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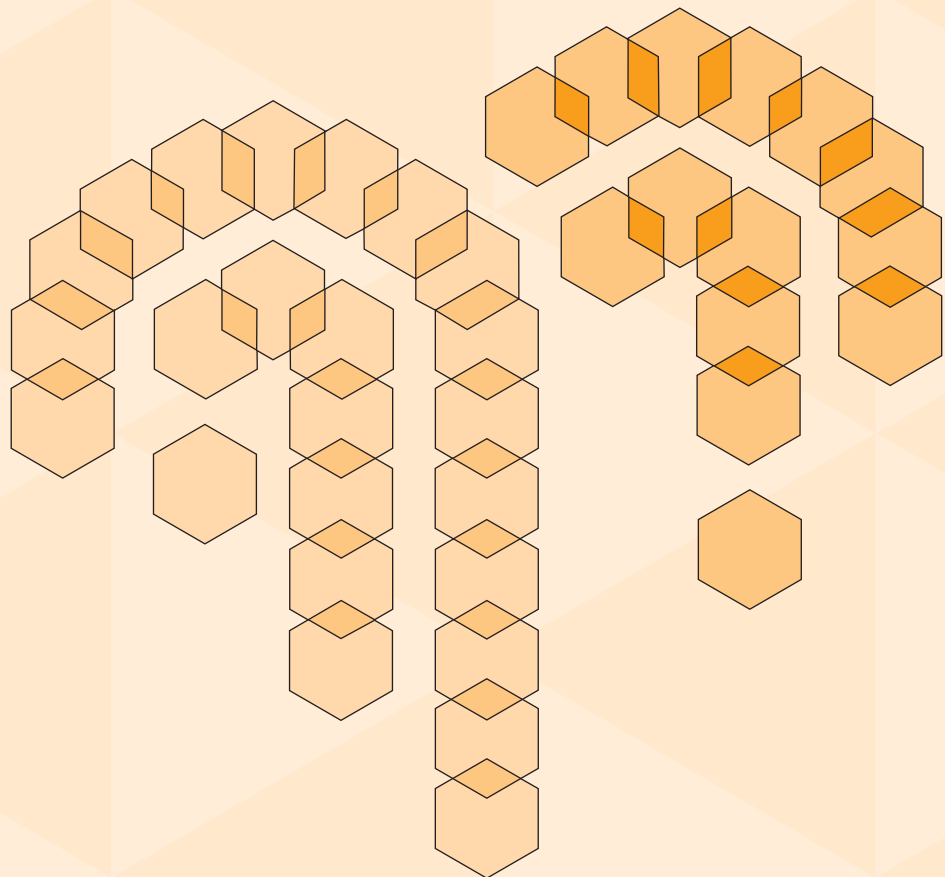
Institute for Environment
and Human Security



**Munich Re
Foundation**
From Knowledge
to Action

Linking Environmental Change, Migration & Social Vulnerability

Edited by Anthony Oliver-Smith and Xiaomeng Shen



SOURCE

'Studies Of the University: Research, Counsel,
Education' - Publication Series of UNU-EHS

No. 12/2009

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About the Editors



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Linking Environmental Change, Migration & Social Vulnerability

Edited by Anthony Oliver-Smith and Xiaomeng Shen

Outcomes of the 3rd UNU-EHS Summer Academy
of the Munich Re Chair on Social Vulnerability
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Anthony Oliver-Smith shaped the programme for this year's academy, and the *Munich Re Foundation Chairs on Social Vulnerability* – Úrsula Oswald Spring and Thomas Downing helped participants accomplish one of the main outcomes of the academy – a research agenda for environmental migration. Mohamed Hamza as a special contributor to this year's academy played an essential role in developing the academy programme and taking the lead for various sessions at the academy. We thank Tamer Afifi and Koko Warner for taking the lead in methodological discussions during the academy.

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The partnership with the *Munich Re Foundation* makes the *MRF Chair on Social Vulnerability* and the annual summer academy possible. The foundation's generous funding of the summer academy created the forum where these and other contributions on social vulnerability were discussed and debated.

Finally, we are deeply grateful to Janos Bogardi, Director of UNU-EHS and Vice Rector a. i. in Europe, and Thomas Loster, Chairman of the *Munich Re Foundation*, for their vision and leadership in bringing together three "generations" of scientists to push the frontiers of research and practice. Their personal involvement breathed vigour and momentum into a creative process and represents a lasting contribution to applied science.

Foreword

Human history has ample proof that migration due to environmental change is not a new phenomenon. However, the concept of environmental migration is still controversially debated both in the political and scientific arena. Striking numbers of people who would have to migrate due to environmental degradation and climate change have been predicted on one side, while other scholars have been challenging the concept of environmental migration insisting that there is not enough scientific evidence to support such a notion. Decision makers and politicians of national and international agencies are cautious about the implications of such a concept, especially if future migration fluxes would become widespread and cross over national borders. Acknowledging environmental deterioration as a legitimate reason to migrate could even swell the number of those seeking livelihoods elsewhere as their native country.

Given the complexity of environmental migration which is also linked to poverty, development and conflict issues, there is indeed a long way to go before scientists can draw any solid conclusions as to how these issues are interlinked and how much they influence migration decisions.

However, while scientists and policymakers continue to remain divided on whether or not the concept of environmental migration is viable for the scientific or political agenda, global environmental changes have already manifested their impact as observed in many small island states, Alaska and many dry land areas in Asia and Africa.

Debate and discourse in science are necessary components in the search for truth. Yet, affected people in Tuvalu and Alaska cannot wait until scientists have reached consensus and presented their uncontested solutions. In its first publication on environmental migration "Control, Adapt or Flee – How to Face Environmental Migration?", *United Nations University Institute for Environment and Human Security* (UNU-EHS) recommends a five-pronged policy approach for different actions to be used in parallel to limit environmental degradation; meanwhile, this policy approach will reduce the vulnerability of marginalized people. These policy suggestions include fostering further scientific research, raising public and political awareness of the environmental and migration issues, improving legislation, providing adequate humanitarian aid and strengthening institutions and policies.

UNU-EHS, as a research entity within the United Nations system, sees its mandate in spearheading environmental migration enquiry both to strengthen scientific evidence and to explore institutional potential to provide affected people with humanitarian aid and a necessary institutional framework of protection. UNU-EHS, as a bridge between theoretical enquiry and policy recommendation convened the *2008 Summer Academy on Environmental Migration and Social Vulnerability* with the support of the *Munich Re Foundation* (MRF).

This issue of *SOURCE* presents the debate and outcome of the summer academy with contributions of participating young researchers from different countries and disciplines. We are happy to note that the papers collected in this issue cover many important aspects summarised in the five-pronged approach. From conceptual discussion on environmental migration and concrete case studies on climate change induced migration, to debate on legal and institutional frameworks, this issue guides the readers through an innovative literature review on environmental migration research in the first section, unique social, economic and cultural dimensions of environmental migration in the second and third section, and exploration of institutional action and human rights perspectives in the last section.

The papers in this publication will not provide answers to all questions; yet, the commitment of the young researchers ensures that their pursuit of truth will continue. It is a privilege for UNU-EHS, together with MRF, to assist aspiring young scientists in their quest.



Janos J. Bogardi
Director UNU-EHS

Foreword

Migration of different magnitudes per se is not a new phenomenon. Human movement has been taking place throughout history. However, this phenomenon has gained strong media presence recently and it is often perceived to be a problem which causes concern and fear. Striking pictures of haggard people in jam-packed boats or extensive physical barriers, such as the one between Mexico and the USA or the wire fence in Melilla, which intends to protect Spain and Europe from illegal migrants from Africa, have the same effect as the tough police and military operations which sometimes reach the point of gunfire. These happenings sound like a story line for a movie, yet for many people today they are already a bitter and sometimes fatal reality.

Given the increasing environmental change, the outlook into the future is far from reassuring. More and more people are forced to leave their homes due to the consequences of environmental change. Particular attention has been focused on the small island states in the Pacific as they are being affected most drastically by climate change. Due to sea level rise people have to migrate and leave their homes behind, a well-known example being the case of Tuvalu. Even the people in the far North can be affected, such as the case of the Inuit in Alaska and Canada. Their habitat is destroyed due to the melting of permafrost soil and their hunting ground which provides them with important livelihood resources. Such cases cause the concern that climate change induced migration will continue to become more and more prevalent. Some even fear a horror scenario of mass migration.

Whereas political persecution and pursuit of a better economic living condition are still dominant drivers for migration today, the driving factors for environmental change induced migration are multifaceted and difficult to disentangle. Yet, there is no doubt that environmental migration will continue to increase. Assessing previous and predicting future migration fluxes is challenging, as there is no consensus on the definition of "environmental migration" and the typology of environmental migration due to interwoven migration motivations is contested. As a consequence, the estimation of environmental migration differs due to different methodologies deployed. However, the policymakers need reliable scenarios and quantification methods to develop coping strategies at national and international levels.

In response to this challenge, we engaged ourselves at the 2008 summer academy in the debate and discussion on various aspects of environmental migration with 25 young researchers from 16 countries. The participation of representatives of the *United Nations Environment Programme* (UNEP) and the *International Organization for Migration* (IOM) has widened the researchers' perspectives on environmental migration issues, in particular with regard to policy and institutional agenda. Participants gained some new insights into migration issues to view migration as an adaptation strategy to cope with changing environment rather than an emergency exit.

In this issue the most important works of the researchers at the academy are presented. Their research covers a broad range of methodological and thematic endeavours to tackle migration study challenges. These works also show that there still remains a great need to continue the debate on environmental migration issues in order to understand the complexity of the cause and effect chains. We can only meet the challenge posed by environmental migration with solid scientific evidence and deeper understanding of the environment and migration nexus.



Thomas Loster
Chairman of the Munich Re Foundation

Preface: Complexity and Causation in Environmental Migration

The issue of environment and migration may be the most discussed and debated dimension of the impact of global environmental change on human beings. Indeed, the research and scholarship focusing on the relationship between environment and migration is riven with controversy. The contingent nature of prediction of environmental impacts, the vast disparities in predictions of numbers of people to be affected, the elusive nature of definitional issues, the difficult question of causation and the overall complexity of human-environment relations, all present serious challenges to researchers attempting to analyze the relationship between environment and migration. Nevertheless, the articles in this Source publication confront and embrace that complexity and the difficult questions that environmental migration poses in specific social and institutional contexts, offering the reader useful case based information and insights into these challenging issues.

Current and projected future environmental changes, largely energized through human agency, are argued to be potentially more extreme than at any other time in recorded history. The recent reports from the *Intergovernmental Panel on Climate Change* affirm that human induced factors are responsible for generating significant increases in temperatures around the world. Among the consequences of this rise in temperature are increases in the rate of sea level rise, increases in glacial, permafrost, arctic and Antarctic ice melt, more rainfall in specific regions of the world and worldwide, more severe droughts in tropical and subtropical zones, increases in heat waves, changing ranges and incidences of diseases and more intense hurricane and cyclone activity. Moreover, many of these changes are compounding each other to accelerate the rates at which they are proceeding. All of these changes are projected to affect natural systems globally, inducing alterations in hydrological, terrestrial biological, and aquatic subsystems.

All of these changes also have great potential for generating processes that may uproot large numbers of people, forcing them to migrate as individuals and families or permanently displacing them and/or relocating them as communities. However, despite the high levels of confidence in the predictions of environmental change, the relationship between environment and migration, as pointed out by Bronen et al in the introductory chapter of this volume, is far from linear or straightforward. Although the actual mechanisms through which major population dislocations might occur are only partially understood, predictions of displacement from climate change range from 50 million to as high as 500 million people in this century, an indication of both the challenges of research and the gravity of the problem.

Migration, both temporary and permanent, has always been a traditional response or survival strategy of people confronting environmental changes that endanger human welfare (Hugo 1996). However, as the papers in this collection amply demonstrate, the role of environment in forced migration cannot be reduced to a simple cause and effect relationship. Today, more than ever, the relationship between environment and migration is considerably more complex than it has been traditionally understood to be. Certainly, part of the reason for the increasing complexity of the relationship is the impact of social and economic factors on the environment, leading to an intensification of vulnerability of both people and environments. The increasingly complex interplay of social and economic factors in the environment is exacerbating the vulnerability of both people and environments and intensifying the impacts of such changes when they occur. Moreover, greater numbers of people are more vulnerable to the impacts of such changes than ever before, due in part to increases in both population and density, but also to environmental degradation and residence in exposed areas.

Although there is a general scientific consensus on global environmental change, the degree to which it will generate mass displacements and migration is contested. Objections attribute the displacement of people to a complex pattern of factors including social, economic and political as well as environmental forces. Environmental disruptions are seen to cause temporary displacement, but rarely permanent migration. Indeed, permanent migration is seen as more the result of endemic economic

scarcity or deficient governmental response rather than the environmental change itself. However, objections to the predictions of mass displacements by environmental changes are based on the construction of human-environment relations as a duality, in which each domain is separate, but interactive rather than mutually constitutive. Seeking single agent causality in the environment tends to elide the fact that the environment is itself socially constructed, and its resources as well as its hazards, are always experienced through people's social, cultural, economic and political beliefs and behaviors. In that sense, the environment cannot be isolated as a single cause because it is interwoven with society. Indeed, focusing solely on environmental agents would reveal little about the political or economic forces that together with these agents produce disasters or, for that matter, any forced migration that might ensue. However, eliminating human-environment relations as the single cause of forced migration should not discount the role of these relations in generating forced migration. Understanding the relationship between environment and forced migration presents a number of conceptual challenges. These challenges are embedded in the complexity of the relationship between social and ecological systems and in the nature of causality between such complex phenomena. The papers in this volume both respect and explore that complexity in specific contexts to reveal unexamined aspects of the environment-migration problem.

Despite the global nature of climate change, the manifestations of this phenomenon will be characteristically local, inflected by local environmental features and local social, economic, political and cultural patterns. Although there are frequent press predictions of anonymous masses of climate migrants flooding into Europe or over the southern US borders, there is general agreement among researchers that affected people will be internally displaced, not international migrants. It is also generally risky to attribute any kind of uniformity or homogeneity to displaced populations. In any given affected region, there may be multiple groups of people, and within each group there will be varying conditions of individuals and families. All these people in turn may bear a different relationship to the land, which itself varies in quality and quantity among them, such that each group, family or individual experiences the threat of displacement and losses from different perspectives. Similarly, their decisions to migrate and how and where they go are taken from specific kinds of orientations regarding their relationship to land, property, and homes as well as gender, age, class and ethnicity.

