it is much more likely that the “affected populations will seek to earn money by working in the cities within the region, or in agricultural areas less affected by drought, both in the form of seasonal or circular migration, and as distress migrants at times of particularly acute conditions.”⁸²

Most academics agree that the likelihood for long distance migration heightens in the cases of abrupt or catastrophic events. According to the February 2008 report, “Demographics and climate change: future trends and their policy implications for migration,” for “abrupt or catastrophic change...there is clearly an increased risk of the emergence of new migration streams, including the possibility of long-distance flows, rather than the reinforcement of existing patterns of migration.”⁸³ However, those long-distance patterns may not be necessarily ‘new.’ Oli Brown contends, “those who cannot, or choose not to, find new homes within their own country tend to seek refuge in places where they have existing cultural or ethnic ties.” If there is transnational or inter-continental migration, it is most likely to follow pre-existing and old colonial relationships. As examples, those in India and Pakistan might migrate to the United Kingdom; those residing in Francophone West Africa would move to France; and those in the South Pacific would migrate to Australia and New Zealand.⁸⁴

⁸² Richard Black, Dominic Kniveton, Ronald Skeldon, Daniel Coppard, Akira Murata and Kerstin Schmidt-Verkerk. “Demographics and climate change: future trends and their policy implications for migration.” Department for International Development, Sussex Centre for Migration Research, February 2008, 22.

⁸³ Ibid., 25

⁸⁴ Oli Brown, “Migration and Climate Change,” 23-24.

This assumes that countries such as UK, France, Australia and New Zealand would be amenable to receiving these populations. Given current restrictive immigration (and asylum)

So far, this paper has explored how millions of people are predicted to migrate on account of climate change in the future. But it is not a given that climate change will produce mass permanent displacement. Thus, a final component to consider is the measurement of people's vulnerability, and adaptation and coping strategies. As defined by Care, vulnerability is the "capacity of individuals, communities and societies to manage the impact of hazards without suffering a long-term, potentially irreversible loss of well-being."⁸⁵ The Department for International Development at the Sussex Centre for Migration Research refers to livelihood assets in its discussion of vulnerabilities. It notes that "the extent of vulnerability of individuals and families to migration as a consequence of environmental degradation is highly dependent on their own asset base" that include physical, human and social capital. Therefore,

"droughts, famines and floods – all likely consequences of climate change – do not have the same consequences for all sectors of the population... rather, ...individuals' vulnerabilities are a function of their endowments and entitlements, rather than simply the availability of jobs, food or housing in a particular area."⁸⁶

Hence, the reasoning is that one's coping capacity, in the instance of environmental events, depends on her access to and control over these assets. Migration may be likely,

policies in these countries, it might be difficult for one to be granted humanitarian or temporary stay, asylum, or any other form of permanent residence. The point about this is that people tend to migrate to areas or communities to which they are familiar.

⁸⁵ Care, "Humanitarian Implications of Climate Change," August 2008, (accessed August 29, 2008); available from [http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7HRGCF/\\$file/care_aug2008.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7HRGCF/$file/care_aug2008.pdf?openelement), 5.

⁸⁶ Richard Black, Dominic Kniveton, Ronald Skeldon, Daniel Coppard, Akira Murata and Kerstin Schmidt-Verkerk, "Demographics and climate change: future trends and their policy implications for migration," 26.

but not necessarily a predestined outcome. For example, low-lying communities may invest in building large embankments to protect from flooding. Or, farmers can change their agricultural cropping patterns to adjust to changes in the land. Both of these measures mitigate one's need to migrate in pursuit of alternate livelihoods.

To summarize, the scholarship on the predictions for climate change migrants has been based on estimates rather than significant evidence;⁸⁷ the data are based on extrapolations from case studies and highly speculative academic papers.⁸⁸ Other reports indicate that climate change migration, while grand in scale may not be so different in scope, as it relates to current migration trends. Migration will most likely be internal; people are not likely to cross borders, unless the climate driver develops into a massive catastrophe, natural disaster, or is set in the context complex humanitarian emergency that affects large portions of the country.

Additionally, most reports focus on populations in 'developing' countries. They suggest that the culmination of climate drivers of migration, population growth, and overall vulnerability in those areas will result in migration. This may also serve to increase the trend toward urbanization and exacerbate the effects of this phenomenon. In contrast, there is little emphasis or focus on climate drivers of migration in Europe and North America, in part because perhaps it is assumed that these regions are better able to adapt or cope, that there is little data, and or that there is relatively less interest in these

⁸⁷ Robert Stojanov, "Environmental Refugees-Introduction," *Geographica*, Vol. 38 (2004): 82.

⁸⁸ Andrew Morton, Philippe Boncour and Frank Lazcko, "Human security and policy challenges," in *Forced Migration Review, Climate Change and Displacement*, 6.

areas in respect to development, in general. To reflect some of these considerations, I add to the previous model of climate change displacement on the following page.

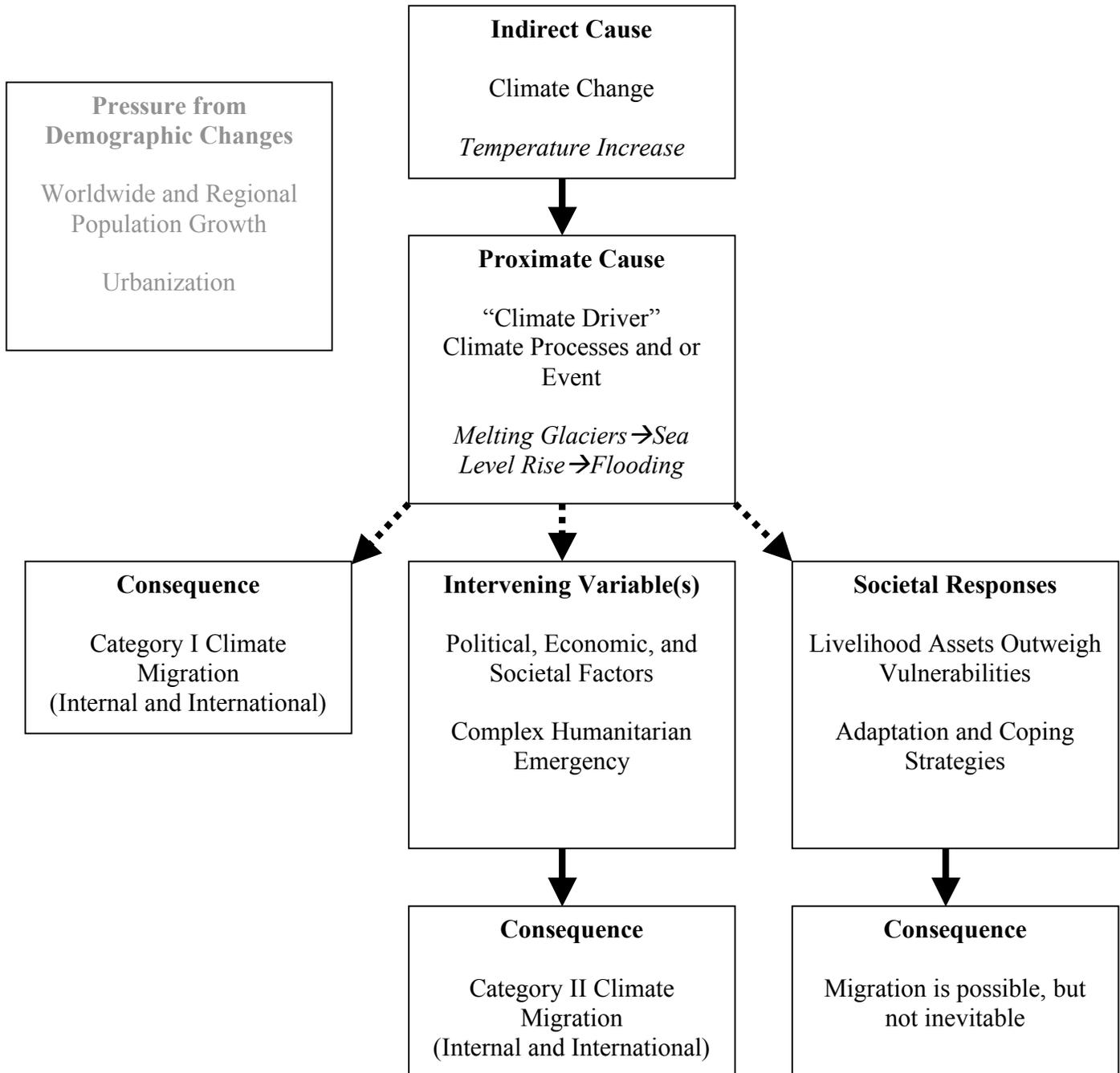


Diagram 4: The Larger Picture of Climate Change Migration

What Climate Change Migration Is Not

Another way to define climate change migration is to identify what it does not entail. There is a tendency in the literature to refer to a wide range of migration patterns as environmental or climate change displacement. This section elaborates on what is referenced as or lumped into the subject of climate change migration, but when it is disaggregated into its constituent parts, is not relevant.

The most common terminology is some variation of “environmental migration,” without any reference to climate change as the cause of displacement. Rather, in this case environmental degradation is the primary catalyst of migration. To complicate this category, several have added external variables to the environment-migration link. For instance, Peter Penz asserts that if the degradation is the result of one particular economic activity, it is “direct environmental displacement.” For instance, if a tannery pollutes a river upstream, those who live downstream and whose livelihoods are based on fishing in that river may be forced to migrate.⁸⁹ Or, if the displacement occurs as a result of a more interactive pattern of development, social and political processes, then those displaced are “indirect environmental migrants.” Penz provides the example of the Chittagong Hill

⁸⁹ Peter Penz, “Development, Displacement and International Ethics” in Forced Migration in the South Asian Region, *Displacement, Human Rights and Conflict Resolution*, ed. Omprakash Mishra (Jadavpur University, Kolkata, 2004), 83.

Tracts in Bangladesh. In short, he contends that the confluence of events, the construction of a hydroelectric dam, in addition to the guerrilla activity in the region, and over cultivation of land that led to soil depletion and erosion, has led to the environmental displacement of the hill people in the area.⁹⁰ These are examples of development-induced migration. But they are not incidents of climate change migration or even environmental displacement. Development displacement and environmental displacement are often conflated because there is failure to recognize that in case of development-induced migration, human development activities (instead of environmental processes or events) are the proximate causes of migration.

In addition, perhaps with the intent to capture the full range of possibilities for the connection between environmental events and process, environmental degradation and change, and migration, the Norwegian Refugee Council accounts for seven different types of phenomena: natural disasters or sudden disasters; gradual environmental degradation or slow-onset disasters; environmental conflict; environmental destruction as a consequence of or as a weapon in conflicts; environment conservation; development projects; and industrial accidents.⁹¹ While these categories are comprehensive, most are not relevant to the topic of climate change. It is not evident why all these factors are included in the climate change migration discussion. It is possible that it is easier to target prevention measures and interventions on these concerns in the hopes of mitigating the scale of displacement, rather than focusing on the more specific concept of climate

⁹⁰ Peter Penz, 83-84.

⁹¹ Norwegian Refugee Council, "Future floods of refugees," 8.
Development projects include dam construction. Industrial accidents include incidents such as Bhopal and Chernobyl.

change. In any case, the focus of this paper is on environmental events and processes as the physical manifestation of climate change. The emphasis is on natural and sudden disasters, and gradual degradation and slow onset disasters as a consequence of climate change.

Chapter III: Current Climate Change Migration- Four Case Studies

The climate change migration models explained in the first chapter of this paper are based on predictions of migration trends for the next few decades. Yet, they do not suggest that such patterns currently exist. If there will be 200 million climate change migrants or even 20 million by the mid to late 21st century, can one observe evidence of those trends now? This section analyzes how the two models may actually map out in cases of climate change migration. There are several climate drivers of migration. However, sea level rise and its effects are the strongest. In fact, flooding is more likely to cause displacement than droughts.⁹² I will use the cases of Carteret Islands in Papua New Guinea, Republic of Maldives, Alaska, and Bangladesh as examples where populations or parts of the population face displacement from their homes in the near future.

Case 1: Carteret Islands, Papua New Guinea

⁹² Brian F. O'Neill, Landis MacKellar, Wolfgang Lutz, *Population and Climate Change*, (Cambridge, UK: Cambridge University Press, 2001), 175.



Map 5: Carteret Atoll, Papua New Guinea. Accessed from Google Earth, April 3, 2009

The six inhabited Carteret Islands belong to the Autonomous Region of Bougainville, Papua New Guinea. These flat and low-lying islands, which form an atoll, are located approximately 200 kilometers northeast of Bougainville.⁹³ The population of the atoll ranges from an estimated 2,500 to 3,000 people. The land is not more than 1.5 meters⁹⁴ above sea level. This would otherwise not be problematic or be a concern except for that in the past 20 years, sea levels have risen 10 centimeters.⁹⁵

Rising sea levels have meant that an already limited area of arable land has been flooded. Oxfam notes that in one generation the shoreline of the islands has receded by

⁹³ Marion Struck-Garbe, “The Storms and Waves Eat Away our Islands,” An Interview with Basil Peso from Tulele Peisa, Carteret Islands, Pacific News, January/February 2009 (accessed December 26, 2008); available from http://www.pacific-news.de/pn31/pn31_PR_interview_Basil_Peso.PDF, 21.

⁹⁴ Ben Saul, “Inquiry into the economic and security challenges facing Papua New Guinea and the island states of the southwest Pacific,” University of Sydney, July 17, 2008, (accessed December 24, 2008); available from <http://www.law.usyd.edu.au/scil/pdf/PNG&PacificSecuritySubJuly08.pdf>. 5.

⁹⁵ Integrated Regional Information Networks, “Papua New Guinea: The world’s first climate change “refugees.”

almost 20 meters.⁹⁶ In addition to flooding, another climate driver of migration is salinization of soil and water supplies. Saltwater intrusion that occurs during storm surges have destroyed vegetable gardens and contaminated fresh water supplies. The incursion of salt water began in the late 1970s. In the past few decades, it has since stretched 30 to 40 meters inland.⁹⁷

The combination of flooding and salinization of soil and water sources has made it increasingly difficult for the Carteret Islanders to utilize natural resources. As anecdotal evidence, Ursula Rakova, one of the Carteret Islanders, has commented that since the 1980s the inhabitants have noticed how high tides have washed through their gardens and resulted in the leaves of plants to turn yellow.⁹⁸ They have traditionally subsisted on limited food crops such as bananas and sweet potatoes. Flooding has limited their diets to coconut, fish, seaweed, and rice, the latter of which is delivered from Bougainville once every six months. In addition to food security, the flooding also has implications for the health of the islanders. One problem is that the constant wet ground has led to an increase in mosquitoes, which has led to an increase in malaria. Another is that the altered diet has led to increased rates of diabetes and diarrhea.⁹⁹

The Islanders' Responses

⁹⁶ Oxfam Australia, "Rising sea levels submerging islands in Papua New Guinea," September 13, 2007, (accessed December 24, 2008); available from <http://www.oxfam.org.au/media/article.php?id=392>.

⁹⁷ Ben Saul, "Inquiry into the economic and security challenges facing Papua New Guinea and the island states of the southwest Pacific," 5.

⁹⁸ Oxfam Australia, "Rising sea levels submerging islands in Papua New Guinea."

⁹⁹ Ben Saul, "Inquiry into the economic and security challenges facing Papua New Guinea and the island states of the southwest Pacific," 5.

To mitigate rising sea levels, the Carteret Islanders have built sea walls and planted mangroves.¹⁰⁰ Despite these efforts, they have been unable to literally ‘stem the tide.’ It is estimated that given current rates of flooding, the atoll will be completely submerged by 2015, rendering the islands completely uninhabitable. Given these predictions, both the Papua New Guinea Government (PNG) and the Autonomous Bougainville Government (ABG) are working on the logistics of a resettlement scheme. In 2005, the ABG decided that the islanders would be resettled in Bougainville. Because of the similarities in language and culture between the Carteret Islanders and the people in Tinputz, Bougainville, it is expected that the islanders will be resettled to this town in northeastern Bougainville. However, the ABG is still having difficulty acquiring the necessary land to relocate all the islanders. Also, there are limited funds dedicated to this resettlement program. In 2007, PNG allocated K2 million (US \$700,000) in its budget for the relocation of the islanders. The ABG administration decided the funds should be allocated not just to the Carteret atoll but to four other atolls as well, even though the inhabitants of these other atolls do not intend to migrate.¹⁰¹ In spite of these bureaucratic constraints, Tulele Peisa, a local non-governmental organization that advocates for the rights of islanders, is engaged in its own negotiations with Tinputz landholders. Tulele Peisa is working with the local Catholic mission that is providing land for islanders to resettle and build homes. The process appears to be slow and marked by several ‘starts’ and ‘stops’ where only a few families have been resettled each year so far. Yet, the plans for migration, perhaps unrealistically given current rates, estimate that resettlement will

¹⁰⁰ Oxfam Australia, “Rising sea levels submerging islands in Papua New Guinea.”

¹⁰¹ Integrated Regional Information Networks, “Papua New Guinea: The world’s first climate change “refugees.”

cease in 2012.

Many of the Carteret Islanders see that relocation to Bougainville is the only viable solution. They recognize that the sea is threatening their livelihoods and that “something must be done.” Basil Peso, another Carteret Islander, notes that people worry about cyclones and tsunamis “which will come along and kill everyone.”¹⁰² At the same time they understand that by moving, they will have to uproot cultural, family and traditional ties to land. Therefore, while most people are reluctant to move, they will migrate if their survival depends on it. There are also some who have indicated that they would rather drown than move at all.¹⁰³ Peso comments that older people do not want to leave the islands.¹⁰⁴ It is not apparent that they would be forced migrate in the resettlement scheme; the process is in the nascent stages of formulation and execution.

So far, the problems the Carteret Islanders have encountered have been presented as consequences of climate change. However, there are some who dispute the role of climate change in the displacement of the islanders. Interestingly, Fred Terry, the director of the United Nations Development Program in Bougainville, contends that dynamite fishing has destroyed the natural protection offered by the reef, and that natural subsidence and tectonic movement might also explain the islands’ inundation.¹⁰⁵ The argument is that sea levels are not actually rising due to climate change, but rather the islands are sinking due to shifts in tectonic plates. The flooding is a consequence of

¹⁰² Marion Struck-Garbe, “The Storms and Waves Eat Away our Islands,” 22.

¹⁰³ Ben Saul, “Inquiry into the economic and security challenges facing Papua New Guinea and the island states of the southwest Pacific.”

¹⁰⁴ Marion Struck-Garbe, “The Storms and Waves Eat Away our Islands,” 22.

¹⁰⁵ Oli Brown, “Migration and Climate Change,” 26.

different processes than what many assume and believe. Furthermore, when the ABG announced in 2005 that the islanders would be resettled, the idea was not actually new. Rather, there had been government plans to evacuate the islanders since the 1980s. The plans were placed on hold given the war in Bougainville during that time.¹⁰⁶

Thus, pattern of events that have led to Carteret Islanders' migration does fit Category I Climate Change Migration, albeit only at a general level. The extent to which climate change is integral to these processes is not clear. It is entirely possible that flooding and depletion of fresh water sources are consequences of the interacting effects of climate change, geological forces, as well as human-made destruction of the ecosystem. Even in this more basic model, it is difficult to extract climate change forces from other 'natural' processes to determine the cause of migration.

Case 2: Republic of Maldives



Map 6: Island of Male, Maldives. Accessed from Google Earth, April 15, 2009.

¹⁰⁶ The Guardian, "Pacific Atlantis: first climate change refugees," November 25, 2005, (accessed December 26, 2008); available from <http://www.countercurrents.org/cc-vidal251105.htm>.

The Republic of Maldives is comprised of approximately 1,200 low-lying islands¹⁰⁷ that are clustered in 26 natural atolls. 199 islands are inhabited and several more have been developed into tourist resorts.¹⁰⁸ More than 80 percent of the land is less than 1.5 meters above mean sea level. A 2006 preliminary population census estimates that there are 298,000 Maldivians, of which over one third live in the capital, Male.¹⁰⁹ It is widely accepted among scientists and other scholars that climate change has and will continue to adversely affect the region. Scott Leckie asserts that Maldives and several of the Pacific Islands are likely to be the hardest hit¹¹⁰ by the effects of climate change. This will manifest in a variety of ways.

First, with a few exceptions,¹¹¹ there is consensus that the sea levels have risen, as

¹⁰⁷ Nils-Axel Mörner, "Sea Level Changes and Tsunamis, Environmental Stress and Migration Overseas: The Case of the Maldives and Sri Lanka," *Internationales Asien Forum. International Quarterly for Asian Studies*, Vol. 38, No. 3-4, (2007): 354.

The Permanent Mission of the Republic of Maldives to the United Nations Office at Geneva notes that the Maldives is comprised of 1,190 coral reef islands.