Such variation and complexity demand a rigorously empirical approach to the relationship between environment and migration. Questioning preconceived categories, simplistic explanations, and widely disparate numbers, the articles in this publication ground their analyses in careful examinations of local and institutional realities to reveal important features and linkages in the relationship between environmental change and migration.



Anthony Oliver-Smith
Munich Re Foundation Chair (2007-2008)

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Lead Chapter

Stay in Place or Migrate: A Research Perspective on Understanding Adaptation to a Changing Environment

Robin Bronen, Divya Chandrasekhar, Dalia Amor Conde, Klara Kavanova, Lezlie Moriniere, Kerstin Schmidt-Verkerk, Rebecca Witter

In July 2008 the summer academy sponsored by the *United Nations University Institute for Environment and Human Security* (UNU-EHS) and the *Munich Re Foundation* brought together 25 graduate student researchers, leading international experts, and senior scientists from around the world to address the issues of environmental change, migration and social vulnerability. The purpose of the summer academy was to advance the science of social vulnerability by discussing the challenges, needs, and strategies surrounding the issue of environmentally induced migration. Migration and environmental change are, in and of themselves, complex phenomena. Understanding the relationship between the two, particularly how climate change and environmental degradation drive migration, is a substantial challenge and a critical area for research and policy response.

The papers included in this journal are a sample of the work that emerged from the summer academy. They add to the growing body of research that examines the nexus between migration and environmental change with the aim of improving current and future policy response. In this introduction, we set the stage for our colleagues' papers by reviewing the interrelated issues associated with 1) defining and identifying "environmental migrants"; 2) isolating environmental drivers of migration events; and 3) understanding how communities and individuals adapt to a changing environment.

Defining Environmental Migrants

Climate change coupled with ecosystem depletion, human overuse of natural resources and pollution are predicted to impact the habitability of large areas of the planet. Some scholars have identified human migration as possibly "the greatest single impact" of climate change (Brown 2007: 4). Estimates of numbers of future environmental migrants, first suggested and repeated since the mid-1990s by Norman Myers (Myers and Kent 1995, Myers 1986, 1993, 2001, and 2002), have been criticized by other researchers (McGregor 1994, Suhrke 1994, Kibreab 1997, Black 2001) for over-simplifying the issue of causation and a lack of data for substantiating predictions of numbers of people to be affected. Other approaches to calculate potential future flows of environmental migrants have been presented (Kiverton et al. 2008) but have not yet been elaborated systematically on a global scale. Lack of a common definition of environmental migration has contributed to the academic controversy regarding the numbers of current environmental migrants as well as those who are expected to migrate.

Working for the *United Nations Environment Programme*, Essam El-Hinnawi used the term "environmental refugee" in 1985 to convey the involuntary nature of flight and to signal the need for an international protocol of humanitarian assistance and protection (El Hinnawi 1985). The use of refugee terminology to describe the nexus of environmentally induced migration, however, has also met with much controversy. The word "refugee" has enormous power in the English lexicon. As Stephen Castles states: "Definitions reflect and reproduce power . . . it makes a big difference whether people are perceived as refugees, other types of forced migrants or voluntary migrants." (Castles 2003). This distinction is critical, because of the policy of sovereign nations to admit very few migrants. Only those accorded refugee status receive the benefit of admission and access to services and resources unavailable to all other categories of migrants. As a result, when employed for the purposes of international policy, the term is used narrowly, to refer to people who seek refuge because of a fear of or actual violence perpetrated against them.

Another reason that the term “environmental refugee” has met with vociferous debate is because the definition is extremely broad. For example, El-Hinnawi described three categories of environmentally-displaced peoples: 1) those temporarily displaced due to natural hazards; 2) those permanently displaced because of permanent changes to the communities’ habitat; and 3) those who migrate permanently or temporarily because of ecological changes in their environment and can not afford to mitigate the changes. (El Hinnawi 1985). Based on El-Hinnawi’s definition, environmental refugees include those displaced by government-sponsored development projects, those displaced by poor agricultural practices and those displaced by industrial accidents.

Since the use of the term “environmental refugee”, the international community has not been able to reach a consensus about the definition and whether use of the term is appropriate. *The International Organization of Migration* (IOM) modified El-Hinnawi’s definition, changed the terminology and introduced the following displacement description:

environmental migrants [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*. (Brown 2007).

Two papers included in this journal continue the dialogue about creating an international human rights framework and a common definition to describe environmentally induced displacement. Sgro’s paper focuses on the *European Union’s* analysis of the issue. She discusses several policy options, including using the existing international instruments such as the 1951 *Geneva Convention Relating to the Status of Refugees* or creating a different framework of response that is specifically tailored to the situation of environmental-induced migration. Bronen’s paper focuses on the relocation of several Alaskan communities due to climate change. She introduces the term “climigration” to specifically define one type of environmental displacement and the need to create a human rights framework and institutional response to specifically address the situation of communities forced to permanently migrate exclusively because of climate change.

Isolating Migration Drivers

Diverse environmental events and conditions at multiple scales may cause and contribute to human migration and displacement. For example, both of the definitions by El-Hinnawi and the IOM include a diverse range of environmental events that may cause a community or an individual to migrate. The first paper in this journal by Moriniere provides a systematic analysis of more than 500 publications published since 1958 that explain the diverse links between migration and the environment. Her paper analyzes the timing, disciplines, and institutions producing these studies as well as the key terms and issues addressed therein.

The inability of researchers to isolate environment as a significant or exclusive driver of migration is central to the controversy related to the predicted numbers of future migration and to the ability to build an appropriate policy response for environmentally induced migration. Defining environmental change as a specific but dynamic displacement category is a critical first step to creating an appropriate framework for policy response.

Drivers of migration have been characterized as complex, non-linear, multiple, multi-dimensional (both push and pull), time bound (seasonal, recurrent and gradual) and quintessentially dynamic in nature. In addition, migration drivers typically include a multiplicity of factors that are difficult to segregate. Social and socio-economic factors, such as age, gender and class, are considered primary causes of migration (Kniveton et al. 2008). In some cases, environment is seen as an additional, but not an exclusive factor, that can influence the decision to migrate.

Moriniere catalogued over 500 papers that discuss environmental migration, and at least 41 authors address the issue of drivers. Some authors describe linkages between drivers (Lazarus 1981; United Nations High Commission for Refugees (UNHCR) 1993; Ford and Adamson 1995; Hugo 1996) while others speak of *synergy* (Myers 1986). Instead of drivers *per se*, other authors discuss *proximate causes* (Adhana 1991; Homer-Dixon 1991), *mediating or catalytic causes* (Belcher and Bates 1983; Massey, Axinn et al. 2007), *secondary factors* (Richmond 2001) or *indirect causes* (Shestakov and Streletsky 1998; Bates 2002).

In describing the exercise of isolating one driver from another, authors disagree about whether this exercise is even “*useful*” (Schwartz and Notini 1994), “*less useful*” (Wood 1991) and “*not analytically useful*” (McGregor 1994), “*complex*” (Schwartz and Notini 1994; Hugo 1996; Doos 1997; Lein 2000; Richmond 2001; Muradian, Neumayer et al. 2006), “*not very likely*” (Black 2001), “*almost impossible*” (Ramlogan 1996), “*not only inappropriate, but impossible*” (Lonergan 1998). Some scholars believe that we should strive to disaggregate primary determinants (International Symposium on Desertification and Migrations 1994) even if the data may be insufficient to distinguish one from the other (United Nations 2001).

Most importantly, even if one might successfully and confidently isolate a migration driver, there is no certainty that an individual migrant, much less a collective group, would perceive the same factor as having influenced his/her/their migration decisions (Shestakov and Streletsky 1998; Hutton and Haque 2003). At least two authors have applied richly quantitative methods with varying degrees of success to measure the weight of one driver over another (Ruitenbeek 1996; Henry, Piché et al. 2004). In some cases, the driver of the migration event is clear. In Alaska, several communities are being forced to relocate because of a combination of climate-induced ecological feedback loops that are threatening people’s lives. However, in those cases where it is not, identifying one cause of migration might undermine our understanding of the relationships between political, socio-economic and environmental processes that may characterize many, but not all, environmentally induced events (Oliver-Smith 1999; Baird et al. 2007).

Segregating drivers is complicated by the concept of volition or the voluntary or involuntary nature of migration events. Scholarship in the social sciences illustrates that distinguishing between voluntary and involuntary movement can be problematic. Lassailly-Jacob (2000: 110) navigated this problem by including on the voluntary side, the spectrum of people for whom “the decision about where and when to move rests within themselves, even though they “choose” under extreme stress” (2000; 110). Alternatively, she described involuntary migration as people who are moved according to administrative policy and are, therefore, entitled to compensation (Lassailly-Jacob 2000: 110).

Involuntary or forced migration has been described as those events driven primarily by political upheaval, natural hazards, and development (Hansen and Oliver-Smith 1982). Oliver-Smith outlines a spectrum of demographic movements that comprise forced migration in the context of disasters, such as: flight – escape; evacuation – removal of people from harm’s way; displacement – the uprooting of people from a home ground; resettlement – relocation of people to new homes; and forced migration – people must move to a new and usually distant place (Oliver-Smith 2006). Perhaps most important to our goal of establishing a framework for conceptualizing environmentally induced migration is scholarship which points to the idea of viewing volition on a continuum rather than as a dichotomy (Bates 2002) and dispensing with the “bald categories” of voluntary and involuntary (Schmidt-Soltau and Brockington 2007: 2184). Purely voluntary or involuntary migration only exists at the extremes of the continuum.

Defining Environmental Change

Migration due to environmental change is not a new phenomenon. However, the extent of environmental change today due to human overuse of ecosystem services has contributed to the degradation of 60% of the environmental services (Millennium Ecosystem Assessment, 2005:1). If we only consider

anthropogenic ecosystem depletion, it is clear that the trends show a dramatic impact worldwide; for example, since 1900, the world has lost around 50% of its wetlands (Moser et al. 1996) and since 1980 approximately 30% of the mangroves have disappeared, forest have been totally depleted in 25 countries and 29 countries have lost more than 90% of their forest cover. In just one decade (from 1990 to 2000) developing countries have lost half of their forest (FAO 2001). Moreover, further declines are projected over the coming decades because of factors such as population growth, land use change, pollution, economic expansion and climate change.

According to the *Millennium Ecosystem Assessment* there is an increasing likelihood of “nonlinear changes in ecosystems that have important consequences for human well-being”, including the incidence of human migration (Millennium Ecosystem Assessment, 2005:1). Moreover, climate change is another factor that is already affecting degraded ecosystem services. However, the magnitude of its effects in the future is uncertain, although it is expected that they will continue. To assist policy makers to understand the impact of environmental change on migration, researchers need to clearly identify the type of environmental change occurring.

During the summer academy, at least four push-scenarios and the resultant migration pattern were discussed and are described below:

- A. Less advanced stages of gradual environmental change that promote seasonal, temporary and circular migration. Drivers: ecosystem degradation, such as land erosion, thawing permafrost and drought;
- B. Advanced stages of gradual environmental change caused by endangered habitats and livelihoods which have reached tipping points and will promote permanent migration. Drivers: advanced cases of ecosystem degradation, such as sea level rise and desertification;
- C. Extreme random environmental events which may cause temporary and permanent large-scale human displacement in the wake of environmental or industrial disasters. Drivers: rapid onset events such as earthquakes, volcanoes, tsunamis, storms (cyclones/hurricanes), flash floods and industrial disasters; and
- D. Development projects including conservation implementation can both cause displacement of people due to its direct impact on the environment and also attract migrants. The depletion of natural resources may also create the need to design protected areas that may cause the resettlement of local people. By including these drivers, we do not suggest the need to re-categorize development forced displacement and resettlement (DFDR), including conservation related resettlement (CFDR), as environmentally induced migration. Induced is not an appropriate term for migration that is planned and designed. We do, however, suggest that the lessons learned from DFDR and CFDR be incorporated into theory and practice related to environmentally induced migration and that future links between development forced displacement and environmentally induced displacement and migration be made explicit, particularly in light of global climate change. Drivers: planned development projects.

These disparate environmental events clearly cause different patterns of migration and require different institutional humanitarian responses. Research included in this journal demonstrates that different forms of environmental change lead to different adaptation strategies by communities and individuals.

Understanding Social Vulnerability in a Changing Environment

Kelly and Adger define social vulnerability as “the capacity of individuals and social groups to respond to- that is, to cope with, recover from or adapt to- any external stress placed on their livelihoods and well-being” (Kelly 2000: 347-348). Scientists employ social vulnerability to examine the ‘social space’ of dis-

asters and related phenomena to assess the variability in human exposure and adaptation to drastic events (Cliggett 2005). In order to operationalize social vulnerability, Kelly and Adger (Kelly 2000) identified poverty, loss of income diversification, loss of common property management rights, and loss of collective action as the four factors that contribute to an individual or group's social vulnerability.

Similarly, Cernea's *Impoverishment Risks and Reconstruction* (IRR) model for resettling development induced populations can be used to operationalize social vulnerability (Cernea 2005). Cernea points to eight potential processes of impoverishment induced by resettlement including landlessness, joblessness, homelessness, marginalization, increased morbidity, food insecurity, loss of access to community resources and services, and social community disarticulation (Cernea 2005). When applied to environmentally induced migration, these conditions can be used as indicators to measure a migrant population's social vulnerability, both in "original" and destination locations

In this journal, Lazrus, Schmidet-Verkerk, Marino and Kavanova examine how local perceptions of vulnerabilities and risk vary and impact the decision to migrate. Lazrus uses the case study of the Tuvalu islands in the Pacific to examine how the portrayal of migration as the sole and imminent adaptive strategy for communities at risk from climate variation does not reflect local aspirations and priorities, and severely limits the exploration of alternative coping and adaptive strategies. Schmidt-Verkerk's comparative study examines how two communities in Zacatecas Mexico perceive and respond to changes in temperature and precipitation patterns and to what extent migration is one of their responses. Kavanova also uses a comparative study to understand the decision to migrate in Belarus due to the Chernobyl nuclear power plant disaster.

Marino's paper describes the gap between rural Alaskan Native villages and the institutions tasked with organizing resettlement. In Alaska, precarious livelihoods are an omnipresent concern –one for which resettlement out of flooding and erosion pathways may be the only possible survival tactic. Voice and agency are thereby bestowed on the range of parties whose interaction is crucial to making resettlement successful and new livelihoods sustainable.

These papers clearly demonstrate that the perceptions of risks associated with environmental change will impact the adaptation strategies. A research and policy perspective informed by the concept of social vulnerability will be critical in the design and implementation of a humanitarian institutional response.