Permanent Mission of the Republic of Maldives to the United Nations Office at Geneva, Introduction, (accessed February 1, 2009); available from <http://www.maldivesmission.ch/index.php?id=9>.

¹⁰⁸ United Nations in the Maldives, *Maldives: A Guide*, (accessed January 31, 2008); available from <http://www.un.org.mv/v2/?lid=2>.

¹⁰⁹ Permanent Mission of the Republic of Maldives to the United Nations Office at Geneva, Introduction.

¹¹⁰ Scott Leckie, "The Human Rights of Climate Change, Where Next?" Paper available from UNDP on the Republic of Maldives, <http://www.mv.undp.org/Images/Leckie%20Paper%20-%20The%20Human%20Rights%20Implications%20of%20Climate%20Change.pdf>, 3.

¹¹¹ The sea level investigations that Nils-Axel Mörner and his team have conducted indicate that the "sea is not at all in a rapidly rising mode and is probably not rising at all." In fact, sea levels fell 20-30 centimeters in the 1970s until the early 1980s.* Therefore, he is "not able to subscribe to the view that certain areas of the world are liable to extensive flooding in the future." Mörner notes that there are have been rapid sea level spikes that are "regional to local dimension" and often directly compensational nature- redistribution of water masses. These ocean dynamic changes seem to be linked to changes in the "monsoon regime."

a result of climate change, and that the projected rise threatens the existence of the nation.¹¹² For instance, seas are likely to rise by 25-58 cm by 2100. A second is that higher frequency and intensity of extreme events such as cyclones could cause severe flooding and significant damage to islands.¹¹³ Therefore, the continued and increasing rise in the frequency or intensity of extreme sea-level events will cause serious problems for the inhabitants of some of the islands in this century.¹¹⁴ A third implication is that such events reduce the resilience of coastal ecosystems and increase saltwater intrusion into freshwater resources¹¹⁵ and groundwater supplies.¹¹⁶ Correspondingly, a fourth is that given the projected increases in sea surface temperature, the health of the coral reef ecosystem is compromised. Not only is this problematic in terms of environmental conservation, but because the tourism and fisheries industries are based on the coral reef system, it will impact the nation's revenue. A final problem is coastal erosion and

Nils-Axel Mörner, "Sea Level Changes and Tsunamis, Environmental Stress and Migration Overseas: The Case of the Maldives and Sri Lanka," 354.

*Nils-Axel Mörner, Michael Tooley, and Göran Possnert, "New perspectives for the future of the Maldives," *Global and Planetary Change*, Vol. 40 (2004): 178.

¹¹² Government of Maldives, *Millennium Development Goals- Maldives Country Report 2007*, (accessed January 31, 2009); available from http://www.mv.undp.org/documents/mdgs_maldives_country_report_2007.pdf, 38.

¹¹³ *Ibid.*, 38

¹¹⁴ John A. Church, Neil J. White, and John R. Hunter, "Sea-level rise at tropical Pacific and Indian Ocean islands," *Global and Planetary Change*, Vol. 53. (2006): 155.

¹¹⁵ *Ibid.*

¹¹⁶ Peter Roy and John Connell, "Climatic Change and the Future of Atoll States" *Journal of Coastal Research*, Vol. 7. No. 4. (Autumn 1991) and John Connell. "Climatic Change and the Future of Atoll States." *Journal of Coastal Research*, Vol. 7. No. 4. (Autumn 1991): 1068.

inundation of low-lying flat land.¹¹⁷ Nils-Axel Mörner identifies that sea level rise and lowering, and changes in wind direction and intensity leads to erosion on many islands. Additionally, human interference with the coastal dynamics and sediment supply causes and exacerbates erosion. For instance, the construction of causeways between islands, dredging, harbor works and sea defenses¹¹⁸ is responsible for erosion along the coasts.

The Islanders' Responses

To manage and plan for changes in the environment the Maldives government has engaged in both short and long term strategies. The overall plan is to advocate for the reduction of global greenhouse gas emissions and climate change mitigation in the international arena. Given its lack of political clout among states, the government must also consider more practical activities. Currently, adaptive measures to environmental changes involve activities targeted at specific sectors where climate change impacts have been identified. The intent is to enhance the capacity of the Maldives to effectively implement adaptations to climate change and sea level rise.¹¹⁹ For instance, it can

¹¹⁷ Ibid.

¹¹⁸ Nils-Axel Mörner, Michael Tooley, and Göran Possnert. "New perspectives for the future of the Maldives," *Global and Planetary Change*, Vol. 40. (2004): 178.

The United Nations Environmental Programme has reported on broad environmental issues in Maldives. See: United Nations Environmental Programme, *Maldives: State of Environment 2002*, (accessed February 1, 2009); available from <http://www.rrcap.unep.org/reports/soe/maldivessoe.cfm>.

Also, for a comprehensive and detailed analysis on vulnerability and poverty, as it relates to development in Maldives, see: United Nations Development Programme, *Republic of Maldives-Vulnerability and Poverty Assessment II 2004*, (accessed January 31, 2009); available from <http://www.mv.undp.org/Images/vpa2.pdf>.

¹¹⁹ N. Mimura, L. Nurse, R.F. Mclean, J. Agard, L. Briguglio, P. Lefale, R. Payet and G. Sem, 2007: Small Islands. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds. Cambridge University Press, Cambridge, UK, 705.

construct hard structures, such as sea walls, or use “soft measures,” such as beach nourishment to protect the land from the sea. They can even continue to occupy the land, but make adjustments by elevating buildings.¹²⁰

Yet, as evidenced by their other efforts to address the matter, there appears to be a perception that adaptation and development measures will not be effective in the long-term and that emigration will be the ultimate solution. At least as early as 1991, there have been discussions of emigration as one possibility, but there is recognition that it depends on the policies of “metropolitan states,”¹²¹ such as Australia. In Kandholhudhoo, a densely populated island in the north of the Maldives, 60 percent of residents have volunteered to evacuate over the next 15 years. Also, there is an understanding that those remaining behind will eventually be compelled to do the same.¹²² Yet, there is no clear indication of where exactly they would migrate, especially if other land in the Maldives is not inhabitable. In 2008 with what might be a drastic, and even unprecedented move Mohamed Nasheed, the President of Maldives, announced that the government would begin to divert a portion of the country’s billion-dollar annual tourist revenue into buying land in another country- as an insurance policy. Nasheed acknowledges that they, the Maldivians, cannot do anything to stop climate change on their own and will have to buy land elsewhere. For the government, it is an “insurance

¹²⁰ Fathimath, Ghina, “Sustainable Development in Small Island Developing States-The case of the Maldives,” *Environment, Development and Sustainability*, Vol. 5, No. 1-2, (2003): 158.

¹²¹ Peter Roy and John Connell, “Climatic Change and the Future of Atoll States,” 1071.

¹²² BBC News, “Maldives: Paradise soon to be lost,” July 28, 2004, (accessed February 1, 2009); available from http://news.bbc.co.uk/2/hi/south_asia/3930765.stm.

policy for the worst possible outcome.” They have identified that Sri Lanka and India are possible places of relocation because they have similar cultures, cuisines and climates. Australia is theoretically also an option because of the amount of unoccupied land available.

Currently, Maldivian emigration to any one of these countries is not officially a consideration. Therefore, there is no indication of how these states have received the possibility of Maldivian immigration. A country such as Australia would probably be reluctant. It does provide development assistance primarily through granting scholarships for Maldivians to study governance, health, education and the environment in Australia. So, the Australian Government has a vested stake in the development of Maldives. For 2008-2009, estimated development assistance amounts to \$4.57 million (Australian).¹²³ To speculate, Australia may be willing to accommodate (mass) migration from Maldives if there were no or few other choices for Maldivian survival and if it could establish a formal immigration program to manage the migration.

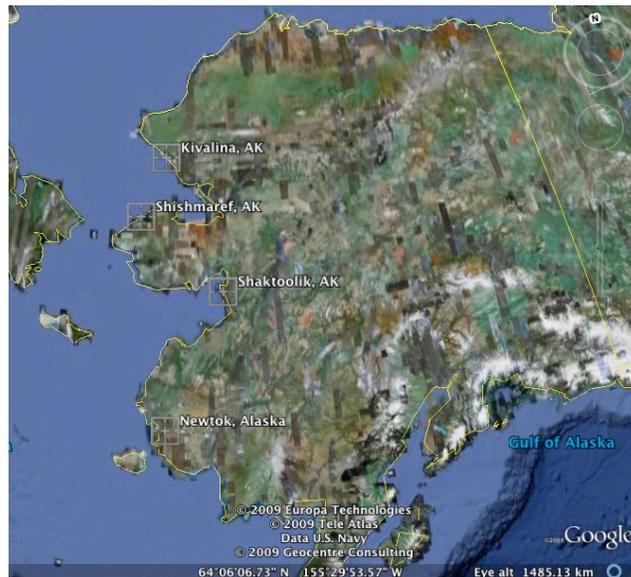
The Maldivians do not want to leave and at the same time, they do not “want to be climate refugees living in tents for decades,”¹²⁴ presumably residing as internally displaced persons. No one has moved on account of climate change, yet. But most reports suggest that migration is inevitable. Similar to the Carteret Islands, this case is an instance of the Climate Change Migration Model I. The question is not whether, but

¹²³ Australian Government, AusAid, *Maldives*, (accessed April 2, 2009); available from <http://www.ausaid.gov.au/country/country.cfm?CountryID=14&Region=SouthAsia>.

¹²⁴ The Guardian, “Paradise almost lost: Maldives seek to buy a new homeland,” November 10, 2008, (accessed February 1, 2009); available from <http://www.guardian.co.uk/environment/2008/nov/10/maldives-climate-change>.

when the some 298,000 Maldivians will be forced to relocate.

Case 3: Alaska, United States



Map 7: Alaska, United States-Towns of Kivalina, Newtok, Shaktoolik, and Shishmaref. Accessed from Google Earth, April 15, 2009.

The evidence of climate change's impact on the environment is apparent in Alaska, where average temperatures have increased by as much as 4.4°C over the last 30 years. Temperature increases have caused glaciers to start to melt, which has caused

surrounding sea levels to rise.¹²⁵ Both the disappearance of sea ice and sea level rise have created stronger storm surges that are eroding land, particularly in the western portion of the state. As anecdotal evidence, in the village of Shishmaref, Tony Weyiouanna, a village elder estimates that the tide moves an average of three meters closer to the land every year.¹²⁶ Also, the increased temperatures are thawing the permafrost, which causes the ground to crumble. In the town of Newtok, the permafrost is starting to melt. To make things worse, the village is below sea level and there is evidence that it is sinking. In fact, it is entirely possible that it is washed away in a decade.¹²⁷

There have been efforts to mitigate the effects of climate events. For example, there are a series of barricades designed to stem the tides. In 2006, the United States Army Corps of Engineers built a new seawall to protect the village of Kivalina. Despite these efforts, a day after the dedication ceremony, a storm ruined a critical component of the seawall. Adaptive measures such as temporarily evacuating villages, and rebuilding public infrastructures and erosion control structures are no longer sufficient.¹²⁸

This has led to serious consideration of relocation among the residents in these towns,¹²⁹ where there is a general perception that there is no sustainable future and there

¹²⁵ BBC News, “Sea engulfing Alaskan village,” July 20, 2004, (accessed February 1, 2009); available from <http://news.bbc.co.uk/2/hi/europe/3940399.stm>.

¹²⁶ Ibid.

¹²⁷ The New York Times, “Victim of Climate Change, a Town Seeks a Lifeline,” May 27, 2007, (accessed January 28, 2009); available from <http://www.nytimes.com/2007/05/27/us/27newtok.html>.

¹²⁸ Robin Bronen, “Alaskan communities’ rights and resilience” in Forced Migration Review, *Climate Change and Displacement*, 32.

¹²⁹ In addition to the community of Shaktoolik.

is no higher ground in the proximate vicinity to which they could relocate. To exacerbate the situation, environmental studies have indicated that a catastrophic climatic event could submerge this area in the next 15 years.¹³⁰

Communities' Responses

In light of these conditions, each community is involved in an ad hoc process with state and federal government agencies for the relocation process. One of the biggest obstacles is that funding constraints have limited their options. For example, it appears as if the denizens of Newtok will have to move. Given the town's remoteness, climate and topography, the Army Corps of Engineers estimates that the relocation could cost \$130 million or the equivalent of \$413,000 for each of the residents.¹³¹ However, no one is able to pay and no one is offering to pay for this at this point. At the same time, this has not stopped the town from taking steps to address the issue. It has actually secured a new site on Nelson Island, nine miles south of Newtok, through a land swap with the United States Fish and Wildlife Services. Also, it has applied for and received some state grants, some of which will be used to build a barge landing at this new site. Finally, thinking creatively, the townspeople are considering moving in stages rather than in one collective move, as the Corps plan might entail.

The Alaska case, similar to the Carteret Islands and the Maldives indicates that at this time, at least some and perhaps most climate change migration is planned and organized. Barring a sudden natural disaster, migration from those respective areas will

Robin Bronen, "Alaskan communities' rights and resilience" in *Forced Migration Review, Climate Change and Displacement*, 30.

¹³⁰ *Ibid.*, 30

¹³¹ The New York Times, "Victim of Climate Change, a Town Seeks a Lifeline."

occur over several years. They will not be the envisioned “flood” of people fleeing the effects of climate change. Rather, migration is a pragmatic response to environmental degradation. In fact, on face it may even be orderly and well executed. This reshaping of how one perceives climate change migration is important. The threat may be imminent, but the transition is manageable. Permanent relocation exacts a physical and emotional toll on those who leave their land and homes, and readjust to new environs. But migrants are not powerless and are highly resilient in the face of daunting challenges. Furthermore, in the case of climate-related impacts, they usually have time to plan.

Case 4: Bangladesh



Map 9: Bangladesh. Accessed from Google Earth, April 15, 2009.

Bangladesh has encountered similar climate change related issues as the previous cases. However, the magnitude, variety, and impact of environmental events and

processes in Bangladesh have exceeded the scale in the Carteret Islands, Maldives, and Alaska. The country is situated on a series of deltas of the Brahmaputra, Padma-Ganges (known as Ganges in India), and Meghna Rivers. It is along these rivers that many of the 150 million persons in Bangladesh reside. In contrast to the previous cases, the primary climate drivers of migration are monsoons, which cause flooding in about one third of the country annually.¹³² This phenomenon has produced multiple types of migration flows.

One type is that both cyclones and flooding regularly cause temporary local displacement.¹³³ Because monsoons occur annually, there is some predictability about their event and impacts. However, Bangladesh has experienced increased variability and uncertainty about environmental events, which are another set of effects of climate change. Bangladesh was impacted profoundly in 2004 when the monsoon arrived earlier than expected. Beginning in late June, the country experienced heavy rainfall that continued through July, which caused flooding to become increasingly more severe. Water levels did not start to recede until August. The flooding left approximately three million people marooned and thousands of others cut off from villages and searching for shelter.¹³⁴ Overall, according to Government of Bangladesh, 36 million people, approximately 25 percent of the total population, were affected. Also, two thirds of the land was under water. Specifically, 39 out of 64 districts, primarily in the north and central regions were impacted severely. For example, the flooding inundated, damaged

¹³² Environmental Change and Forced Migration Scenarios, General Overview Study, Short Version-Asia Pacific, (accessed January 8, 2008); available from http://www.each-for.eu/documents/GOS_Asia-Pacific_-_short_080510.pdf. 27.

¹³³ Ibid., 32

¹³⁴ BBC News, "Millions battle South Asia Floods," July 12, 2004 (accessed January 2, 2008); available from http://news.bbc.co.uk/2/hi/south_asia/3885513.stm.

and eroded, among several assets, homes, livestock sheds, and vegetable gardens.¹³⁵ This resulted in various immediate responses. Many people in rural areas moved into makeshift shelters on higher land that was drier. An August 2004 United Nations report notes that over 1.6 million people live in temporary shelters.¹³⁶ While others migrated to cities, such as Dhaka, some chose to stay in their flooded homes to safeguard their property.¹³⁷ More recently in 2007, heavy rainfall from mid-July until mid-September affected 10 million persons. It resulted in the migration of an estimated 3,000 persons per day to Dhaka from rural areas.¹³⁸ It is important to mention that although flooding may be sub-optimal in the sense that it causes displacement, many people actually rely on annual flooding for productivity in agriculture. In this sense, flooding is expected and ‘normal.’ However, as a consequence of climate change, what is not normal is that it flooding is more erratic and unpredictable.

Another type of migration emerges from riverbank erosion. Even though they are necessary, persistent floods also change river courses. Because many Bangladeshis are landless, they are forced to reside along riverbanks. Hence, not only does flooding mean

¹³⁵ Bangladesh Disaster and Emergency Response, Post-Flood Needs Assessment Summary Report, September 30, 2004, Local Consultative Group-Bangladesh, (accessed January 2, 2008); available from [http://www.reliefweb.int/rw/RWFiles2004.nsf/FilesByRWDocUNIDFileName/JMAN-65FD4W-lcg-bang-6oct.pdf/\\$File/lcg-bang-6oct.pdf](http://www.reliefweb.int/rw/RWFiles2004.nsf/FilesByRWDocUNIDFileName/JMAN-65FD4W-lcg-bang-6oct.pdf/$File/lcg-bang-6oct.pdf), 3.

¹³⁶ Joint Bangladesh UN-DMT Situation Report, August 4, 2004, (accessed January 2, 2009); available from <http://www.lcgbangladesh.org/derweb/sitreps/2004/Floods%202004%20Joint%20Bangladesh%20UNDMT%20Sitrep%2004%20Aug%202004.pdf>, 3.

¹³⁷ Bangladesh Disaster and Emergency Response, Post-Flood Needs Assessment Summary Report, 3.

¹³⁸ Integrated Regional Information Networks, “Bangladesh: Flood migrants pour into Dhaka,” October 18, 2007, (accessed January 2, 2009); available from <http://www.irinnews.org/Report.aspx?ReportId=74846>.

that people lose their homes, but also land is eroded along rivers annually.¹³⁹ According to the Centre for Environmental and Geographic Information Service, 88,780 hectares of land along the Brahmaputra River, 27,990 hectares along the Padma River, and 38,510 hectares along their distributaries had been eroded between 1973 and 2007.¹⁴⁰

In a survey undertaken in a Bangladesh floodplain in the mid-1980s, 64 percent of sample households reported having been displaced by erosion at least once. Normally, migrant households relocate only a short distance away. For example, nearly 88 percent of households had remained within two miles of their previous residence. In 1995, the Flood Plan Coordination Organization estimated that riverbank erosion displaced over 728,000 people between 1981 and 1993 along Jamuna, Padma, and Meghna rivers.¹⁴¹ Nazrul Islam, an environmental specialist, notes that between 300 and 500 families are rendered homeless annually due to river erosion that results “in massive displacement in the country.”¹⁴²

These two examples indicate riverbank erosion is not new in this region. The matters that are most concerning are not just erosion, but its frequency, intensity, and unpredictability in recent years, implicitly on account of climate change. It is estimated that in the next year 29,000 people living along the banks of Brahmaputra, Meghna and Padma rivers will lose their homes. By 2025, around 3,575 square kilometers in the

¹³⁹ Environmental Change and Forced Migration Scenarios, General Overview Study, Short Version-Asia Pacific, 32.

¹⁴⁰ As cited in: Integrated Regional Information Networks, Bangladesh: “River refugee” numbers continue to swell,” August 1, 2008, (accessed January 8, 2009); available from <http://www.irinnews.org/PrintReport.aspx?ReportId=79569#>.

¹⁴¹ Environmental Change and Forced Migration Scenarios, General Overview Study, Short Version-Asia Pacific, 33.

¹⁴² Integrated Regional Information Networks, “Bangladesh: “River refugee” numbers continue to swell.”

valleys of these rivers and their estuaries will be lost to erosion.¹⁴³

It is crucial to note that climate change is not the only factor in exacerbating erosion. The interplay of local and regional environmental conditions such as the deforestation in the Indian and Nepalese Himalayas, the silting of riverbeds, the absence of adequate and appropriate river management, and population growth also impact erosion. Ibrahim Wares, a water engineer, notes that “with the increasing population, more people shift toward the river banks and make their homes near them, making them vulnerable to erosion and flood damage.”¹⁴⁴ The IOM acknowledges that an estimated one million Bangladeshis are displaced annually, mainly to urban centers because of flooding and subsequent riverbank erosion.¹⁴⁵

A third is migration as a consequence of drought and water scarcity. While too much water is the principal problem most of the time, parts of Bangladesh do not receive enough water. The northwest and northeast regions are particularly prone to these phenomena.¹⁴⁶ Correspondingly, regions have undergone desertification and soil degradation. The United Nations Environmental Programme notes that soil acidification and salinization are increasing. This has meant that arable land has become increasingly scarce. In 1993 Thomas Homer-Dixon contended that over the last three decades, “land

¹⁴³ Ibid.

¹⁴⁴ Ibid.