Conclusions

Climate change coupled with environmental degradation will clearly impact the habitability of our planet. Human migration may be one of the adaptation strategies. The inability to isolate environment as a primary or exclusive driver of migration should not prevent public policy makers from identifying humanitarian responses that ensure the resilience and adaptation of communities impacted by a changing environment. Moreover, this will allow the mitigation of further environmental impact that can result from resettlement policies.

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1. Section

Conceptualising Environmental Migration

Tracing the Footprint of 'Environmental Migrants' Through 50 years of Literature

Lezlie C. Erway Morinière

Abstract

Changing environments are reportedly catalyzing unprecedented migration patterns across the globe. Marginalized communities are becoming increasingly vulnerable – forced to use limited resources to control, adapt to, or flee their homelands. In order to determine the role that science might play in compiling evidence to recognize this growing group of migrants, it is important to understand the experts in the field, appreciate what anchorage moulds their discourse, and most importantly, be cognizant of the precise level of their exploration and resulting global understanding. Although scholars recognize that the terms used to refer to 'environmental migrants' have changed and that the number of published views on the topic is rising, no document to date has laid out the complete set of terms, how they may have evolved over time and the speed with which the research and policy communities are gaining interest. This report presents results of a systematic analysis of 321 publications published since 1958 by over 87 academic journals featuring 506 authors.

Keywords

environment, climate, mobility, migration, displacement, drivers

Introduction

Over the past 50 years, at least 500 authors have written more than 300 documents to offer specific causes and consequences to explain the diverse links between migration and the environment. The present paper analyzes the timing, disciplines, and institutions producing these studies as well as the key terms and issues addressed therein. A comprehensive review of environmentally-driven migration as portrayed in the literature provides a state-of-the-art assessment for researchers and policy makers alike. The situational analysis encompasses both peer-reviewed and gray literature (i.e., organizational reports) to lay the foundation upon which to build consensus on what is understood about these migrants, the processes that have influenced them and what insights are missing to meet the demands of both science and society by 2050. This knowledge will guide a survey of expert opinion and the creation of a global database on environmentally-driven migration.

Individuals have sought refuge from extreme events since the dawn of time. There is no set definition of what constitutes an individual seeking refuge from environmental or climatic extremes such as land degradation, drought, desertification, sea level rise or extreme hazards such as cyclones and flooding. According to the *United Nations Convention* (U N 1951) relating to the Status of Refugees, a refugee is "any person who, owing to a well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion...". More and more often, literature refers to these migrants as "climate refugees" (Fankhauser 1991; Batten, Manlove, Gryll N. 2007; FOE 2006) or "environmental refugees" (Myers 2001; Bates 2002; Castles 2003; Bell 2004; Farbotko 2005; Hunter 2005; Jiang et al. 2005; McMichael 2006; Salehyan 2005). The terms remain controversial, however, and the United Nations does not formally recognize these migrants.

Current estimates of environmentally-driven migration abound, based largely on back of the envelope calculations and in-depth case studies in isolated areas across the globe. The *International Federation of the Red Cross* estimates 25 million "climate migrants" (International Federation of the Red Cross 2001). While sceptics claim that there are no "climate migrants" (Black 2001), leading author Myers proposes

a “conservative” estimate of 150-200 million over the next fifty years, due primarily to global change (Myers 2002). *Christian Aid* has recently reported one billion environmentally-driven migrants by 2050 (McNamara 2007). Most researchers concede that whatever its current state, the phenomenon is likely to accelerate in the future. To date, however, no recognized data set exists to defend the magnitude of this phenomenon.

Methods

For this paper, 321 documents were compiled and reviewed to extract trends in the timing, authorship (discipline, journal and institutional background, etc.) and concepts portrayed (terms and positions on issues). Starting with *Web of Knowledge* results, bibliographies of the more recent publications found were used to seek older references spanning 50 years. This systematic review goes beyond analysis options provided within the *Web of Knowledge* interface to include documents that specifically address both human mobility and some aspect of the environment, with an explicit link between the two concepts. Given the wealth of perspectives, they include 153 articles in professional, peer-reviewed journals and 29 books. The remaining 140 are official agency reports, conference papers / proceedings, gray literature, academic theses, news and other media. 53 percent of the documents (n=171) in the compilation have the migration-environment link featured explicitly in the title.

Each document was entered into a database with data fields representing the date produced, the type of document, the authors' names, the main author's discipline and institution, the country or region (if it was or featured a case study), the frequency of the use of key terms used for migrants and drivers and other key conclusions (especially issues of quantification or prediction). Summary statistics of these fields are presented below with an indication of resulting trends, followed by discussion, conclusions and recommendations for a research program.

Results

Timing

W. Petersen's *Typology of Migration*, appearing in 1958 (Petersen 1958) is the earliest within the compilation, providing a 50-year span for this analysis. Therein, he proposed a typology of migration featuring what he called 'primitive migration' – one “*resulting from an ecological push: a movement related to man's inability to cope with natural forces*”. The number of relevant publications since that date grew with exponential speed. Up to and including 1970, only 15 documents had been published and by the 1980s, 24 more. The 1990s saw 104 and the 2000s (up to July 2008) already 179 publications in print.

Authors

A total of 506 authors have contributed to these publications. The most prolific writers (contributing more than five publications each) include N. Myers, R. Black, S. Henry, S. Lonergan and A. Suhrki. Out of the 321 publications, fifty-nine percent (n=118) of their authors were linked to universities and another twenty percent (n=40) to United Nations or multi-lateral agencies. 23 percent (n=29) of the authors is grounded in geography followed by two disciplines of equal size: 11% (n=14 each) from environment/ecology and from anthropology / archaeology / sociology. Nine percent (n=12) of the main authors write from the field of economics.

Case Studies

At least 32% (n=103 of the 321 publications) were themselves – or featured – in-depth case studies of a particular region (usually tied to a common event or process) or country. The largest subset of these featured Africa (n=47), while other significant clusters were in Asia (n=23) and the Americas (n=22). The most commonly targeted countries were Bangladesh (n=23) and Ethiopia (n=9).

Key Terms Employed

There have been numerous names in the literature given those purportedly displaced by environmental factors. Typically the 'name calling' includes two terms: the first represents the purported driver or trigger of migration and the second, the person moving such as *refugee*, *migrant*, *displacee* or *exile*. The 'drivers' of the movement are most often crafted from the words *environment*, *ecology* or *climate*. *Famine* and *distress* are other drivers that appear in this compilation. The list featured in Table 1 stipulates the first year the term was identified in the literature. The terms were found repeatedly from the given date onwards.

The most commonly used name (found in 15% of the publications) in this compilation is '*environmental refugee*' (n=48), despite the fact that many publications hotly criticize both the meaning and utility of this term. The first author to use the term '*environmental refugee*' was International Institute for Environment and Development [19]: "*Third World environmental refugees are increasingly fleeing worn out lands for industrialized countries of the North*". One year later, after the heavily quoted paper by UNEP's El Hinnawi [20], it became a household term. The term '*climate refugee*' seems to have first been put into print in 2006 by an Australian interest group [4]. The second most frequent name is '*environmental migrant*' (4%, n=12), appearing for the first time in 1997.

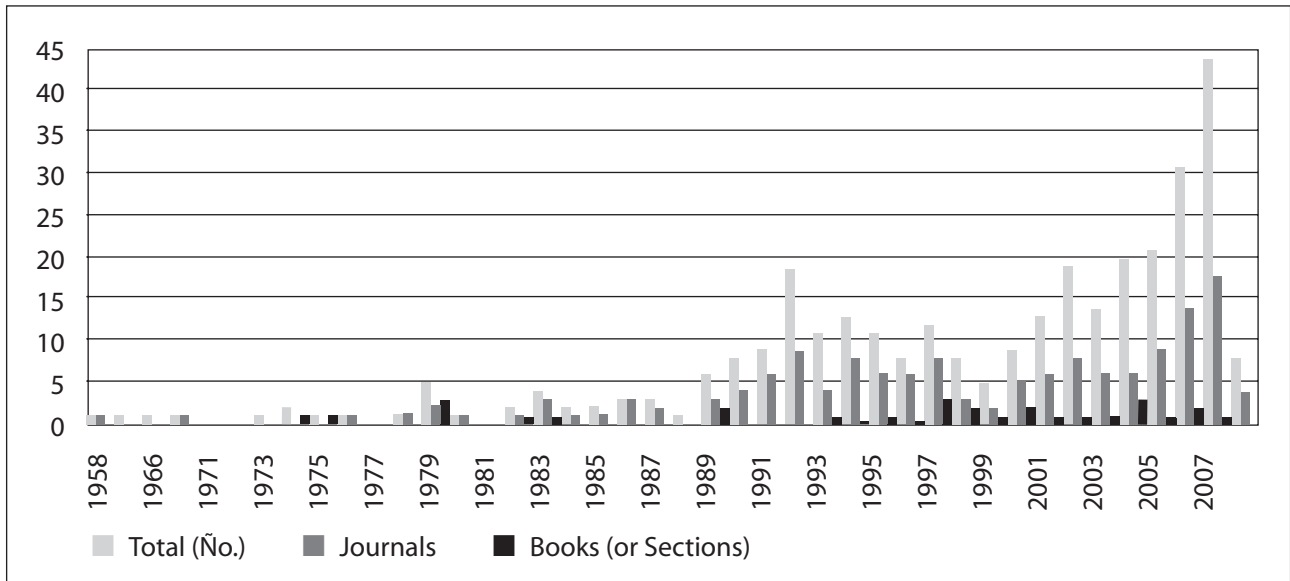
Table 1: History of Name-Calling

Year	Term used
1958	primitive migrant
1984	environmental refugee
1986	famine refugee
1991	ecomigrants
1994	ecological refugee
1995	distress migrant
1996	environmental migrant
1997	ecological migrant
2002	environmentally displaced person
2002	eco-refugee
2006	climate-change exile
2006	climate refugee
2007	environmental displacee, development displacee

Discussion

Although the compiled publications ebb and flow, they have experienced a constant growth spurt since 1999 (See Figure 1). It is interesting to note that the most prolific author or expert in the field, Norman Myers (at least nine publications), writes articles that are in sharp contrast to the second most prolific expert, Richard Black (at least six publications). These two authors seem to represent the two polar opposites of the debate; few of the other 506 writers express extremes such as either Myers's plea for recognition or Black's urging to cast the term '*environmental refugee*' permanently out of circulation. Based on this compilation, the main issues plaguing the phenomenon of environmentally-driven migration to date are threefold: terminology, drivers, and quantification, each is discussed below.

Figure 1: 50 years of Publications on the Interaction of Migration & the Environment



Issue 1: Terminology

The war on terminology has been waged since the early 1990s. According to some authors, the term *environmental refugee* was coined to sound an alarm “about the menaces endangering the planet's fragile ecosystem [...] the international community was encouraged by the media to create a new category of refugees: environmental refugees” (Gonin, Lassailly-Jaco 2002). The harshest criticism of the term started only ten years after it surfaced and continues to date:

- “misleading conceptually and ... legally and institutionally unfounded” (McGregor 1994)
- likely to “dilute the refugee concept but would do nothing to clarify questions of institutional responsibility” (Collison, McGregor 1995)
- “a legal misnomer” (Keane 2004)
- “provocative and potentially useful but ultimately a problematic concept [...] particularly misleading” (Vine 2005).

Some still insist in this century that “it is imperative that the definition of a ‘refugee’ be widened to include all those in peril from natural and unnatural disasters” (Richmond 2001). Over twenty years past its sounding in 1984, however, the *environmental refugee* alarm appears to have lost its lustre.

The *United Nations University* in conjunction with the *Environmental Change and Forced Migration Scenarios* (EACH-FOR) effort (a co-financed research project within the *Sixth Framework Program of the European Commission* project) has proposed a new convention regarding the naming of those fleeing environmental events and processes. The proposed terms (Renaud et al., 2008) are as follows:

- “*Environmental Emergency Migrants/ Displacees*” describes people who must flee because of rapid onset events and take refuge to save their lives.
- “*Environmentally Forced Migrants*” defines those who are compelled to leave to avoid gradual environmental deterioration and may not have a choice to return.
- “*Environmentally Motivated Migrants*” indicates those who chose to leave a deteriorating environment in order to avoid further weakening of their livelihoods.

Rather than continue the quest for perfect terminology, these three terms are a sufficient foundation for future interdisciplinary research. Currently underway is an effort to evaluate the strength of opinion that interdisciplinary specialists hold on these three and 41 other statements drawn directly from the compilation. To be hosted by United Nations University, an on-line survey of key experts will enable a factor analysis to encapsulate the major waves of current opinion.

Issue 2: Drivers

Just as economists have tended to emphasize purely monetary influences on migration (Mouegot 1992), psychologists have been most concerned with rationality, human geographers with space (location, distance, gravity) and most recently, physical scientists (climatologists, ecologists, etc.) with the environment as major determinants of human migration. We are inevitably faced, then, with both a quest for multiple nonlinear and interdependent triggers and, once identified, the onerous task of identifying which may have the strongest influence on migration patterns. At least 41 authors addressed this issue; they describe the act of isolating drivers as “*useful*” (Schwarz, Notini 1994), “*not analytically useful*” (McGregor 1994), “*complex*” (Richmond 2001; Schwarz, Notini 1994; Lein 2000; Hugo 1996; Doos 1997; Muradian, Neumayer, Ropke 2006), “*not very likely*” (Black 2001) or “*not only inappropriate, but impossible*” (Lonergan 1998). Some encourage the disaggregation of primary determinants (*International Symposium on Desertification and Migrations* 1994) even if the data may be insufficient to distinguish one from the other (UN 2001). At least two authors have applied richly quantitative methods to measure the weight of one driver over another (Henry et al., 2004; Ruitenbeek 1996). Most importantly, even if one might confidently isolate a driver, there is no certainty that an individual migrant, much less the collective group of them, would perceive the same factor as having influenced his/her/their migration decisions (Shestakov, Streletsky 1998; Hutton, Haque 2003). This has been confirmed by many of the EACH-FOR case studies, finalized in 2009 for 22 countries.

Issue 3: Quantification and Prediction

While many authors underscore the need for prediction (Doos 1997; Jacobson 1989; Myers 1993; Stojanov 2006; Nordas, Gleditsch 2007; McLeman, Smit 2006; Renaud et al., 2007; Smith 2007), there is little concrete evidence to justify current predictions of ‘environmentally-induced migration’. Authors who have dared to publicize an independent quantification of environmentally displaced on a global scale, however, are strongly criticized (Myers, Kent 2005). The numbers and methods are poorly documented with rarely a data table to be found. They continue nonetheless to be cited in numerous fora across the globe. More perplexingly, empirical evidence has not systematically justified migration over the past 200 years as being environmentally-induced. What can available evidence on a global scale offer to trace the footprint of migrants with origins in the 1846 *Irish Potato Famine*, the 1930s *Dust Bowl*, escalating resource scarcity in Darfur or Mexico or Hurricanes Mitch and Katrina?

Global data exist to enable a systematic assessment of both the geo-temporal distribution of such migrants and the sets of drivers that may direct observed trends. Such a database, entitled the *Global Footprint*, is currently being compiled by *Stockholm Environment Institute* (SEI) in collaboration with the University of Arizona (*Office of Arid Lands Studies*), as part of a SIDA-funded research project inves-

GLOBAL HUMAN FOOTPRINT

Set A: Environmental Stressors

- Natural Hazards
- Climate Extremes
- Slow Onset Processes
- Resources Scarcity

Set B: Non-Environmental System

- Economics & poverty
- Conflict and persecution
- Population Growth
- Development (dams, conservation)

Set C: Human Displacement

- Urbanization
- Remittances
- IDPs/Refugees
- Residual Migration

tigating transformations in risk and tipping points into humanitarian crises. The *Global Footprint* aims to compile the best-available evidence through space (multiple scales: gridded, national or regional) and time (up to hundreds of years, longitudinal) to explore patterns of migration of the past and present. All available global datasets will be tapped to explore drivers and proxies falling into one of three categories. Environmental stressors, Set A, will include environmental events or processes, climate extremes and sea level rise. Non-environmental stressors, Set B, will enable comparison of the environment to the other push factors; datasets will feature less debated drivers such as economic dynamics and rapid population growth. Proxies for displacement will form Set C drawing on datasets that capture snapshots of human mobility such as urbanization, remittances, migration stocks, residual migration and IDP/refugee flows (see text box). No single variable can be a perfect indicator of mobility and the triangulation of all available evidence will bring to light the multi-faceted and interdisciplinary nature of the phenomenon.

Concluding Remarks

After fifty years and hundreds of authors and publications, measurable actions (support, policy, systematic research) have been rare in the field of environmentally-induced migration. McNamara attributes this to the refusal of the United Nations to recognize environmental migrants. She blames this refusal on two elements: the growing xenophobic sentiment of Western nations and the shirking of state responsibility for environmental pollution and concludes that “*research on the extent of the problem [...] may not guarantee any concrete changes in policy or in the tenor of debates*” (McNamara 2007). In the UNU Summer Academy (in Munich, 2008), however, senior policymakers from key organisations made clear statements stressing that a better grasp of the real volume of the global phenomenon will have an important influence on policy.

A footprint is the quintessential symbol of life – an impression left behind by a person on the move. Footprints are rarely, if ever, used to produce exact estimates of a population. They are merely an indicator – that someone has passed through or nearby; we can almost never prove the exact owner, how many were travelling together, or the precise time of their travel. A footprint is precisely the level of information we need to commence this quantification exercise. Science has an urgent role to play in compiling evidence – footprints – upon which the United Nations can decisively act. Environmentally-induced migration exists. Standing on the shoulders of the 500 scientists and authors compiled above, scholars may be able to detect a footprint on the horizon.

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2. Section

Response and Coping Strategy to Climate Change Induced Vulnerability

Perspectives on Vulnerability to Climate Change and Migration in Tuvalu

Heather Lazrus

Abstract

Tuvalu, a Pacific Island country comprised of low-lying atolls and reef islands, is widely considered to be one of the most susceptible places on the planet to impacts of global climate change. Consequently, Tuvaluans are frequently portrayed internationally as inevitable victims on the frontline of climate change with only one real option: migration. However, a sole focus on migration as imminent and inevitable obfuscates local agency and preempts investment in local adaptation strategies. In this paper, perceptions of vulnerability to ecological change among different social actors are examined using cultural model analysis. The paper relies on ethnographic and archival data collected during 15 months of fieldwork in Funafuti and Nanumea, Tuvalu and among Tuvaluans living in Wellington, New Zealand.

Keywords

Tuvalu, global climate change, vulnerability, migration, political ecology

Introduction

Global climate change influences peoples' lives in a myriad of different ways and is experienced initially and most acutely in smaller social arenas such as the low-lying Pacific island country of Tuvalu. The ways that people perceive vulnerability and what they consider to be most at risk vary tremendously between individuals and across groups. For example, there is a widespread perception in popular media that the risks to people in Tuvalu are such that they necessitate migration – that the vulnerability they face by remaining in the islands is greater than the risk of culture loss (and loss of other place-based assets) should Tuvalu become a nation of climate refugees. The implications of this perception are many, including disempowering Tuvaluans and discouraging investment in effective and efficient, in situ adaptation efforts. It remains crucial to consider long-term adaptation needs that may necessitate future migration without discounting present efforts to maintain livelihoods and culture in place. The argument is one for following a holistic development pathway guided by the precautionary principle.

Tuvalu is comprised of nine low-lying atolls and reef islands totaling approximately 26 sq km of land area with elevations of generally less than three to five meters above sea level. The fragmented islands span some 900,000 sq km of the Pacific Ocean between 5° and 10° south and 176° and 179° east. In 2002 the predominantly Polynesian population numbered roughly 11,000 with nearly half of the population concentrated in the national capital on Funafuti Atoll. An estimated 15,000 Tuvaluans live overseas.

Recent research in Tuvalu found that, among a small sample, climate change is not a primary concern motivating international migration (Mortreux and Barnett 2008). The link between vulnerability and migration needs to be interrogated. Migration has direct repercussions for how national sovereignty and place-based island and national identities are negotiated in Tuvalu. This paper makes an initial attempt by examining different cultural models of vulnerability in order to expose how vulnerability is differently understood according to different referent objects of risk. Cultural models are mental roadmaps that contain implicit and tacit information shared among members of a group about how to interpret and behave in the world. Using an approach previously employed by Kempton et al. (1999) to identify and analyze cultural models of environmental values, change, and risk among Americans this paper finds several different ways of understanding what vulnerability means based on various ways of assessing risk, risk factors, values, and risk priorities.

Political Ecology of Vulnerability

The *Intergovernmental Panel on Climate Change* (IPCC) has confirmed the anthropogenic origins of contemporary climate change (Rosenzweig 2007: 81). Those who are most vulnerable to the effects of climate change, however, are not significant contributors to the problem of accumulating greenhouse gases. The deep inequalities of climate change expose the ways that the global political economy degrades local ecologies, often in places far removed from the causes. Hazards theorists who attempt to bring politics, economy, and ecology into the same analytical lens, employ a political ecology framework (e.g. Blaikie and Brookfield 1987; Paulson et al. 2003). Oliver-Smith writes that vulnerability is essentially a political ecology concept located at “the conceptual nexus that links the relationship that people have with their environment to social forces and institutions and the cultural values that sustain or contest them” (Oliver-Smith 2004:10). Thus, too, as Rayner puts it, “what one sees depends on where one stands” (2002:92).

Cultural Models and Methodology

In order to engage effectively with the world, people must process the complexity we perceive through simplified, mental models that reflect and reproduce cultural beliefs and values held amongst members of a group (Paolisso 2007:127, Quinn and Holland 1987). In other words, cultural models are the mental roadmaps that contain implicit and tacit information and that becomes “what one sees with, but seldom what one sees” (Hutchins 1980:12 in Quinn and Holland 1987:14 emphasis in original). Models emulate key relationships between core beliefs about nature, society, and values. While political ecology exposes the different and often conflicting positions of variously situated actors, cultural models allow us access to the underlying concepts that inform truth and meaning in environmental conflict. An important empirical insight is that while beliefs and values are culturally specific, the rules of logic are more universal (discussed in Bernard 2002:458).

Five schemas describing cultural models about vulnerability in Tuvalu are included in the table below and explained in the following sections. The cultural models expose counter-discourses of vulnerability that prioritize different elements of risk and hazard while conforming to an underlying logic about the susceptibility to harm flowing from exposure to impacts. The information used here is part of a larger dissertation project based on 15 months of fieldwork utilizing qualitative methods (participant observation, focus groups, semistructured interviews, structured interviews including a cultural consensus survey, archival research, and participatory mapping using GPS) in three sites: on Funafuti Atoll, the Tuvalu’s capitol, on Nanumea Atoll, an outer island, and in New Zealand where Tuvaluans are the fastest growing community of Pacific Islanders.

Models of Vulnerability

Risk selection and perception are so embedded in cultural, social, economic, and political institutions that “to alter risk selection and risk perception...would depend on changing the social organization” (Douglas and Wildavsky 1982:9). Critical differences lie in how risk is identified and assessed, what is considered to be most at risk (cultural risk priorities refer to the different ways that people have of ranking risk, so for some the risk of culture loss is greater than the possibility of weathering a storm), the vector along which harm arrives, the values that inform the assessment, and the appropriate response. The following table sketches some of these categorical differences according to various perceptions of vulnerability to impacts of climate change in Tuvalu. The underlying factors that are prioritized by these understandings of what constitutes vulnerability are not mutually exclusive but exist along a continuum, although factors seem to coalesce into the rough schematic categories displayed in Table 1.

Table 2: Models of Vulnerability

Model/Paradigm¹ Schemas/ Components	“Apocalyptic”	“Technical/ scenario- based”	“Universal adaptation”	“Nationalist”	“Place-based”
How is risk identified and assessed?	Media interviews; decontextualized popular expert opinion and non-expert opinion	Technical measurement and scenario downscaling	Universal socioeconomic indicators and indexes	Combination of technical and local observations	Local observation; external information
What is cause of risk or dominant stress?	Failure to see consequences of unchecked consumption by large populations; anthropogenic climate change	Biophysical change driven by physical processes; anthropogenic climate change	Inability of institutions to cope with ecosystem change	Unchecked consumption by large populations; political failure; and inequality	External causes; internal causes; population growth; culture change; traditional beliefs
What and who is most at risk?	Tuvaluans and, by extension, all of humanity	Physical islands and infrastructure	Politically and economically viable country	Nation; sovereignty; cultural integrity	Culture; livelihood; water and food security
What are the values at risk?	Environmentalist; human rights; equality	Scientific process; quantitative; empirical validation	Development based on efficiency and progress metrics	Development based on statemaking; national territorial sovereignty	Cosmological and material connections to landscape; island identity
Timeframe of concern	Imminent; media worthy	Long term, doubling of CO ₂ , up to 100 years	10, 20, 30 years; timeframe of development	Election cycles (four years); development projects	Maintenance of daily livelihoods
Appropriate response	Migration (failing immediate global action)	Technical fix that is aid dependent	Planning for adaptation; aid dependent	Mitigation; aid dependent adaptation; discourse of resettlement	Pray to God; government action

¹ These categories are simplified for emphasis and space requirements, and represent very condensed, although dominant, points of view. The “place-based” category reflects themes dominant in interviews with islanders mainly in outer islands where knowledge of climate change is formed from observations of change based on a lifetime of observing and interacting with the environment.

The following sections elaborate the information in Table 1 with data from field observations, interviews, and collected media.

Apocalyptic

A virtual flood of sensationalist articles published in popular interest and news venues describe the situation in Tuvalu as apocalyptic. Rarely is more than one side of the story told; Tuvalu is being submerged as helpless islanders beseech the world to consider their watery fate. Obscured in the articles is not only Tuvalu's colonial history, fight for political independence, dependence on external aid, but also the agency and tenacity of people who have inhabited the atolls for centuries and expertly navigated the Pacific Ocean for thousands of years. While many articles and media items relaying climate impacts in Tuvalu are well intentioned and often well researched, most do not expose the global structures of vulnerability at the heart of climate change. Instead, media perpetuates a blameless sense of impending apocalypse that is not being resisted by the agency and efforts of Tuvaluans to maintain livelihoods in the face of social, economic, political as well as environmental and climatic change.

Journalistic references to modern-day Atlantis, a canary in a coal mine, and troubled paradise conjure apocalyptic imagery and a sense that Tuvalu's fate is, by extension, the fate of humanity for the troubles that we have brought upon ourselves through run-away fossil fuel use and unchecked consumption. These perceptions of vulnerability, more than any other category, rely on emotive metaphors that a European and American audience will understand to connote the inevitable victim status of Tuvalu. Campbell (1997) states that such labels of ultimate vulnerability to forces beyond one's control are deeply disempowering. Indeed, a review of several articles about Tuvalu and climate change appearing in the Sydney Morning Herald over 15 years between 1990 and 2005 found them replete with stereotypes of island marginality that reinforce Tuvalu's less secure status as compared to other, more globally central places (Farbotko 2005).

As well as disempowering, apocalyptic perceptions of vulnerability seem to leave little recourse aside from migration, resulting in a future as a nation of environmental refugees. This preempts any real discussion of adaptation options without which the predictions of doom become self-fulfilling prophecies. Guiding these media efforts, however, is usually a cadre of values associated with environmentalism, human rights, and global equality. Thus, as important rhetoric, these media may also "offer a powerful and timely message, one that should be heard by viewers in industrialized societies especially" (Chambers and Chambers 2007).

Technical

Technical descriptions of vulnerability are based on measurement and assessment of physical changes such as sea level rise that will physically impact the structure of the island and built infrastructure. Bio-physical change is driven by physical processes, including anthropogenic influence at various scales – from global climate change to local coastal mining practices. Correspondingly, technical solutions that are capital intensive and aid dependent are proposed. Since they insist on an empirically derived genealogy of the problem, technical measures may in fact be less quick to attribute change to climate-driven impacts. For example, recent king tides in Funafuti that cause waves to crest above the coastline and, disconcertingly, water to bubble up through the middle of porous atolls, are attributed to regular cycles and oscillations and weather patterns that do not necessarily involve forcing from anthropogenic climate change. Such cycles will be exacerbated by climate change, but debate rages about the current influence of climate change on recent king tides. In the words of one scientist, based in Suva, Fiji, "It's the media that keeps stirring up stories... Media hype depends on mass hysteria versus a longer term and perhaps more realistic view" (South Pacific Applied Geoscience Commission scientist 2006). Technical assessments of vulnerability ascribe to scientific values and do not support the social construction of risk that is likely to play into Tuvaluans' decision-making about migration. Instead, the long term forecast will be a technical problem that is assumed to be an objective interpretation of reality. At some

point, a technical solution will involve a cost benefit calculation that may indicate the cost-effectiveness of migration.