¹⁴⁵ International Organization for Migration, *Expert Seminar: Migration and the Environment*, 32.

¹⁴⁶ Bangladesh Case Study, 1. Appendix 3 in Richard Black and Dominic Kniveton, Ronald Skeldon, Daniel Coppard, Akira Murata and Kerstin Schmidt-Verkerk, “Demographics and climate change: future trends and their policy implications for migration.”

scarcity has been a key factor causing the large scale movement of people from Bangladesh to the Indian state Assam.”¹⁴⁷ The impact of climate change on a series of environmental processes has led to land scarcity, which is the proximate cause of migration.

To add to the set of climate-related problems and impacts in the country, though not usually indicated, a fourth type of migration may result from sea level rise. Given that Bangladesh is low-lying and is densely populated, persons residing in the area are also vulnerable to sea level rise. The IPCC reports that a 10-45 centimeter rise in sea levels will cause inundation of about 15 percent or approximately 750 square kilometers in the Sundarbans.¹⁴⁸ The primary impacts of this will be the losses of plant species and wildlife. The secondary impacts will be economic loss and exacerbated insecurity and loss of employment.¹⁴⁹ Jon Barnett then suggests that this will force 5.5 million people in this region to relocate.¹⁵⁰ They may move further inland, but may also migrate to India.¹⁵¹

Thus, outright flooding, river erosion, desertification, and sea level rise track along the Category I Climate Change Migration model. Flooding in Bangladesh appears

¹⁴⁷ Environmental Change and Forced Migration Scenarios, General Overview Study, Short Version-Asia Pacific, 27.

¹⁴⁸ Sundarbans are mangrove forests near the Ganges River.

¹⁴⁹ Intergovernmental Panel on Climate Change, *Technical Summary-Asia, Climate Change 2001: Working Group II: Impacts Adaptation and Vulnerability*, (accessed April 3, 2009); available from <http://www.ipcc.ch/ipccreports/tar/wg2/040.htm>.

¹⁵⁰ Jon Barnett, “Security and Climate Change,” Working Paper, Tyndall Centre for Climate Change Research, October 2001, 4.

¹⁵¹ Golam Mahabub Sarwar and Mamunul H. Khan, “Sea Level Rise, A Threat to the Coast of Bangladesh,” *Inernationales Asien Forum*, Vol. 38, No. 3-4, (2007): 386-387.

For more on environment-induced migration patterns from Bangladesh to India, see: Ashok Swain, “Displacing the Conflict: Environmental Destruction in Bangladesh and Ethnic Conflict in India,” *Journal of Peace Research*, Vol. 33, No. 2, (May 1996): 189-204.

to be a ‘necessary evil,’ of sorts. While many depend on it for cultivating agriculture, it also results in both internal and international, temporary and permanent large-scale migration. Yet, the case of Bangladesh also indicates that there are other factors that mediate the link between environmental processes and events, and migration. The IOM notes that other economic, social and cultural factors intervene in determining whether affected populations are displaced over the long term or choose to migrate permanently. In this manner, the case also follows the Category II Climate Change Migration model. The IOM suggests that there are “causal links between poverty, local displacement of population and temporary or permanent labor migration associated with environmental degradation induced by river flooding.” The post-monsoon rise in unemployment and food shortages during the gap between major paddy harvesting periods exacerbates Bangladeshi displacement in regions such as the northwest. During this time many people migrate temporarily to urban centers.¹⁵² This suggests that all migration within and from the country does not relate directly to climate change, but that climate change exacerbates the impacts of environmental processes and events in the region.

Furthermore, while natural phenomena such as monsoons usually lead to migration, it does not mean that they always do. EACH-FOR acknowledges that disasters do not always create out-migration. EACH-FOR refers to a 2005 study of an April 14, 2004 tornado in Bangladesh. The study provides empirical evidence of the non-occurrence of out-migration in the aftermath of the tornado. Data collected from 291 respondents from eight tornado-affected villages suggest that no one from these locations migrated to other areas. The main reason why no one left is that government and non-

¹⁵² International Organization for Migration, *Expert Seminar: Migration and the Environment*, 34.

governmental organizations provided a constant flow of disaster aid in the country.¹⁵³

This suggests that migration is not inevitable, but still probable in the context of monsoons. Furthermore, even if there is displacement, they will not “move out of their homelands in vast and sudden waves.” Thomas Homer Dixon asserts “environmental scarcity rarely manifests itself in such a sharp and hurtful way that people are suddenly compelled to leave.”¹⁵⁴

Methodology in Evaluation of Cases

The case studies indicate there are challenges in establishing clear links between climate change and migration. If one is going to classify correctly specific types of migration as “climate change migration,” there must be an evaluation of the conditions that deem it as such. A first step is to determine whether climate change has actually produced the environmental process or event, the climate driver of migration. This paper has assumed that this connection is a given. The Carteret Islands case raises the possibility that sea level rise is a consequence of other natural and human-made processes and of climate change. In Bangladesh, it is implied that climate change exacerbates previously existing environmental processes, but not necessarily causes them. Human activities such as deforestation and poorly run river management projects affect riverbank erosion.

However, the more significant issue is whether the climate drivers actually cause

¹⁵³ Environmental Change and Forced Migration Scenarios, General Overview Study, Short Version-Asia Pacific, 34.

¹⁵⁴ Thomas Homer-Dixon, *Environment, Scarcity, and Violence* (Princeton: Princeton University Press, 1999), 93.

migration. Hence, another step must include an analytical separation of climate change drivers from other variables for migration. One has to sort out and extract the climate drivers of migration from the economic, political, social contexts of migration. Thomas Homer-Dixon indicates that environmental factors only produce their effects in complex interaction with other social and physical variables.¹⁵⁵ For instance, the situation in the Carteret Islands may not be so much about rising sea levels, but perhaps about the ‘failure’ of previous development efforts to counter the phenomenon. Additionally, in reference to broader humanitarian emergencies that have multiple causes, including both ‘natural’ and human, how can one determine that migration is actually a consequence of environmental processes? In Bangladesh, migration was also a result of the interacting process of unemployment and food shortages after flooding.

As part of any evaluation, there should be some measurement of the impact of the environmental events and processes on migration. There are quantitative studies to determine the degree to which changes in the environment lead to migration, and there are qualitative approaches that seek to identify the character of migrations, either forced or voluntary, that are undertaken in response to environmental change.¹⁵⁶ As an example, the EACH-FOR project provides some of the most comprehensive analyses on the correlations between environmental degradation and migration. I contend that for migration to be labeled “climate change migration,” climate change should be the primary cause of migration and the effects of climate change on the physical environment

¹⁵⁵ Ibid.

¹⁵⁶ James Morrissey, “Environmental Change and Forced Migration-A State of the Art Review,” Refugee Studies Centre, Background Paper, Oxford Department of International Development, January 2009, 39.

Morrissey also discusses the problems with quantitative and qualitative approaches to studying the connections between environmental change and migration.

and on migration should be new or at least significantly different than preexisting patterns. It should not be able to be characterized as economic migration, conflict migration, or any other related term.

If these types of analyses and distinctions are absent, we run into the issue of classifying every migration flow as “climate change migration.” The problem with this is that if everything is “climate change migration,” then it loses its overall meaning. It ceases to be unique and critical in addressing, as so many sources have stressed in this paper. Thus, if one assumes that climate change migration does exist and will occur on a massive scale in the near future, there must be unambiguous causal rather than correlative links between and among climate change, the climate drivers of migration, and migration. Based on most of the literature to date, it is not evident that this particular exercise has been conducted often, or at least has been reported well.

Chapter IV: The Agendas *Behind* the Agenda

The subject climate change migration is an inter-disciplinary field with implications for not only the populations affected by climate change, but also a variety of sectors: human security and state security; humanitarian and development aid; environmental advocacy; and more broadly, international politics. Each holds a particular perspective and shades how the topic is perceived. This final section delves into what may be so important, what some ‘hidden agendas’ might be among these disciplines. I argue that different stakeholders use climate change migration to advance their own interests. While there are individual viewpoints, the study and understanding of climate change migration is not confined to any one of these sectors. As Andrew Morton, Philippe Boncour and Frank Lazcko note, climate change migration is a crosscutting

issue that has political ramifications and implications for humanitarian and development aid.¹⁵⁷

Human Security and State Security

Human Security

Some contend that climate change presents a general “risk to human security” because of its potentially “negative effects on people’s livelihoods.”¹⁵⁸ Climate and environmental changes ‘threaten’ human security when ecological tipping points are exceeded. These are “points in time when environmental pressures mount and so threaten human security that people begin to factor environmental conditions into their migration decisions.”¹⁵⁹ For the Human Security Network, while climate change has transnational implications, “it primarily affects the human security particularly in volatile regions and vulnerable groups.”¹⁶⁰ Yet, as mentioned previously in this paper, it is crucial to be cautious about establishing links between environmental change, conflict, and migration.

State Security

The security sector, especially in the United States, has commented extensively about the “threat” of climate change to national security. For example, CNA Corporation, a think tank funded by the United States Navy, contends that climate change acts as a

¹⁵⁷ Andrew Morton, Philippe Boncour and Frank Lazcko, “Human security and policy challenges” in Forced Migration Review, *Climate Change and Displacement*, 5.

¹⁵⁸ Camillo Boano, Roger Zetter, and Tim Morris, “Environmentally Displaced People: Understanding the Linkages Between Environment Change, Livelihoods and Forced Migration,” Refugee Studies Centre, University of Oxford, December 20, 2007.

¹⁵⁹ Koko Warner, Olivia Dun and Marc Stal, “Field observations and empirical research” in Forced Migration Review, *Climate Change and Displacement*, 14.

¹⁶⁰ Human Security Network, “Human security and the climate change impact on vulnerable groups,” May 8, 2007, (accessed August 23, 2008); link available from <http://www.humansecuritynetwork.org/menu-e.php>.

“threat multiplier” for instability in some of the most volatile regions of the world. The think tank sees that climate change can have a destabilizing impact on any country. It points out that the predicted effects of climate change such as extreme weather events, drought, flooding, sea level rise, retreating glaciers, habitat shifts, and the increased spread of life-threatening diseases, have the potential to disrupt “our way of life and to force changes in the way we keep ourselves safe and secure.”¹⁶¹

Paul Smith concurs with and elaborates on this view. For him, “...large-scale population movements—spurred by climate change and its related processes—will most likely pose security challenges for states, particularly if they entail the crossing of international borders”¹⁶² Joshua Busby comments that Caribbean countries such as Haiti and Cuba could be hard hit by extreme weather events, contributing to humanitarian disasters and the possibility of refugee flows and state failure. The argument is that this is problematic for the U.S. on several levels. Not only is there regional political instability, but also the potential for large-scale migration flows, most likely bound for the United States. Furthermore, Busby notes that Cuba in 1980 and Haiti in 1994 have used the threat of migration to extract concessions from the United States to let in migrants. He believes that if the U.S. does not take action to address climate change or support risk

¹⁶¹ CNA Corporation, “National Security and the Threat of Climate Change,” 2007, (accessed October 8, 2008); available from http://securityandclimate.cna.org/report/SecurityandClimate_Final.pdf, 6.