Universal Adaptation

The socioeconomic indicators used by many non-governmental organizations and others to determine vulnerability begin to address the 'multidimensionality' of disasters, but usually entail an approach that is guided by top-down universals. The important factors are human indices such as the *Millennium Development Goals* (MDGs) relating to poverty, gender, education, healthcare, and so on which, if not allowed to be re-interpreted by local actors, are the a priori concerns of development. Development becomes a powerful force driven to standardize both problems and solutions (Scott 1998), as well as to open inroads for political penetration of local communities (Fergusson 1994). Ironically, while adaptation efforts channeled through large scale development efforts are intended to bolster the political and economic viability of less developed countries, the result is often a loss of political and economic control, forfeited in attempts to conform to project criteria and deadlines.

Universalistic understandings of the causes and consequences of vulnerability – where it is measurable by a standard set of indicators – assume that vulnerability is abstract to the people who are affected. An international NGO manager expressed that: "One weakness of Pacific Island governments is... that home populations don't care... [They do] not want to be held accountable [for adaptation] therefore it is [the organization's] role to show people domestically the issues – the relevance of climate change as it relates to the issues they are concerned about" (World Wildlife Fund Officer 2006). A local environmental officer put it in these terms: "If people are not well informed, they can't adapt" (Tuvalu Department for the Environment Officer 2006). This perspective implies that a certain type of knowledge is necessary and that other understandings, such as cosmological world views, of risk are illegitimate even if they lead to adaptive behavior.

Nationalist

Understandings of vulnerability that prioritize the preservation of nation, sovereignty, and cultural integrity rely on a combination of technical and local observations to identify risk. In Tuvalu, an historical precedent does exist for the cultural metric used to assess the vulnerability of the nation. Following a century of colonial administration under which Tuvalu and Kiribati (then the Ellice and Gilbert Island Colony) had been joined together, and with political independence on the horizon, Tuvalu opted for separation from their northern, Micronesian neighbors in Kiribati. External observers criticized the decision on the basis that Tuvalu had inadequate resources to be a viable nation-state, however, separation prior to self-government was favored in a United Nations facilitated referendum by 92% of votes - 88% of estimate eligible voters participated (Isala 1976:164, MacDonald 1975:42). Tuvaluans, who are culturally and linguistically Polynesian, saw the threat of becoming severe minorities in an independent country with Micronesian Kiribati to be greater than the material security that would have afforded.

Like apocalyptic perceptions, nation-oriented discourses of vulnerability tend to connote troubled futures brought about by unchecked consumption, political failure, and systemic inequality. For over ten years, the government of Tuvalu has been promoting the cause in these terms: "For the people of low-lying island states of the world... and certainly of my small island country of Tuvalu in the Pacific, this is no longer a debatable argument. The impacts of global warming on our islands are real, and are already threatening our very survival and existence" (Prime Minister Kola Talake at the 1997 Kyoto conference in Japan in Ede 2003:8). In a home-grown take on the extreme vulnerability and necessity for migration, the Ambassador to the United Nations explained: "There are already environmental refugees, even in our own country. In actual fact, we are already refugees... Can we really allow ourselves to leave

our islands? Can we really find another Tuvalu elsewhere? Anyone can uplift us and put us elsewhere, do we really want that to happen?" (Sopoaga 2006).

Place-based

Perceptions of vulnerability formulated from non-technical observations of the environment and gleaned from external sources of media where available (especially on Funafuti Atoll, the national capital, where internet and print material are on hand) prioritize the risks to cultural integrity, livelihood, and food and water security. Risk arises extra-locally, whether from industrial processes around the globe, divine workings, or cosmological retribution for social transgression on the part of community leaders according to traditionally informed customs. In Nanumea, an outer island, past droughts, pest infestations, and irregular fish behavior – all potentially climatological phenomena – were attributed to various social transgressions on the part of island chiefs. This reason was rarely supplied in interviews, and usually only in reference to past beliefs. A frequent response elicited by interview questions was that observed changes in weather, precipitation patterns, sea levels, coastal erosion, plant growth, and fish species was God's intervention (98% of the population identify as Protestant and other religions represented in Tuvalu include Catholicism, Bahai, Islam, Assembly of God, and Seventh Day Adventist). As one elder on Nanumea Atoll put it: "I think it is all connected, we were made in such a marvelous way, now we call it God. The tides, the moon, and seasons. In spite of technology, there is always that limit and we cannot go any further" (Nanumea resident 2006).

Creeping environmental problems such as sea level rise do not gain the level of immediacy of health, education, and economic needs that factor highly on the decision to migrate to New Zealand. For many who are not attracted to migrate for these reasons, environmental change is concerning, but not now a motivation to relocate.

Recommendations and Outlook on Vulnerability and Migration in Tuvalu

Migration is an aspect of island life and a part of island identity, perhaps especially so on relatively isolated and physically small islands such as the Tuvaluan archipelago. A century ago, Semple observed that "where every landscape is a seascape... Migrations, voluntary or involuntary, make up their history (Semple 1911:209 in Connell and King 1999:3). Migration dominates origin legends, archeological records, and contemporary daily life. In Tuvalu, migration and the remittances it generates are foundations of the national economy. Seamen working temporarily overseas, for example, have contributed as much as 20% of the nominal *Gross Domestic Product* (GDP) (Knapman et al. 2002).

The cultural models explained above are not intended to convey truth or falsehood, but to provide a heuristic that can help expose the different positions of various actors. The topic of climate-driven migration has sparked controversy in Tuvalu and beyond. National migration driven by climate impacts is a real possibility on Tuvalu's watery horizon and must be planned for, but not at the expense of in situ disaster mitigation and climate adaptation. Research results indicate that while migration is a fact of life in Tuvalu, forced migration will result in disempowerment and will further entrench the structures of inequality that produce their vulnerability.

Immediately, the precautionary principle must be followed so that in situ development is pursued that is climate sensitive thus achieving a measure of local adaptation while at the same time working towards development goals and reducing inequalities. At the same time, it is both prudent and critical that longer term strategies are instigated, most especially in light of the unprecedented degrees of change that climate change and will impress upon structures of international relations and their premise of territorial sovereignty. As long as the potentials for global mitigation and local adaptation exist, the international emphasis must be on mitigating greenhouse gas emissions and funding adaptation efforts to the changes in climate to which the planet is already committed.

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3. Section

Resettlement, Replacement and Livelihood

3.1 Immanent Threats, Impossible Moves, and Unlikely Prestige: Understanding the Struggle for Local Control as a Means Towards Sustainability

Elizabeth Marino

Abstract

This paper examines the Inupiaq village of Shishmaref, Alaska (USA) which faces flooding and increased erosion due directly and indirectly to climate change and increasing temperatures. Because the village is located on a barrier reef island, erosion and flooding are making permanent habitation of the island impossible, leading to a need to relocate. Planning for the relocation of Shishmaref has been ongoing for at least 34 years.

As Shishmaref struggles to cope with contemporary hazards and potential diaspora, ideologies concerning indigenous people, power, and disaster mitigation come into play. This paper examines the social-historical context that gave rise to the vulnerability of Shishmaref and demonstrates how local power and local authority are key aspects to future sustainability.

Keywords

environmental migration, climate change, environmental anthropology, sustainability, Inupiaq, Alaska

Introduction

Increasingly around the globe people and infrastructure are threatened by both natural and technological disasters leading, in some cases, to a need for migration (Oliver-Smith 2002). While migration has been a human adaptation strategy to hazardous environmental conditions for millennia, an increase in permanent infrastructure inappropriate to local conditions can make the migration of large groups of people, particularly indigenous people, difficult and costly both in terms of increased poverty and decreased social and cultural cohesion. With the onset of local environmental changes due to global climate change, these disasters will likely increase leading to unprecedented levels of environmental migrants. How governments and local populations can responsibly plan for, provide funding towards, and sustainably adapt to changing environmental hazards has yet to be grappled with or determined in most contexts.

The costs of being unprepared for these hazards are severe as seen in New Orleans with Hurricane Katrina and as may be seen in Bangladesh, in Tuvalu, in the Mekong river delta, in this case study in Alaska and in other places where rising sea waters and increased storms and erosion threaten people's lives and livelihoods. In order to avoid the threat of increased poverty and decreased social and cultural cohesion associated with forced migration (Cernea 2000) international organizations, national governments, and local populations must consider sustainable solutions for environmental conservation and, in some cases, plan the migrations or relocations of vulnerable populations.

The Shishmaref case study given in this paper outlines how difficult and complex planning for sustainable relocations can be and how local participation in all aspects of planning is necessary in order to stave off threats of social and cultural disintegration. It examines how the history of colonization plays a role in constructing contemporary vulnerability to environmental hazards and how settlement and migration is controlled through infrastructure and development. Shishmaref is a small village, yet it exists today as an early case study of potential environmental migrants coping with both a changing climate and a bureaucratic system that is difficult to engage. Shishmaref in effect is the proverbial

canary in the coalmine, and as Tony Weyiouanna of Shishmaref has said in interviews before, “nobody wants to be the canary.”

Sustainability, Social Science, and Shishmaref

Shishmaref, Alaska – population 609 – faces massive flooding and increased erosion every fall when storms off the Chukchi Sea hit the barrier reef island. These storms and the erosion that follows are making the island uninhabitable and causing imminent threat to lives and homes. The Inupiat people from Shishmaref who have inhabited the island for thousands of years are in planning procedures with the state and the federal government to secure funding for relocating and reconstructing the village in a discrete location on the mainland. These discussions have been on-going for at least 34 years, and funding for relocation is still elusive. Today Shishmaref is struggling to cope with hazards and potential disaster while planning for long term sustainability; though what a sustainable village for Shishmaref consists of, and – importantly – who controls the discourse on future planning, has yet to be determined.

Sustainability has been defined in many different ways, predominantly influenced by the idea of ecological sustainability in the context of human exploitation of an environment. Valiela, et. al. have examined varying definitions of sustainability and claim, “the notion seems to involve at least two features: first, maintenance of yield or stocks within some range of values, across some time span, and second, avoidance of degradation of the target resource or of adjoining environmental units” (2000: 1007). In its application to other academic fields, sustainability theory incorporates these two features, particularly the concept of maintaining some variable or system without causing the degradation of another system.

The purpose of employing the sustainability concept in this paper is to consider the long-term effects of changes to social, environmental and biological systems in the context of adapting to hazards in the village of Shishmaref, Alaska. How will Shishmaref – as a distinct cultural group – ‘sustain’ or maintain itself when faced with the immediate threat of flooding while being cognizant of, and preventing degradation to, future systems?

For the social sciences, sustainability is a concept that should be dealt with cautiously. As with all terminology that implies an ultimate goal outside of a specific context – such as sustainable, resilient, non-violent, enlightened, free, saved, safe, etc. – there is the danger of unending politicization. We, as humans, will never be ultimately ‘sustainable’, free from all vulnerability and resilient to all hazard in any practical sense; and we can foresee the potential political conflict among different parties when cultural or linguistic sustainability, for example, comes into conflict with economic sustainability.

What is perhaps most useful when thinking of social-ecological sustainability, for my purposes, is the general spirit of the *UN Division for Sustainable Development’s* common dictum that promotes “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN-DES 2008). In the context of Shishmaref, I recognize competing values and cultural interpretations that are in constant negotiation for what the needs of the present are and what the needs of the future may be. Thus sustainable development is not an end, but a negotiation of goals for the present, while keeping an eye on the future. This paper will demonstrate that when this negotiation is driven by outside actors, vulnerability increases.

At stake in Shishmaref, Alaska is the cultural integrity and group stability of the Native village as it faces immediate threat by rising sea levels and increased erosion. The village of Shishmaref, located on Sarichef Island, now loses approximately 10 feet (3.04 meters) of land to storms and erosion every year. In 1997 a large storm took 30 feet (9.14 meters) of shoreline in a single night (Weyiouanna 2008). This is significant to an island that has only 2.48 square miles (4 square km) of land. Government agencies, non-governmental agencies, and the local population all acknowledge that permanent, year-round

habitation of the island will be impossible in the near future, and the migration and/or relocation of people living on the island is imminent.

This paper considers the social-historical context that gave rise to the vulnerability of Shishmaref, and demonstrate how contemporary relocation planning participants struggle to surmount deep-rooted ideologies concerning indigenous people, power, and disaster mitigation planning. I argue that the struggle for, loss of, and reclamation of local power and control are essential in understanding how vulnerability in Shishmaref was constructed and how the Native village will sustain itself in the future.

The Extent and Costs of Flooding in Alaska

Climate change in Alaska is having dramatic and profound effects. Currently 184 out of 213 villages or 86 percent of Alaska native villages experience problems with erosion and flooding (GAO 2003). A 2003 report notes that “while the problems are long standing, various studies indicate that coastal villages are becoming more susceptible to flooding and erosion due in part to rising temperatures” (GAO 2003). Alaska has over 33,000 miles (53,108 km) of coastline, most of which is inhabited by indigenous populations dependent on sea mammals and fishing to maintain livelihood and cultural integrity. Much of this coastline is currently threatened to varying degrees by severe erosion due to permafrost melt and increasing temperatures, thus exposing many indigenous communities to the uncertainties of a changing environment (Mason, et. al. 1997). Shishmaref can be seen as the beginning of a potentially much broader trend of coastal relocations, both in Alaska, in the Arctic, and in the world.

The Arctic experiences polar amplification, a greater over-all warming around the poles than in other areas of the globe during periods of global warming trends. From 1954 to 2003, the mean annual atmospheric surface temperature in Alaska and Siberia has risen between 2 and 3 degrees celsius. Warming has been particularly salient in the winter and spring (ACIA 2005: 992). Along with warming, snow and ice features have diminished and permafrost boundaries have moved north, meaning that permafrost has melted, causing foundation problems for structures in Alaska and problems with erosion (ACIA 2005: 997).

For at least five Native villages in Alaska, erosion, flooding, and storm activity are creating immediate threats to human life and safety, and while sea walls and other forms of erosion protection are still being built, ultimately the people who live in these five villages will be forced to migrate or relocate. Kivalina, Koyukuk, Newtok, Shaktoolik, and Shishmaref have been identified as immediately threatened (GAO 2000: 2, Immediate Action Working Group 2008).

While it has been suggested that members of these villages should consider relocating to a more urban environment, complete reconstruction of infrastructure and relocation of the village to an uninhabited area is locally preferred (Schweitzer and Marino 2006, pers. comm. S. S. 2008). However, relocation is dauntingly, perhaps prohibitively, expensive. In Shishmaref, for example, relocation costs have been estimated at \$100-200 million USD for a village of just over 600 residents (US Army Corps of Engineers 2006).

Long-standing Shishmaref

As for culture, our ancestors have lived here for thousands of years. The land itself here is part of life, part of our way of life (David Sockpick 2005).

The raging sea is tremendously powerful and needs to be respected. Shishmaref Island will need to be relocated from the sea and moved to a different location, in due time. The move needs to be closely tied to our hunting traditional cultural practices, we are sea mammal hunters. ... We can't go without seal meat and oil (Herbert Nayokpuk 2005).

Relocating to a more urban environment, or merging Shishmaref into another Inuit village on the Seward Peninsula, is inconceivable for residents in Shishmaref. Historically speaking, the village of Shish-

maref is relatively new, but the Kigiqitamiut people [a sub-group of the Inupiaq, literally island people (Marino et. al. in press)], the majority of residents in Shishmaref, have inhabited a discrete area with independence and relative autonomy for thousands of years.

Shishmaref is located on Sarichef Island, a barrier island just off the mainland Seward Peninsula. Shishmaref is primarily composed of Inupiaq families, with a small number of non-Native residents, most of whom work in the school. The local economy is a cash/subsistence mixed economy consisting of a few cash paying administrative and service oriented jobs including employment at the school, the tribal and municipal governments, the two small stores, and state welfare payments. Hunting, primarily seal, bearded seal and walrus, is an important feature of both cultural and economic systems. Caribou, fish, birds, berries, and greens are also hunted, fished, and/or gathered locally throughout the year.

Settlement patterns prior to the late 19th century/early 20th century were sedentary seasonal, with people relatively situated in one place from freeze-up through spring and moving inland during summer and fall to exploit land mammals and fish. Like other 'nations' (Burch 1988, 2006) on the Seward Peninsula, the Kigiqitamiut territory was made up of one large village (Kiqiqtaq) with a population of about 80 people, surrounded by smaller settlements (Koutsky 1981).

Permanent settlement in the village superseded seasonal migratory patterns after the establishment of a government school in 1906 (Koutsky 1981). This is an important historical moment for understanding contemporary relocation issues. Elders in the village have told us that the ancestors of the Kigiqitamiut knew that the barrier reef island was continually in flux and that the island would eventually disappear (Schweitzer and Marino 2006). Prior to 1906 the island was only inhabited after the sea ice froze around the island, meaning any fall storm would meet with a natural buffer, preventing drastic erosion and flooding. Today it is fall storms that hit prior to freeze-up that are the cause of erosion and threats of flooding. This early development that ignored local knowledge of storm patterns and seasonality has contributed to the present vulnerability of Shishmaref.

Early 20th-century missionaries and government administrators pushed for settled, western-style villages and with the pressure of forced schooling and infrastructure development were successful in making Seward Peninsula tribes sedentary (Ray 1975). This moment marks a power shift in controlling the movement of people on the land. While Kigiqitamiut people certainly still travel over their territory for subsistence purposes, establishment of infrastructure is clearly a means of influencing movement and ultimately creates vulnerability to the storm season.

Ignoring local knowledge, particularly local indigenous knowledge during government sponsored development is not unique to Alaska, nor to the past. Anthony Oliver-Smith writes

Increasing vulnerability to hazard continues relatively unabated today, largely because of the undermining of indigenous adaptations, based on long term experience in local environments, through direct government policies or political economic forces creating production systems inappropriate to local culture and environmental conditions (1996b: 315).

Past Attempts to Relocate

Local efforts to relocate the village have been on-going since the 1970s. In 1974, the *Department of Community and Regional Affairs* released a report on the Shishmaref relocation effort after a severe fall storm led to extensive damage on the island (DCRA 1974). At that time extensive planning by local residents and meetings between government representatives and local leaders occurred. These plans did not come to fruition. The estimated cost of this relocation was placed at 1 million USD (Mason et. al. 1997), compared to today's 100-200 million USD.

Local residents say that the decision to relocate was voted down by local majority in the same year. According to a number of sources, including the primary relocation advocate in 1974, Percy Nayokpuk, this decision was more accurately a vote in favor of a new school. If the village had officially voted for

relocating, their window of opportunity for new state-funded development would close. While relocation was in the planning stages, no money or practical plan was secured to actually relocate the village. Conversely, the village was in line and ready to receive a new school and gym facility. The school remains the largest building to date.

Development continues to be problematic in conjunction with relocation. The village of Shishmaref has now officially voted to relocate and has chosen a preferred site. Receiving government aid for housing projects is nearly impossible in the aftermath of this vote, and residents say that this has caused the out-migration of younger, working-age adults to Nome or Anchorage (pers. comm. K. S. 2008).

Government Strategy

In 2006 the *Army Corps of Engineers* published a research inquiry into possible solutions for Shishmaref relocation. Three possible scenarios were described: relocate to the mainland and reconstruct village infrastructure from scratch, relocate residents to the regional centers of either Nome or Kotzebue, or take no action. Peter Schweitzer and I authored the report on the anticipated consequences of relocating residents to the regional centers of Nome or Kotzebue. In a surprisingly unanimous series of interviews, residents declared that they did not want to move to Nome or Kotzebue, even if government funding was provided. We were told that traditionally strained relations between the people of Kotzebue and the people of Shishmaref would make integration difficult. Nome was considered a place of vice that would lead to alcoholism among community members, other declines in social health, and eventual social, linguistic, and cultural disintegration. Many residents said that they would prefer relocation to Anchorage over Nome or Kotzebue. Some commented that they would simply not move if the government attempted to relocate residents to more urban centers (Schweitzer and Marino 2006).

Despite the conclusions of this report and the unanimous local decision, discussion of relocation to regional centers is still in circulation among some policy makers.

Today relocation planning efforts are being spear-headed by the IAWG, an organization constructed by the governor's office which is comprised of a number of state and federal agency representatives. In the last meeting they called for another feasibility study for relocation in Shishmaref, which has caused consternation to Tony Weyiouanna, a Shishmaref resident who has worked on the relocation project for almost ten years. It seems that there is no end to the planning and that as a new cast of government workers takes on the task, the past efforts of local residents disappear. In fact, one representative that currently sits on the IAWG board whom I spoke with did not know of the 2006 *Cultural Impact Assessment* published by her agency on possible scenarios for relocating Shishmaref.

Real local power within the state's planning is relatively absent, despite the good intentions by all to include local voices. According to the IAWG final report, the working group suggests that "local communities severely affected by climate change should be encouraged to establish a project coordinator position to interact with all other organizations and be an advocate for funding through grants and other means to implement needed evaluations and action plans" (2008). Yet, at least two village representatives (pers. comm. T. F. 2008, pers. comm. S.S. 2008) requested funding from the IAWG to travel to the final IAWG meeting and were denied.

The Struggle for Local Control

They come here and said pretty, nice things about what they would do to help our village, but I read it and it makes it where it's only their decision and I don't think that's right (Daniel Iyatunguk July 2008; co-chair, Shishmaref Elders Council).

People aren't talking about the past, about why villages were here in the first place and they're not talking about the future – what it is going to be like for our kids (Tony Weyiouanna, July 2008; community advocate, former transportation coordinator, Kawerak).

Shishmaref residents consistently voice their desire for eventual relocation, but there is some scepticism about relocation efforts spearheaded by outsiders. Coordinators in the village confide that it is often a quiet struggle over who is 'in charge' of planning procedures. Fiercely proud, local village advocates are making decisions to force local control and power in political arenas. One way to accomplish this is by earning money. The local relocation committee has set up a website where outside individuals can donate directly to the village for the relocation project.

More visible is the concerted and successful effort Shishmaref has made in marketing itself as the 'first victim of climate change'. The extensive list of news and documentary organizations that have visited Shishmaref for climate change pieces includes, but is certainly not limited to: The New York Times, The National Film Board of Canada, The Associated Press, Reuters, People Magazine, Earthwatch Radio, Global Create (Japan), National Geographic Magazine, Maison Radio (Canada), Viverra Films (Holland), The New Yorker, The Weather Channel, BBC, Time Magazine, TV Asahi (Japan), ABC News, French Daily Liberation, HBO, the Norwegian Broadcasting Corporation, Thalassa (French television), HD Net TV, National Public Radio, the German TV network, ZDF, Svenska Dagbladet (Sweden), CBS news, and others.

Shishmaref has consciously become the face of climate change. Local relocation activist, Tony Weyiouanna, has largely been the architect of this media success. He tells the story of how, in 2002, a People's magazine reporter phoned Weyiouanna in his office in Shishmaref. The reporter had an ultimatum: convince him to come to Shishmaref or he was going to Tuvalu for a climate change story.

"I looked up Tuvalu on the internet," says Weyiouanna, "and saw that he could be sitting in shorts drinking a margarita." Or, he could come to Shishmaref, the relatively desolate island in the middle of the Chukchi Sea. Weyiouanna says: "what I knew we had was culture."

To date, the people in Shishmaref have been photographed picking berries, wearing fur lined parkas, and riding on dog sleds, and these photographs have been reprinted and shown by many of the world's most respected news organizations. The exoticism of the Inupiaq people in Shishmaref, and the cultural prestige and romance imbued by media outlets when capturing these images, has launched Shishmaref into international consciousness. This international recognition can be interpreted as one way of reestablishing local control over relocation strategies and planning.

However, being in the spotlight comes with a cost. Anthropologist Josh Wisniewski noted early in his work, that Inupiaq hunters who are asked to speak about climate change for community advocacy reasons often feel compromised. He observed that speaking about the environment, animals and future is highly regulated in this hunting culture. To know the future is akin to hubris, but for community advocates speaking in cross-cultural environments, speaking to the future is necessary (Marino, et. al. 2008).

The IAWG's last report makes the statement, "These problems [flooding and erosion leading to relocation], which primarily affect small, isolated communities, are difficult to address and due to this are easily ignored" (IAWG 2008). To gain voice and attention, residents of small Arctic villages are taking drastic steps. Shishmaref has worked with the media and lobbied extensively in state and federal arenas. The village of Kivalina has brought a lawsuit against eight oil companies, 14 power companies and one coal company, asking for the cost of their own relocation (Ben-Ysef 2008). All these efforts, I argue, are an attempt to gain, not just state and federal money towards relocation, but control over the movement of people in traditional lands; an effort to not be ignored or acted upon without consent; an effort to reinvent the power relationship between native villages and government.

It should be noted that the members of the IAWG board themselves have, at every meeting and in every report, discussed the need for local voice in state and federal projects. Stakeholders in every sense, these government agency men and women are working dilligently to find mechanisms by which to aid these communities. But in a cross cultural setting, how to establish local voice is complex and is easy to ignore because of the magnitude and immanency of flooding and erosion. The history of government inter-

vention into Alaska Native village life is a dismal history of colonialism, and altering the very nature of how government works with and for local native communities is difficult.

Complexity in Disaster Prevention and Sustainability: Some Final Thoughts

De Wet writes:

[...] dealing with complexity – as opposed to complicatedness- requires us to find a way to build open-endedness and flexibility into the more structured frameworks and procedures that are an inescapable part of policy formulation and application, and to find ways of capitalising on and incorporating the creativity and entrepreneurial talent to be found among resettlers (2006: 199).

In the simplest understanding of complexity, flexibility is necessary to handle situations that continuously change, evolve, and are – to some degree – unpredictable. Flexibility can only be capitalized on if significant power over planning and defining goals is ceded to local residents. In the context of Shishmaref, the loss of local control over movement and development has increased vulnerability to the flooding and erosion that exists today as much as, if not more than, rising temperatures, rising seas, and melting permafrost. If, as Appadurai writes, “globalization is essentially a localizing process” (1996: 11), then any notion of sustainability in a global world must also emerge from the local. Throughout my work in Shishmaref, the consistent themes in interviews concerning relocation are a) the wish to remain as a unique and discrete village on their own land; b) the wish for local control over decision making; and c) frustration with government planning.

The goal is not isolation. Shishmaref is connected in all areas of life to the outside, globalized world. Family members move away, but come back to visit. Television, radio, and video games are available in the village. Money, commodities, information, and people move freely among the village, other Inupiaq villages, urban areas throughout the United States, and the world. This will be true for the foreseeable future. This paper has sought to demonstrate, not that the village should act alone, but that the effects of planning and development without local input and local knowledge are antithetical to ultimately creating a sustainable village.

This research has spawned an ever increasing number of further questions and avenues for future research. We must better understand the way in which sustainability is understood by different cultural groups in different contexts; what procedural steps can be taken to successfully integrate local knowledge and local definitions of sustainability with government expertise; and how power and political leverage establish themselves as necessary variables in sustainability theory. How can environmental migration be carried out in sustainable and satisfactory ways for all stakeholders? What is constant in these issues is the need to develop broad ranging theory without neglecting local difference; to ultimately ask Shishmaref residents ‘what does sustainability mean to you?’

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3.2 The Potential Influence of Changing Precipitation and Temperature Patterns on Migratory Behaviour in the State of Zacatecas, Mexico

Kerstin Schmidt-Verkerk

Abstract

The nexus between climate change and migration is more complex than many publications about the likely numbers of people concerned suggest. Migration decisions depend on multiple factors and people are making use of a variety of responses to adverse environmental conditions. Furthermore, migrants are individuals whose decisions depend to a large extent on their perceptions of reality. Qualitative empirical work in the Mexican state of Zacatecas shows that members of different groups of migrants and non-migrants share attributes, ideas and values, which are specific for their group. Under a future scenario of worsening living conditions caused by changing temperature and precipitation patterns, international migration is unlikely to change because this group of migrants does not depend on agriculture. For members of other groups it will be difficult to break into the system of international migration because of a lack of access to networks and financial limitations. Internal migration might increase, because those who have not migrated before might become forced to do so when they cannot live off subsistence agriculture anymore. However, those who cannot migrate for personal or financial reasons are likely to be affected most severely by future climate change.

Keywords

climate variability, migration, livelihood strategies, qualitative approach, Mexico

Introduction

This paper investigates the nexus between dry weather and migration in the Mexican state of Zacatecas. Fieldwork took place in two rural communities, Laguna Seca and El Tigre, between January and June 2008.

Climate Change and Migration

Reflections about how future climate change might affect migration flows worldwide have become topical at the latest after the release of the *Fourth Assessment Report* of the *Intergovernmental Panel on Climate Change* (IPCC 2007). Although the report cautiously only mentions a “potential for population migration” (IPCC 2007:16) as a consequence of climate change, it entailed a considerable coverage of the subject in newspaper and magazine articles and in the policy papers of a variety of NGOs. These articles and policy papers are primarily concerned with the question of how many people are likely to become displaced as a consequence of shocks and stresses caused by climate change such as sea level rise, increasing periods of droughts, floods, and hurricanes. The numbers they mention are based on the estimates of “environmental refugees” suggested by Norman Myers in his publications in the 1990s (Myers 1993, Myers and Kent 1995, Myers 1997). Some scholars criticized these estimates as oversimplistic and labelled estimates of 200 million people becoming displaced as a consequence of environmental change by 2050 as guesswork without a scientific foundation (McGregor 1993, Suhrke 1994, Kibreab 1997, Black 1998, 2001).