For a more dire and fatalistic prognosis of the effects of climate change and its implications for U.S. national security, see: Peter Schwartz and Doug Randall, “An Abrupt Climate Change Scenario and Its Implications for United States National Security,” October 2003, (accessed January 28, 2009) Available from Environmental Defense Fund, http://www.edf.org/documents/3566_AbruptClimateChange.pdf.

¹⁶² Paul J. Smith, “Climate Change, Mass Migration and the Military Response,” *Orbis*, Volume 51, no. 4, Foreign Policy Research Institute, (Fall 2007): 619.

reduction, countries in the region could be increasingly tempted to use the threat of migration again.¹⁶³

These security concerns not confined to the United States. The European Commission also sees climate change as a "threat multiplier" that "exacerbates existing trends, tensions, and instability." It identifies that climate change "threatens to overburden states and regions which are fragile and conflict prone."¹⁶⁴ The Commission perceives that climate change effects make "those parts of the populations that already suffer from poor health conditions, unemployment or social exclusion are rendered more vulnerable." The concern is that it could amplify or trigger migration within and between countries, and that Europe must expect substantially increased migratory pressure.¹⁶⁵

Thus, "many countries around the world are characterizing international migration—and particularly acute, disruptive migration—as a threat to national security."¹⁶⁶ What seems to behind the concern, warranted or not, is "that migrants may be a social or economic burden, a threat to cultural identity, or a political threat to the host state..." Also, Smith identifies that in many industrialized countries, there is "acute sensitivity" regarding the racial, ethnic, and cultural characteristics of incoming migrants.

¹⁶³ Joshua Busby, "Climate Change and National Security-An Agenda for Action," Council on Foreign Relations, (accessed October 15, 2008); available from http://www.cfr.org/content/publications/attachments/ClimateChange_CSR32.pdf, 6-7.

¹⁶⁴ European Council, "Climate Change and International Security," Paper from the High Representative and the European Commission to the European Council, March 14, 2008, (accessed January 29, 2009); available from http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/reports/99387.pdf, 2

¹⁶⁵ Ibid., 4

¹⁶⁶ Paul J. Smith, "Climate Change, Mass Migration and the Military Response," 628-629.

Finally, in a post 9/11 environment, immigrants now are viewed as possible agents or supporters of terrorism.¹⁶⁷

Smith argues that the state response to climate change migration is likely to entail military action because international migration, which states considered traditionally a social or labor issue is now “transformed often into a security matter.”¹⁶⁸ Thus, “as states contend with these climate-related disasters, or feel overwhelmed by what they perceive as “uncontrolled migration,” many will turn to military forces to deal with the challenge.¹⁶⁹ Smith asserts that military forces will be limited most likely to two key situations: interdiction operations and migration processing (including repatriation) operations. A third instance might entail stabilization operations, “particularly when climate change-induced disaster generates the potential for mass migration.”¹⁷⁰

Human Rights, Development and Humanitarian Assistance

Human Rights

The international human rights regime and international aid enterprise are key players in the discussion about climate change migration. From a human rights perspective, “grounded in the principle of the inherent dignity of the human person,”¹⁷¹ it is not only the total numbers that climate change displaces that matters. Derek Bell contends that “the physical environment is not simply a natural resource to be

¹⁶⁷ Ibid., 629

¹⁶⁸ Ibid., 628

¹⁶⁹ Ibid., 619

¹⁷⁰ Ibid., 630

¹⁷¹ Scott Leckie, “Human rights implications” in Forced Migration Review, *Climate Change and Displacement*, 18.

‘appropriated . . . worked on, shaped, and benefited from.’” Rather, it can also be a person’s home; a fundamental and constitutive part of one’s identity. For many, their environment provides the frame of reference in which the development of their personality takes place. Consequently, “one cannot treat the disruption, degradation or destruction of particular environments or homes as nothing more than the loss of some substitutable natural resources. Instead, the pursuit of development goals must be constrained by a concern for the protection of people’s homes.”¹⁷²

Therefore, it is crucial that the home space is preserved and protected. This means that “every single person who is forced from their home, against their will, must have a remedy available to them which respects their rights, and if necessary, fulfills their rights as recognised under international rights law.”¹⁷³ Potential and actual “environmental refugees” should be entitled not only to equal rights to natural resources and wealth as “citizens of the world” but also as “particular persons in a particular place,” they should be entitled to some control over what happens to their homes.¹⁷⁴ Also, in respect to climate change’s effects on atoll-countries such as the Maldives, Jon Barnett and Neil Adger argue that basic normative rights such as everyone having a “right to a

¹⁷² Derek R. Bell, “Environmental Refugees: What Rights? Which Duties?” *Res Publica*, (2004): 152.

¹⁷³ Scott Leckie, “Human rights implications,” in Forced Migration Review, *Climate Change and Displacement*, 18.

¹⁷⁴ Derek R. Bell “Environmental Refugees: What Rights? Which Duties?,” 152.

nationality” are at risk¹⁷⁵ with the flooding of their respective territories and subsequent permanent displacement.

Development Assistance

While climate change migration is usually associated with humanitarian emergencies, international development aid is also integral in the discussion. For Frank Biermann and Ingrid Boas, the protection of the so-called “climate refugees” is “essentially a development issue that requires large-scale, long-term planned resettlement programs for groups of affected people mostly within their country.”¹⁷⁶ Development aid tends to focus on adaptation and coping measures to environmental process and events, with the goal of mitigating migration. Many programs seek to build and reinforce the resilience of local communities to handle the effects of climate change. Therefore, development projects are not necessarily about addressing the intersection of climate change and migration, but rather tackling the challenges that climate change and environmental degradation present.¹⁷⁷

Humanitarian Assistance

¹⁷⁵ Jon Barnett and Neil Adger, “Climate Dangers and Atoll Countries,” Working Paper 9, Tyndall Centre for Climate Change Research, October 2001, 8.

This is found in Article 15.1 of the Universal Declaration of Human Rights.

¹⁷⁶ Frank Biermann and Ingrid Boas, “Protecting Climate Refugees: The Case for a Global Protocol,” *Environment*, November-December 2008, 2.

¹⁷⁷ For more discussion about the intersection of climate change, security, and development refer to the Institute for Environmental Security document, “Climate Change, Security and Sustainable Development,” Report of the Conference “From Bali to Poznan-New Issues, New Challenges” in Brussels, Belgium in December 2007, March 2008.

Another cross-cutting issue with development is poverty. For an assessment of the intersection of poverty, climate change, and migration, see: World Bank, “Poverty and Climate Change, Reducing the Vulnerability of the Poor through Adaptation,” 2003. (accessed January 29, 2009); available from

http://povertymap.net/publications/doc/PovertyAndClimateChange_WorldBank.pdf.

From the humanitarian perspective, the matter is about primarily about identifying human vulnerabilities to climate change and where they are likely to occur. For example, Care's *Humanitarian Implications of Climate Change* maps "hotspots" of climate-related hazards such as flooding, cyclones, and droughts onto human vulnerabilities related to social and financial assets. In essence, it looks at where natural disasters are likely to strike and the levels of vulnerability persons in those regions are to coping with those events. One of the most important factors shaping one's coping capacity is her access to and control over natural, human, social, physical, political and financial resources.¹⁷⁸ Other capacity variables include the quality of governance in a state, the quality or degradation of their natural resource base, the presence or absence of conflict, and the rate of urbanization and demographic change.¹⁷⁹ Care contends that the intensifying hazards may place substantial pressure on populations to migrate, at least temporarily. It asserts that prolonged droughts exert the "greatest pressure on households to move – particularly from rural to urban areas."¹⁸⁰ Under this framework, the emphasis is on a more holistic set of interventions and responses to climate change where migration becomes a secondary concern.

Environmental Advocacy

The third group of stakeholders with a stake in climate change comes from the field of environmentalism and conservation. David Keane explores one aspect of the environmentalist 'agenda.' He indicates that the separation of environmental causes of

¹⁷⁸ Care, "Humanitarian Implications of Climate Change," 1.

¹⁷⁹ *Ibid.*, 5-6

¹⁸⁰ *Ibid.*, 19

migration from political, social and economic causes is of key concern for ecologists, such as Norman Myers, who supports the notion of “environmental refugees.” The environmentalist agenda focuses on climate change, deforestation, and desertification, among other environmental concerns. Keane suggests that these environmentalists use the migration ‘card’ to advance their own causes. The reasoning is that if the ‘international community’ wishes to prevent or mitigate the “huge numbers” of migrants, it must prevent the environmental causes of those migrations.¹⁸¹ Thus, state attention and action on climate change migration will advance their interests in environmental preservation and conservation.

International Politics

Finally, the issues of climate change and migration can also have political reverberations among states. There are debates among states about who should take responsibility for climate change. Elizabeth Ferris comments that “some tension exists between the developed and developing world on the politics of climate change.”¹⁸² The state of Tuvalu has wanted to hold industrialized countries such as the United States and Australia “liable for causing sea level rise due to their high levels of greenhouse gas emissions.”¹⁸³ Despite the fact that it is generally accepted that “developed” states are

¹⁸¹ David Keane, “Environmental Causes and Consequences of Migration: A Search for the Meaning of “Environmental Refugees,” *Georgetown International Environmental Law Review*, (Winter 2004), (accessed January 29, 2009); available from http://findarticles.com/p/articles/mi_qa3970/is_200401/ai_n9353848/print, 5.

¹⁸² Elizabeth Ferris, “Making Sense of Climate Change, Natural Disasters, and Displacement: A Work in Progress,” 3.

¹⁸³ Fabrice Renaud, Janos J. Bogardi, Olivia Dun, and Koko Warner, “Control, Adapt or Flee- How to Face Environmental Migration?”, United Nations University, No. 5, 2007, (accessed January 29, 2009); available from <http://www.ehs.unu.edu/file.php?id=259>, 20.

more culpable than others in causing or at the very least, advancing the processes and effects of climate change, there are disagreements about what, if anything these states should do.