Despite this criticism, a decade later and in the more specific context of the nexus between climate change and migration, the *Stern Review on the Economics of Climate Change* quotes these numbers again and even suggests that they are based on “conservative assumptions” (Stern 2006:77). A report for the

British organization *Christian Aid* (2007) even expects one billion climate change refugees by 2050. Thus, the theoretical debate has so far been focused on the numbers of people that are expected to migrate because of climate change and it assumes a linear relationship between climate change and migration. However, empirical studies that investigate how increasing periods of drought affect migratory behaviour suggest that this relationship is much more complex. Five studies in the Sahel revealed two general outcomes: 1) Drought seems to cause an increase in the number of people who engage in short-term rural to rural types of migration. On the other hand, it does not affect, or even decrease international, long-distance moves (Findlay 1994, Ezra and Kiros 2001, Henry, Schoumaker and Beauchemin 2004). 2) The conceptualisation of vulnerable people as helpless victims who have to flee the consequences of a drought seems to be false. Depending on their socioeconomic position, they might have the choice between a variety of coping strategies, including migration. On the other hand, they might also be too poor to migrate at all, meaning that migration is as unlikely to be a way of escaping their situation as any other strategy (Haug 2002, Meze-Hausken 2004).

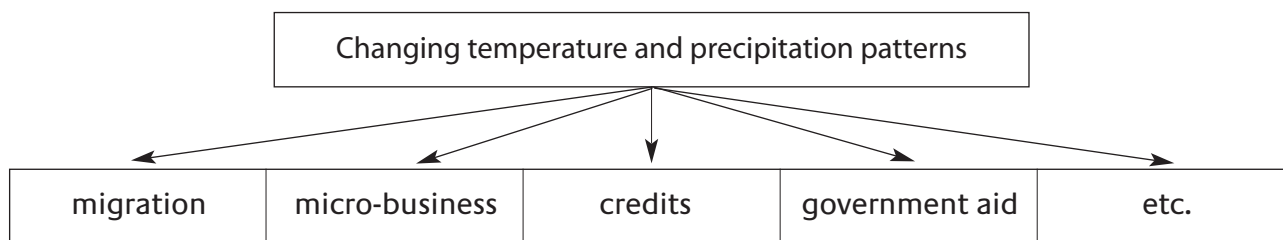
Conceptualisation

For the design of the presented research, seven theoretical considerations have been taken into account. 1) Migration is a phenomenon which cannot be explained by one single reason alone (Kritz, Lim, and Zlotnik 1992, Castles and Miller 1993, Boyle, Halfacree, and Robinson 1998, Wood 2001). These authors argue that, on the contrary, there are a multitude of economic, social and cultural reasons that influence migratory behaviour. 2) There are many different forms of migration. It can be internal or international, long or short distance, temporary or permanent and single family members or whole families can move. 3) In many regions of the world, migration is not new but has been a livelihood strategy for generations, also as a response to adverse environmental conditions. In the Sahel this phenomenon is referred to as “eating the dry season” (Rain 1999, Brown 2007). 4) Environmental stresses and shocks that are likely to be worsened by climate change are not new phenomena either. Therefore, people have found a variety of responses including migration. 5) In many societies climate related problems affect and are intertwined with economic, structural and political problems and need to be regarded in their specific context. 6) Climate change is an abstract concept and a lot of uncertainty about its future impacts exists. The *United Nations Framework Convention on Climate Change* defines ‘climate change’ as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC 1992:3). Therefore, only the effects of climate variability can currently be observed, and from these observations, scenarios about the situation under future climate change have to be constructed. 7) People’s behaviour depends to a large extent on their perceptions of reality. Therefore, the way how individuals feel affected by the climatic variability of their living environment, and the extent to which they think that any form of migration is a suitable response to it, depends on their perceptions and on individual feelings about their living situation.

Methodology and Research Methods

The complexity of the question of how and to what extent climate variability might affect migratory behaviour requires an in-depth understanding of the situation from the perspective of the people concerned. Therefore, in the presented research a qualitative and holistic approach was used. Empirical fieldwork involved participant observation, visits of agricultural fields, qualitative interviews, and expert interviews. The research questions were divided into two sets, allowing an approach of the problem from two perspectives. The first set of research questions is concerned with people’s livelihood strategies. How do different groups of people respond to changing temperature and precipitation patterns in the state of Zacatecas? To what extent do different forms of migration appear to be a response?

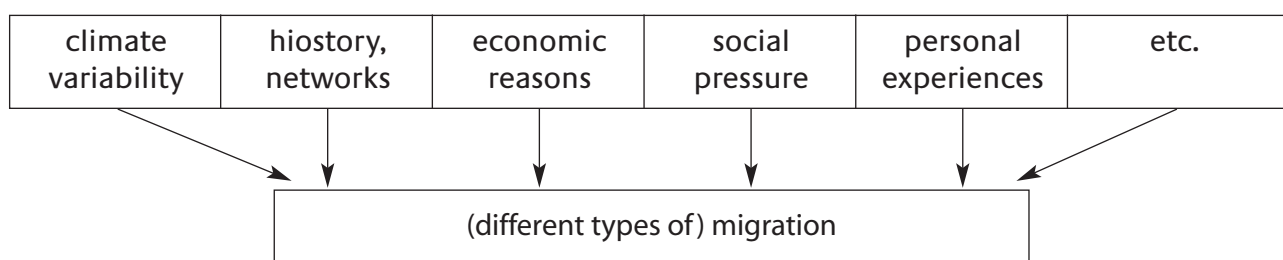
Figure 1: Focus of First Set of Research Questions



Source: author

The second set of research questions is concerned with the migration process. What sets of factors influence migration decisions within different groups of people? How far are changing precipitation and temperature patterns a relevant factor in the decision making process? How do these changes influence the choice of destination, the length of stay and the number of migrants sent?

Figure 2: Focus of Second Set of Research Questions



Source: author

The Mexican State of Zacatecas

The state of Zacatecas is situated in the centre-north region of Mexico, about 500 km to the north of Mexico City. Its average altitude is 2,100 metres above sea level. The state has about 1,354,000 inhabitants and is politically divided into 58 municipalities (INEGI 2000).



Source: Google Images²

² Map of Mexico, http://images.google.co.uk/images?q=map+of+mexico&hl=en&rls=GGLJ,GGLJ:2006_35,GGLJ:en&um=1&sa=X&oi=images&ct=title, 30 August 2007.

Migration in Zacatecas

Zacatecas is labelled as a classical migration state of Mexico because the first migrants were contracted by the USA to build railways and to work in agriculture and mining more than a century ago. During the *Bracero Programme* between 1942 and 1964, more than 4.5 million Mexicans worked in the USA, most of them originated from the four states of Jalisco, Michoacán, Guanajuato and Zacatecas (Massey et al. 1987).

In the 21st century, Zacatecas is still one of the most important migrant-sending states in Mexico. According to the 2000 census of the *Mexican Institute for Statistics, Geography and Informatics* (INEGI), in 2000, 4.9% of the population in Zacatecas migrated to the USA, which is the highest rate of all states and far above the Mexican average rate of 1.6% (INEGI 2000). Results of the '*Encuesta sobre Migración en la Frontera Norte de México*' (EMIF), as shown in table 1, indicate that after a decrease of the absolute number of migrants between 1995 and 2001, migration from Zacatecas to the USA increased again between 2002 and 2005 but without reaching the numbers of 1995.

Table 1: Flow of Migrants from the State of Zacatecas into the USA by Year

Year Migrants	1995	1999	2000	2001	2002	2003	2004	2005
	25,487	20,415	15,956	12,014	18,722	17,757	17,778	19,663

Source: Data elaborated by the USEG of 'El Colegio de la Frontera Norte' based on the longitudinal study '*Encuesta sobre Migración en la Frontera Norte de México*'. SEGOB: INAMI and CONAPO, STPS, SRE and El Colegio de la Frontera Norte.

In 2000, at the state level 17.5% of the households were sending migrants (Delgado Wise et al 2004:170). However, the population of Zacatecas is not homogenous and in some municipalities international migration affects up to 37% of the households. Delgado Wise et al (2004:168) point out, that while 23 of the 57 municipalities in the state of Zacatecas show this very high international outmigration rate, seven of the municipalities show a low or very low international migration rate.

Economic Problems in Zacatecas

The population of Zacatecas is suffering from structural and seasonal unemployment. In 2006, about 29% of the active population was employed in the primary sector (INEGI 2007). Especially commercial agriculture needs many seasonal day labourers who become unemployed in times of the year when no work is available or when the landowners decide not to farm. Commercial farming is often not productive anymore, because operational costs are exceeding profits (for further information see Márquez Herrera forthcoming) and because of a changing climate. Furthermore, the global food crisis and the global financial crisis have affected and are still affecting many households because of rising prices of food and other products that are required to meet basic needs.

The Climate in Zacatecas

Zacatecas has always been affected by dry weather. For the period between 1941 and 1996, the *Mexican National Meteorological Service* (SMN) indicates an average annual amount of precipitation of 520 mm in Zacatecas in comparison to 777.4 mm on the national average. In 2006, total annual precipitation in Zacatecas was with 520.7 mm very close to the average between 1941 and 1996.

Table 2: Precipitation in Zacatecas on a Monthly Basis (in mm)

	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C
Average (1953- 2006)	17.4	8.1	5.5	9.3	16.6	76.5	96.1	102.3	80.3	36.8	9.8	13.6
2006	24.0	0.0	0.0	1.5	12.4	38.5	125.3	104.3	114.4	66.0	11.5	22.8

Source: INEGI 2007:10

However, as table 2 shows, the months with the strongest rainfall were July, August and September. In the past, most of the rainfall usually occurred between June and August and this pattern assured that farmers could cultivate their land in May or June and harvest before the cold period in November began.

Farmers in Zacatecas think that this pattern has been disturbed for the past two decades but that it has become worse during the last years. In 2007, many of them lost their harvest to the cold weather which started in early October. Because of a lack of rainfall in May and June they could only start farming in July and therefore, the farming cycle was too short. This has led many people in Zacatecas to think that over the last 15 or 20 years the weather has become dryer than it used to be. Furthermore, during the last three years exceptional droughts have affected the state, which had a large impact on subsistence, but also on commercial farming.

Empirical Results

Fieldwork took place in El Tigre, a rural community with 50 years of international migration history and almost no employment opportunities in the region, and in Laguna Seca, a rural community without international migration history, where seasonal employment in commercial agriculture is available. In the two communities, six categories of migrants and non-migrants, which will be presented in this section, have been identified.

International Undocumented Migrants

International undocumented migrants generally originate from villages in which international migration networks are available, such as El Tigre, or they have good contacts to those villages because of friends, in-laws or other relatives. Very often older family members are already in the USA and help the new migrants to find employment and housing at the destination. International undocumented migrants are mostly male and younger than 45 years of age because illegal border crossings are perceived as too dangerous for women and older people often fear that they will not find employment. International undocumented migrants perceive the lack of employment opportunities as the largest problem in the village community. However, even if they found employment in Mexico, many still would prefer to migrate because salaries are much lower in Mexico than in the USA. Therefore, internal migration is not considered an option by the majority of them because they think that it is not worthwhile to move and leave the family behind for the relatively low revenues. Many return home regularly every three to five years because their families live in the village. While they are at home, they usually do not get involved in any income-generating activities. Apart from helping their parents or other relatives, they are not involved in farming or cattle raising, either. The majority does not own land because this is a privilege of the older generation. Often, their fathers are either still farming the land or they passed it

on to one of their children who might have stayed in the village. Sometimes the migrants' wives operate small businesses, selling homemade food or industrial produce to a shop against the payment of a commission. The women also sometimes receive the government aid 'oportunidades'. Loans are often used to finance the next border crossing.

International Documented Migrants

International documented migration can be found in El Tigre and in Laguna Seca, regardless of their different international migration histories. However, often, these migrants come from families without migration experiences. In other cases, they do not want to get involved in undocumented migration (anymore) because of previous bad experiences. Corresponding to the needs of the employers in the USA or Canada, migrants are mostly male and very young. They usually spend between three months and a year abroad while their families stay in the home village. At home, they perceive unemployment as the most important problem, followed by droughts. Similar to the undocumented international migrants, the majority does not own land or cattle because of their young age. Sometimes they are helping their parents to farm or they farm on their parents' land. When they are at home, they are also searching for other employment opportunities. Their wives also often operate small businesses or receive 'oportunidades'.

Internal Migrants

Internal migrants originate from villages in which no undocumented international migration networks exist. They are mostly male, but sometimes couples or families are moving. Internal migrants belong to all age categories and often they only stop migrating once they are physically unable to work. They are permanently settled in the village and only a few of them have moved permanently to bigger agglomerations in the region. Apart from bigger cities such as Zacatecas or Guadalajara, many migrants go to regions in which agriculture is possible throughout the year, such as the coast of Jalisco. Their stays generally last a few months and take place during the winter when no work in commercial agriculture is available in their home communities. Internal migrants usually do not dispose of the financial means and of the networks needed to get involved in undocumented international migration. Some have been recruited as documented international migrants but the majority also lacks the resources to pay for the necessary papers. Internal migrants think that major problems in the village community are the (seasonal) lack of work and the low salaries they gain as day labourers. Rising prices of goods to satisfy basic needs, such as food, clothes and utilities, have affected many of them. Older internal migrants own and often farm their piece of land. Therefore, changing precipitation and temperature patterns as well as economic problems affect them in two ways:

- 1) Fewer jobs are available in commercial agriculture because more irrigation systems would be needed for farming, which many employers are not able or not willing to pay for.
- 2) Small scale subsistence farming is becoming uneconomical because their investment often does not pay off when their harvests get destroyed. Other livelihood strategies consist of small businesses operated by the wives, credits, and government aid in the form of 'oportunidades' and 'procampo', which is paid to subsistence farmers.