Nevertheless, the debate more germane to this paper relates to the tension between international and domestic immigration laws, specifically related to the right to apply for asylum. According to Richard Black, policy-makers in the North have made climate change migration an issue because they want to further restrict asylum laws and procedures. In Black's view, "the term was invented at least in part to depoliticise the causes of displacement, so enabling states to derogate their obligation to provide asylum."¹⁸⁴ Black asks "why so much effort should have been spent trying to separate environmental causes of migration from other political, economic or social causes, even to the point of trying to rewrite the definition of a refugee in international law..."¹⁸⁵ One answer is that while the efforts may not be solely about limiting asylum, it is possible that they form a basis, a platform upon which to allow states to establish the boundaries of their overall immigration policies.

Convergence of Diverse Perspectives?

Another approach to understanding the discourse on the subject is to distinguish between those who forecast waves of 'environmental refugees' and those who are more skeptical about making the causal link between climate change and migration. The former are classified as the "advocates," who push the issue of "environmental refugees." They believe that climate change migrants will most likely 'flood' states in the future. Steve

¹⁸⁴ Richard Black, "Environmental refugees: myth or reality," 11.

¹⁸⁵ *Ibid.*, 12

Loneragan notes that many would agree that environmental disasters such as floods, droughts and earthquakes are displacing large numbers of people.¹⁸⁶ This category also includes, which Olivia Dun and François Gemenne refer to as the “alarmists.” They are likely to isolate environmental factors as a major driving force of migration.¹⁸⁷ In a similar fashion, Astri Suhrke discusses the “maximalists” who “tend to extract the environmental variable from a cluster of causes and proclaim the associated outmigration as a direct result of environmental degradation.”¹⁸⁸ They see that “environmental degradation has already displaced millions of people, and more displacement is on the way.”¹⁸⁹ The “advocates” tend to come from disciplines such as environmental, disaster and conflict studies.

The latter grouping is less likely to give credence to the relationships between climate change and migration that the “alarmists” contend. Lonergan’s “contrarians” question critically the role of environmental changes in migration.¹⁹⁰ These “skeptics” tend to look at the complexity of the migration process.¹⁹¹ Correspondingly, in contrast to the maximalists, the minimalists’ view contends that environmental change as a

¹⁸⁶ Steve Lonergan, “The Role of Environmental Degradation in Population Displacement,” *Environmental Change and Security Project Report*, Issue 4. (Spring 1998): 7.

¹⁸⁷ Olivia Dun and François Gemenne, “Defining ‘environmental migration’” in *Forced Migration Review*, *Climate Change and Displacement*, 10.

¹⁸⁸ Astri Suhrke, “Pressure Points: Environmental Degradation, Migration and Conflict,” 6.

¹⁸⁹ *Ibid.*, 4

¹⁹⁰ Steve Lonergan, “The Role of Environmental Degradation in Population Displacement,” 8.

¹⁹¹ Olivia Dun and François Gemenne, “Defining ‘environmental migration’” in *Forced Migration Review*, *Climate Change and Displacement*, 10.

contextual variable that can contribute to migration.¹⁹² For instance, they focus on the impact of a particular process such as land degradation, deforestation or changing climate on migration. Yet, they take much more seriously that migration is not a monocausal phenomenon. Thus, environmental degradation by itself is not important as a cause of migration.¹⁹³ The “skeptics” belong almost exclusively to the field of forced migration and refugee studies.¹⁹⁴

Each sector’s efforts for advancing its underlying concerns might explain the increased attention on the issue. This has been fundamental in raising the level of discussion on and study of the subject. It has impelled academics, activists, and policy makers to explore the matter in greater depth and to consider the ramifications of climate change migration.

Chapter V: Protection Gaps and International Policy Responses

Not only are there conflicting conceptions of what climate change migration is, there are also debates about its implications for human security among the ‘international community.’ This final chapter explores the legal gaps in the protection¹⁹⁵ of those who

¹⁹² Astri Suhrke, “Pressure Points: Environmental Degradation, Migration and Conflict,” 4.

¹⁹³ *Ibid.*, 5

¹⁹⁴ Olivia Dun and François Gemenne, “Defining ‘environmental migration’” in *Forced Migration Review, Climate Change and Displacement*, 10.

¹⁹⁵ The InterAgency Standing Committee provides a detailed summary of legal protection gaps, disaggregated by the cause of migration. I highlight broad protection concerns. See:

InterAgency Standing Committee, *Climate Change, Migration and Displacement: Who will be affected?* Working paper submitted by the informal group on Migration/ Displacement and Climate Change of the IASC - 31 October 2008, (accessed December 15, 2008.); available from <http://unfccc.int/resource/docs/2008/smsn/igo/022.pdf>.

are displaced by climate drivers of migration, and the international policy response and approach to addressing them.

Protection Gaps

One issue that needs to be addressed is what happens to the legal status of nation-states that are submerged completely or rendered uninhabitable, and the population is forced to migrate to another country, as predicted for the Maldives. Maria Stavropoulou asserts that the ‘disappearing states’ scenario is an area for additional legal measures.¹⁹⁶ This is where the laws on statelessness may become applicable. Kälin contends that because statelessness means to be without nationality and not necessarily without a state, persons in this situation, such as the Maldivians, would not become stateless as long as there is some remaining part of the territory of their state. Furthermore, if the whole country is submerged, it is not certain that they become stateless in the legal sense. Maldives could continue to exist as a legal entity at least for some time even if the territory has disappeared. Yet, even if Maldivians end up not having a nationality, according to Kälin, international law on statelessness does not provide adequate protection for them. Refugee law will also not be applicable to their case, and they will need of some form of international protection.¹⁹⁷ The rights of the affected populations

¹⁹⁶ Maria Stavropoulou, “Drowned in definitions?” in Forced Migration Review, *Climate Change and Displacement*, 12.

¹⁹⁷ Walter Kälin, “Displacement Caused by the Effects of Climate Change: Who Will Be Affected and What Are the Gaps in the Normative Framework for Their Protection?,” Brookings Institution, (accessed October 16, 2008); available from http://www.brookings.edu/papers/2008/1016_climate_change_kalin.aspx?emc=lm&m=219200&l=27&v=1037154.

will need clarifying, for example, “whether they require a unique legal status and about the responsibilities of the international community, particularly in terms of relocation.”¹⁹⁸

Another issue pertains to those who are internally displaced by the climate drivers of migration. The Guiding Principles on Internally Displaced Persons does “provide sufficient protection for those forcibly displaced by sudden-onset disasters or because their place of origin has become inhabitable or been declared too dangerous for human habitation.”¹⁹⁹ Kälin notes that in fact, the normative framework for people displaced by the effects of climate change inside their own country is better developed than that for people displaced outside their country. Both human rights law and international humanitarian law protect IDPs.²⁰⁰ Yet this protection scheme will have to be specific about its scope as to who or what groups are protected and why they should be afforded the benefit. For example, what sort of protection (if any) would be available for those who decide to pre-empt projected, but not immediate climate change-induced environmental degradation in their communities? In the context of internal displacement resulting from slow-onset disasters, there is a need to distinguish between those who *voluntarily* leave their communities because of the effects of climate change and those who are *forced* to leave their homes and therefore qualify as internally displaced persons. As Kälin suggests, the “criteria should be based on an assessment of whether such persons may be reasonably expected to remain at or go back to their place of residence,

¹⁹⁸ Walter Kälin, “The Climate Change-Displacement Nexus.”

¹⁹⁹ Walter, Kälin, “Gaps in IDP Protection” in Forced Migration Review, *Climate Change and Displacement*, 17.

²⁰⁰ *Ibid.*

taking into account the prevailing circumstances there as well as the particular vulnerabilities of affected persons.”²⁰¹

A third concern relates to international migration. If a population crosses an international border on account of a natural disaster, generally there is no international protection granted to them because they do not qualify as refugees under the Refugee Convention. Stavropoulou points out that there is a need for the prohibition of the deportation of people from countries hit by a natural disaster who are not refugees under the 1951 Convention yet should not be returned for humanitarian reasons.²⁰² Kälin would concur that they would be of “special concern to the international community,” if as persons displaced across international borders, they “cannot return to their country of origin for factual or legal reasons or cannot reasonably be expected to do so because of a lack of security or sustainable livelihoods there.”²⁰³

To some extent this issue is already addressed in national responses. In some countries, humanitarian status is afforded to foreign nationals who cannot *return* to their countries of origin due to natural disasters or other emergencies. As one example, the

²⁰¹ Walter Kälin, “The Climate Change-Displacement Nexus.”

The criteria for assessment include: (A) Permissibility or whether return is impermissible by law. For instance, human rights law prohibits the sending of people back to a situation where their life or limb is at risk. (B) Possibility of return. For example, return may temporarily not be possible because of technical impediments, such as the roads are cut off. Return is impossible if the country of origin refuses admission for technical or legal reasons. (C) Reasonableness of return. Return cannot be reasonably expected if the country of origin does not provide any assistance or protection at all or at far below international standards as long as the displacement ends. These criteria are explained in: Walter Kälin, “Displacement Caused by the Effects of Climate Change: Who Will Be Affected and What Are the Gaps in the Normative Framework for Their Protection?”

²⁰² Maria Stavropoulou, “Drowned in definitions?” in Forced Migration Review, *Climate Change and Displacement*, 12.

²⁰³ Walter Kälin, “Displacement Caused by the Effects of Climate Change: Who Will Be Affected and What Are the Gaps in the Normative Framework for Their Protection?”

United States permits the Attorney General to grant Temporary Protected Status (TPS) to “aliens” who are nationals of a foreign state and who are already in the United States, in cases where,

“...there is an ongoing armed conflict within the state and, due to such conflict, requiring the return of aliens who are nationals of that state to that state (or to the part of the state) would pose a serious threat to their personal safety...”

and

“...there has been an earthquake, flood, drought, epidemic, or other environmental disaster in the state resulting in a substantial, but temporary, disruption of living conditions in the area affected...”²⁰⁴

The primary intent of TPS is that those who have been granted the status will not be removed from the United States during the period in which the status is in effect. The status can be designated for not less than 6 months and not more than 18 months, and the U.S. can renew it yearly. Additionally, it is designed for only for "extraordinary and temporary conditions." Even if a situation is extraordinary, there is no guarantee that nationals of that country will be granted status. At this time, countries or parts thereof that are currently designated for TPS are Burundi, El Salvador, Honduras, Nicaragua, Somalia, and Sudan. So, TPS provides only very limited protection for certain foreign nationals *already* residing in the United States. Therefore, it is not applicable at all for any of the cases in this paper and is inadequate for providing any measure of protection for climate change migrants.

UNHCR sometimes provide humanitarian assistance to those who are impacted by natural disasters. For instance, UNHCR has operated in Pakistan since the 1980s in order to assist Afghan refugees. After the earthquake in October 2005, in a departure

²⁰⁴ United States Citizenship and Immigration Services, Immigration and Nationality Act, Section 244-Temporary Protected Status, (accessed March 2, 2009); available from <http://www.uscis.gov/propub/ProPubVAP.jsp?dockkey=c9fef57852dc066cfe16a4cb816838a4>.

from its traditional functions, UNHCR distributed blankets, tents, and stoves from its local and regional stockpiles to Pakistanis.²⁰⁵ It also provided relief after the Indian Ocean tsunami in 2004, floods in Somalia in 2004, and cyclone-related flooding in Myanmar in 2008.²⁰⁶ Otherwise, because the affected populations do not fall under the scope of the Refugee Convention and its mandate, UNHCR protection to those affected by natural disasters, including climate change migrants, remains rare and will continue to be limited.

International Responses

Beyond the gaps in protection, there are multiple views on *who* is responsible for providing protection and *how* it is achieved. With this in mind, I outline some suggestions that academics and others have offered to address climate change migration concerns. One approach calls for a consolidated international response. The justification for this is that the global nature of climate change and its predicted adverse effects deserves a global response. Therefore, organizations such as the United Nations must “integrate more fully concerns about the consequences of climate change into its security, natural disaster prevention, and humanitarian response activities.”²⁰⁷ Another argument for international protection and assistance incorporates the notion of state security. The claim

²⁰⁵ United Nations High Commissioner for Refugees, *Pakistan Earthquake*, (accessed April 1, 2009); available from <http://www.unhcr.org/cgi-bin/texis/vtx/earthquake?page=intro>.

²⁰⁶ United Nations High Commissioner for Refugees, “Climate change, natural disasters and human displacement: a UNHCR perspective,” October 2008, (accessed April 1, 2009); available from <http://www.unhcr.org/protect/4901ebf12.html>, 6. This policy paper explains the implications of climate change migration for UNHCR and its operations.

²⁰⁷ Nigel Purvis and Joshua Busby, *The Security Implications of Climate Change for the UN System*, The Brookings Institution, Reproduced by permission of The Woodrow Wilson International Center for Scholars, May 2004, (accessed October 8, 2008); available from: <http://www.brookings.edu/views/papers/fellows/purvis20040501.pdf>, 5.

is that some of the states most vulnerable to climate impacts may be unwilling or unable to protect the migrants.²⁰⁸ Nils Petter Gleditsch, Ragnhild Nordås and Idean Salehyan thus also contend, in security sector parlance, that the United Nations “should face the issue of climate change as a crisis that threatens the security of its member states and humanity...”²⁰⁹ In some sense, there have been movements towards this. At the state level, 192 countries are members of the United Nations Framework Convention on Climate Change, which establishes a broad roadmap for intergovernmental efforts to address the challenges climate change present.²¹⁰ Also, within civil society, the Institute for Public Policy Research hosted an international conference on climate change and its impact in April 2008. The conference included national and international policymakers, experts on climate change and migration, and representatives from the private sector, international organizations and non-governmental organizations.²¹¹ So, there have been attempts to coordinate at the international level, but it is not clear how those efforts have impacted policy.

In the event of some concerted and consolidated international response beyond these efforts, what would it actually do to ensure and provide protection to affected

²⁰⁸ Norwegian Refugee Council, “Future floods of refugees,” 7.

²⁰⁹ Nils Petter Gleditsch, Ragnhild Nordås and Idean Salehyan, “Climate Change and Conflict: The Migration Link” Coping with Crisis, Working Paper Series, International Peace Academy, May 2007, (accessed August 23, 2008); available from http://www.ipacademy.org/asset/file/169/CWC_Working_Paper_Climate_Change.pdf, 11.

²¹⁰ See United Nations Framework Convention on Climate Change website available at <http://unfccc.int/2860.php>.

²¹¹ Institute for Public Policy Research, “Climate Change and Forced Migration,” Transcript of conference held on April 29, 2008, (accessed January 29, 2009); available from <http://www.ippr.org/uploadedFiles/research/researchteams/pprcfmtranscript.pdf>.

populations? One suggestion is to open up and add climate change migration to the Refugee Convention. Still, as previously explained, given the resistance to use of “refugee” to describe climate change migrants, this is a politically unviable and unpopular route. Another is to adopt a new and separate convention that draws upon environmental, human rights and refugee law. Again, the lack of political will among states to create laws, which would assign additional responsibilities to their roles as states, would limit this possibility. A third would be to form an international regime on migration that includes comprehensive legal measures on environmental migration, in addition to the rights of migrants, refugees from combat zones, and migrants interdicted at sea.”²¹² This avenue is unlikely in light of the fact that states are already slow in acknowledging the protection concerns of IDPs, the stateless, and other vulnerable populations, let alone climate change migrants who do not carry the same type of political attention within or among states. A fourth would be, similar to the approach to IDPs, investigate the protection gaps and create a “synthesis of existing (and analogy of) international law in the form of principles.”²¹³ This alternative is more viable; it might be easier to approach to form “soft law” and develop norms that could gain greater legitimacy over time. Eventually, if there were additions to the Refugee Convention, a fifth option would be to create an additional (Optional) Protocol, to which states can sign and ratify individually.

A new international regime on refugees that also includes climate change migrants is not likely to commence anytime in the near future, save for drastic climate or

²¹² Nils Petter Gleditsch, Ragnhild Nordås and Idean Salehyan, “Climate Change and Conflict: The Migration Link,” 11.

²¹³ Norwegian Refugee Council, “Future floods of refugees,” 31.

environment-related events that would impel such action. Even if it does come to fruition, it still does not address the essential human security concerns that are raised in the case studies in this paper. As examples, food sources are limited in the Carteret Atoll; the ground upon which people reside is crumbling in western Alaska; and riverbank erosion is already causing continual displacement in Bangladesh. So, while much *discussion* is devoted to these protection issues, the locus of *action* has been on development measures to mitigate the likelihood of migration, and increasingly, to also manage disasters.

Many, such as Myers, have stressed that sustainable development efforts are crucial in pre-empting climate change migration flows.²¹⁴ Yet, there is a question about whether these efforts are successful. In light of the ‘evidence’ about the impact of environmental processes and events on internal and international migration flows, are sustainable development practices sufficient to mitigate or prevent migration? In reference to the case studies, past and current development efforts have not necessarily changed the prospects for future displacement within and from the respective regions. Perhaps at a minimum it only delays the necessity for migration.

Disaster management, another element of development programs, addresses protection and assistance concerns for climate change migrants. There is considerable attention to how development projects can aid local communities, which are often first responders to crises. Support includes providing local governments the capacity to provide increased electricity and water provision, housing, sanitation, and public

²¹⁴ According to the International Strategy for Disaster Reduction, sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

For a definition of sustainable development, and other related terms, see: International Strategy for Disaster Reduction, “Terminology of disaster risk reduction.”

services.²¹⁵ Another effort is to assist national governments to develop disaster risk reduction strategies.²¹⁶ Efficient disaster management structures do not prevent migration, but may mitigate the ramifications of migration. In this manner, it fills at least partially the current protection gap in the field and provides practicable responses to those who are displaced.

Conclusion

In spite of all the attention given and study devoted to the intersection of climate change and migration, there are substantial knowledge gaps in this field and subsequent opportunities for further research and exploration. First, there is no clear and common understanding of whether and how climate change will exactly impact migration flows. The models presented in this paper set the conceptual boundaries of the subject and identify the critical components of climate change migration, but remain theoretical

²¹⁵ Nils Petter Gleditsch, Ragnhild Nordås and Idean Salehyan, “Climate Change and Conflict: The Migration Link” *Coping with Crisis*, 7.

²¹⁶ For examples of disaster risk reduction strategies on the state level, see: International Strategy for Disaster Reduction. “Towards National Resilience- Good Practices of National Platforms for Disaster Risk Reduction.” *United Nations*. 2008. Accessed August 25, 2008. Available from http://www.unisdr.org/eng/about_isdr/isdr-publications/16-Towards-National-Resilience/Towards-National-Resilience.pdf.

constructs. The EACH-FOR Scenarios project offers some qualitative and quantitative data on the linkages in certain countries. Yet, the research component of the field is still developing.

Second, it is not evident how climate change migrants will impact the regions to where they are displaced or move. It is implicit in most of the literature on this subject that they will have a negative impact- they will be a drain on local resources and strain humanitarian response capacities. Thus, much of the concentration in policy has been on preventing displacement, and in particular, international migration. Also, there is debate about whether their presence will cause or exacerbate conflicts. This argument has also been made for refugees, but it has not held true in all circumstances. Even in recognition that migration may not always be ideal, what seems to be missing in discourse about climate change migration is a discussion or evaluation of their positive impacts- such as their economic potential in host communities.

A third concern relates primarily to the case of mass displacement, where whole communities or even most persons within a country migrate internally and or internationally. It is not evident how governments will respond to sudden or gradual mass displacement either internally, or as a receiving country through international migration. There are very few discussions, at least reported widely, that broach how states would manage this type of displacement. In the case of international migration, at the minimum a host or receiving state would provide humanitarian assistance and would possibly extend at least temporary protection. However, beyond their meeting the basic physical needs of climate change migrants, it is not clear how states would approach legal protection and status questions. Given that states are highly adverse to unregulated

migration flows into their territories, in spite of the logistical and political challenges, it might be important if there are some formal mechanisms for recognizing and ensuring the legal protection of climate change migrants.

The final issue is not so much a knowledge gap, but more a question about how to advance the rigor and the quality of the evaluations and analysis of the subject, and the corresponding responses in policy and in practice. This means shifting the focus from predicting climate change migration to developing strategies to managing current environmental and displacement concerns. Thinking of the long-term is crucial, but at this point, it is more useful to concentrate energies on more constructive activities such as addressing the needs of those who will or have been displaced.

Overall, this field should continue to use the available technology and science to anticipate and prepare for ‘natural’ disasters, in tandem with state and international organizations that work to prevent, adapt to and mitigate the effects of environmental processes and events. How populations and governments address the climate change migration is critical. A state’s inability and or unwillingness to prepare for, respond to, and even mitigate the stresses it produces is problematic. It distills to a population’s and or to a government’s access to resources and assets that support their ability to manage the climate drivers of migration. Therefore, when one considers the policy implications of climate change migration, the emphasis should not be on just the fact that “climate change” is causing migration, but that people are migrating and that there should be measures to mitigate their vulnerability, enhance their adaptation capacities, and facilitate their movements if those efforts fail.

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