Voluntary Non-migrants

Voluntary non-migrants are people who could possibly migrate but are not willing to do so. They originate from all types of villages, but the majority is born in communities without access to international migration networks. They have either never heard of positive migration experiences in their family or made some bad migration experiences themselves. They are people of all ages who are usually very bound to their home villages. All feel very affected by the economic problems of their home commu-

nities but they are willing to live with these problems. Usually, they are unhappy with their lives but they fear that it might be worse in other places. Illiterate people are especially afraid of moving because they think that they will not manage to find their way or to even find a job in places other than their familiar environment. Some of them also found employment close to their home village and are not willing to trade it for something as insecure as migration. Many do not want to leave their wives, their children or their aged parents behind because they think that their presence is needed more than their money. Droughts are perceived as very problematic because, like the internal migrants, they depend to a large extent on subsistence agriculture and on the jobs in commercial agriculture, except for the few who have found employment in other sectors. They are making use of the same livelihood strategies as internal migrants. However, many are adapted to being limited regarding the variation and amount of food and regarding to the money that is available.

Involuntary Non-migrants

Involuntary non-migrants are people who might be interested in migration but for some reason are unable to engage in it. A lack of international migration networks and of financial resources makes it impossible to migrate internationally for many of them. However, some are also unable to migrate internally because of a disease, their age or their gender. Women usually do not migrate at all because they need to take care of their children and of the elderly. Often, households without migrants belong to the poorest group of the society. Thus, they are the most affected by the lack of family income, rising prices, and droughts. If they are physically still able to do so, very often, they are still trying to farm in years when others have already given up because of unfavourable weather conditions. Droughts are thus perceived as very problematic because they might destroy their major source of food. Other livelihood strategies are the same as for internal migrants.

Former International Migrants

Former international migrants had been recruited for their first move or became involved in already existing migration networks in their home village. They are older than 45 years and they are male and female. In the past, recruited migrants were also mostly male. However, they were often followed by their wives, both legally and illegally. In the 1980s illegal border crossing was still easier and less dangerous and more women were involved in it. The majority of the former international migrants do not migrate anymore because they do not possess any documents that would allow them to do so, and they think that illegal border crossing would be too difficult. Furthermore, they fear that they would not find a job at their destination. However, some of them received the status of a U.S. resident for themselves and for their family during one of their earlier stays. Those people still go to the USA to live with their children for a while or to visit other relatives. Few former international migrants became completely settled in the USA because the majority prefers to live in their home village. Many perceive the changes of temperature and precipitation patterns as more intense than the younger generation does. They have experienced times, in which they think that subsistence farming and cattle raising was easier. They belong to the generation that received '*ejido*' land when it was distributed and the majority is still farming and raising cattle. Other livelihood strategies are small businesses, government aid, and credits. Many former international migrants also depend to a large degree on the remittances that their children are sending.

The Likely Effects of Future Climate Change

Changes of precipitation and temperature patterns that can already be observed today are likely to become more severe in the future. Although concrete forecasts for the climate of Zacatecas do not exist, the 2007 IPCC report suggests that dry regions are likely to become dryer in the future. Agriculture already has been and will be affected by droughts, rainfall at unusual times of the year and by changing temperature patterns throughout the year. People who rely on commercial or subsistence agricul-

ture for their livelihood will be affected most and they might need to search for responses. For some of them some form of migration might be an alternative, for others this will not be the case.

Empirical results from the state of Zacatecas, as presented in the previous section, have shown that international migrants are the group that is least affected by environmental stressors because most of them do not farm. However, those who have not migrated internationally before will find it very difficult to break into the system because of a lack of networks and financial resources. International undocumented migration has become more difficult, more dangerous, and more expensive as a consequence of stricter border protection measures. Furthermore, the global economic crisis has affected the number of jobs in the USA as well, so that potential undocumented migrants might be discouraged by a lack of employment opportunities. It is thus unlikely, that even under a scenario of worsening conditions in agriculture more people will migrate internationally than before.

On the other hand, as a consequence of more severe environmental conditions, more people might join the group of internal migrants. Those, who did not want to migrate before and who relied substantially on subsistence farming as a livelihood strategy might have to change their mind when subsistence agriculture without irrigation becomes impossible. Also, employment in commercial agriculture is likely to be affected by a different climate as some landowners might decide not to farm anymore or to switch to more resistant crops. Because the majority of internal migrants and of non-migrants work as day labourers in commercial agriculture these people might be forced to search for jobs in other parts of Mexico. However, people in other regions of Mexico are likely to be suffering from the same problems and might also decide to migrate, so that the labour market in destination areas might get saturated.

People who cannot migrate (anymore) for a variety of reasons, such as their age, a disease, their female gender or extreme poverty, are likely to suffer most in the future.

Conclusion

This paper investigated the complexity of the nexus between climate change and migration by using empirical data from the Mexican state of Zacatecas. It showed that different groups of migrants and non-migrants are vulnerable to climate change in different ways and that the most vulnerable people are the least likely to migrate internationally. Access to international migration networks is linked to a migration history of the village of origin and it is difficult for outsiders to break into these systems, especially if they lack the necessary financial resources. Therefore, the idea that future climate change will generate large numbers of international migrants is placed in doubt. The attention of scientists and policy-makers should instead be directed towards the likely rising numbers of internal migrants and towards those people who have to stay behind.

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3.3 Migration Caused by a Technical Accident – the Case of Environmental Migration in Belarus

Klara Kavanova

Abstract

In Belarus, the Chernobyl nuclear power plant disaster caused a large scale land contamination by radioactive pollution. As a consequence, many people had to move/migrate voluntarily or involuntarily from the heavily polluted areas, forming a large group of “true” environmental migrants. The purpose of the conducted field research was to find out the present socio-economic situation of the environmental migrants, focusing on the present quality of life of the environmental migrants with respect to the quality of life before the disaster. In addition, the obtained results were also compared with the situation of people who decided not to migrate and stayed behind to live in the polluted areas. As a result, the main reasons that led the migrants to leave or to remain in the contaminated area were identified as well. The research findings point out personal, behavioural and psychological factors as the key factors in the migration decision making process and it also shows that economic and environmental reasons for migration are interlinked and ought to be considered as a joint structure..

Keywords

Belarus, Chernobyl disaster, environmental migration

Introduction

Men have always responded to the adverse changes in the environment, caused by natural forces or man-made, by migrating elsewhere. Henry (2006) states that the environment, as well as the population migration, are very complex issues with problematic relationships with respect to each other. In consequence, the quality of the environment represents one of the basic determinants of population migration (Drbohlav 1994) and cannot be excluded from the migration decision making process (Carr 2005). Although, nowadays, there is no doubt that an environmentally driven population migration exists. This phenomenon still represents an academic issue that is not easy to interpret. Despite obvious links between migration and environment, the scholars as well as the politicians and public have only recently started paying attention to the issue of environmental migration. This is mainly because of its possible linkage with global or regional climate change, which has become a “hot topic” after the IPCC report release in 2007. It is not presumptuous to state that present environmental migration has already become one of the global challenges that human society has to face. The academic investigation of the phenomenon is most likely a key for managing the possible migration flows in the times to come (Stojanov, Kavanova 2008).

The objective of this paper is to introduce the possibility of further scientific research within the field of environmental migration. Even though the term “environmental migration/migrants” still does not officially have a definition and there is a lot of discussion about the proper term, this paper will not question it, but will conform to the definition proposed by the International Organization for Migration (IOM):

Environmental migrants are persons or group 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 (IOM 2008).

The paper presents a research in the field of the quality of life of migrants in Belarus, where the deteriorated environment played a key role in migration movements after the 1986 Chernobyl nuclear power plant disaster. The first objective of the research was to identify the present quality of life of environmental migrants comparing it with their quality of life before the disaster. The second objective of the research was to compare the quality of life of the environmental migrants with the quality of life of the people who did not migrate and, in spite of deteriorated environment, decided to stay and live in the heavily polluted regions. Along with these two objectives, the reasons to resettle or to remain were also examined. The qualitative approach with an interview method was used to conduct this research that took place in Belarus during June 2007. Each interview was composed of sets of questions which were related to housing, health, labour and family issues regarding the quality of life. In total, 28 semi-structured interviews were conducted, with the total of 32 informants formed by two groups. The first interviewed group consisted of migrants who were displaced by the former Soviet government in 1986 almost immediately after the Chernobyl disaster, or who migrated during the early 1990s (to an already independent Belarus). This group of informants was interviewed in the capital city of Minsk, a place where the most migrants from polluted areas resettled. The second group of informants was represented by the people who did not migrate and, despite the impaired environment, stayed in the original, now polluted, habitat. These informants came from five presently polluted localities in southern Belarus and correspondingly, each of the five chosen localities represented a former "home" for part of the environmental migrants in Minsk.

Migration and Technical Accidents

As stated above, the push factor of environmental migration is the damaged environment or environmental stress, regardless whether the event was caused by man or nature. The consequences of these events are very similar; people are not able to live in their traditional habitat and have to move elsewhere. Technical accidents are often a cause of the displacement of people. For example, between 1986 and 1992, there were 75 major chemical accidents all over the world that displaced more than 2 million people (UNEP in Lonergan 1998). Some of these accidents had such an impact on the environment that they eventually led to permanent displacement of the people, while some accidents caused only temporary displacement. The form of displacement (temporary or permanent) depends on the measure of damage to the environment, as well as on the state (government), who has to deal with the accident. For example, the Bhopal accident (the most serious chemical accident – IOM 1992) did not result in people's migration from the place even though the damage on the environment and people's health was severe. On the contrary, in the USA, the Love Canal case, where toxic waste was dumped around people's residences, led to permanent relocation of several thousand families (IOM 1992). This example shows that migration, to a great extent, also relies on the form of governance, level of democracy, wealth, and the quality of disaster management of the country in which the accident takes place. Because of this, same causes of migration (in the case described by this paper, the technical accident that had a severe impact on the environment and people's health) may lead to different outcomes (migration/displacement versus remaining in the original area) in developed and developing countries.

The Chernobyl accident occurred on 26 April 1986, and, to a certain degree, affected many European countries, though Ukraine, Russia and Belarus were the most affected. The main impacts of the disaster are economic, health related, environmental and social (UNDP and UNICEF 2002). Also, the psychological impact of the disaster was great on the public - for example, 64 per cent of Ukrainians think that the Chernobyl disaster is an important factor that influences their health (Panina and Golovakha 2001). Till now, living in the contaminated areas represents a threat (mainly health related, but also socio-economic) to the people, but some sources like Kohut (1997), UNDP and UNICEF (2002) state that living in the less contaminated areas does not represent a health problem anymore. This statement is very dis-

putable, since no authority or measurements can state with certainty, that there is no longer any danger. This situation is enhanced by the uniqueness of the Chernobyl disaster which remains unmatched.

Environmental migration as a consequence of the Chernobyl accident is unique due to the reasons that forced people to migrate. Unlike "traditional" disruption of environment, radioactive contamination and pollution is not visible by any means to ordinary people and the consequences of radiation will uncover after years. Because of this, inhabitants do not have the immediate, obvious reason to migrate. Due to the nature of the environmental disruption, migration/relocation/displacement of people is often government/state organized and the spontaneous flows of migrants/refugees are less seen than in other cases of environmental migration.

Migration as a Consequence of the Chernobyl Accident

The Chernobyl nuclear power plant disaster is often mentioned as one of the examples of man-made causes of environmental migration (Jacobson 1988, Ramlogan 1996, Kohut 1997, Lonergan 1998, IOM 1992). Because of the surface contamination by the radioactive pollutants released as a result of the accident, the impaired environment forced a great number of people to leave or move from their original habitat. Even though Kohut (1997:24) is explicitly stating: *"Lessons learned from Chernobyl related to migration ... may contribute knowledge that can be generalized for managing ecological as well as other mass migration in other parts of the world"*, the majority of studies related to the Chernobyl accident focus on health issues or environmental impacts of the accident, while its impact on social, economic, living conditions or impacts of emigration from the polluted areas have not been studied in-depth.

There is no accurate data on the actual number of migrants that moved due to the Chernobyl disaster. UNHCR report (in Zayonchkovskaya 2000) states 228,000 migrants. More precise information can be found in the World Bank report (2002): about 350,400 people migrated due to the Chernobyl disaster (the number includes government-organized as well the non- government organized migrants). The majority of these people have been resettled through the government organized resettlement program. Immediately after the accident, 25,000 people were evacuated from the power plant vicinity and another 91,000 followed till the end of 1986 (Shestakov and Streletsky 1998). At first, people from the most contaminated zones were resettled. The policy of the governments was to first resettle the people from the most contaminated zones. This caused one of the main problems with the resettlement - most of the people were not resettled until five years after the accident. Only 26 per cent of people migrated within the first year after the disaster (Shestakov and Streletsky 1998). The reason for the delayed migration was the lack of new apartments which were not built until the early 1990s. Table 1 shows the proportion of the migrants according to their nationality. Almost 50 per cent of the migration took place in the Ukraine (UNDP and UNICEF 2002).

Table 1: The Number and Share of Environmental Migrants Due to the Chernobyl Disaster in Belarus, Ukraine and Russia

	Belarus	Russia	Ukraine	Total
Number	135,000	52,400	163,000	350,400
Share	38.5 %	15.0 %	46.5 %	100 %

Source: World Bank (2002), UNDP and UNICEF (2002)

Due to the weather conditions, Belarus suffered the most radiation contamination, mainly in the south-east part of the country. Almost 20 per cent of the country's area was contaminated with about 2.5 million people living there (World Bank 2002). Within the first year after the accident, 24,700 people (only

18 per cent from the total number of Belarusian migrants) left their homes. Until the year 2000, it was already 135,000 environmental migrants in total (World Bank 2002). The majority of these migrants were resettled within the early 1990s. The main Belarusian problem concerning the resettlement activities was that not all people living in the contaminated area were resettled. At present, about 1.6 million people still live in the contaminated area (mainly in the areas where the level of contamination is very low). The contaminated area has a mainly rural quality but due to the disaster, agriculture cannot be conducted anymore. Today the contaminated regions are affected by migration, not only because of the disrupted environment, but also due to the lack of job opportunities and low wages (World Bank 2002).

As already stated above, the environmental migration due to the Chernobyl disaster can be mostly characterized as government organized. Shestakov and Streletsky (1998) stress that it is very difficult to track non-government organized migration. They conclude that the most part of the migration flows occurred within the boundaries of national states. But Serdiuk (1992) claims that the disaster also affected the flows of international migration. His idea confirms that the early 1990s migration of Czech citizens living on Ukrainian and Belarusian territories back to the Czech Republic was mainly due to the increasing health problems and the fear of the consequences of the Chernobyl accident (Dluhosova 1998).

An interesting characteristic of the migration due to the Chernobyl disaster is that the more time passes, the less people migrate from the contaminated areas. And also, there are cases of people returning and moving to the contaminated areas even from countries far away (e.g. Kazakhstan) (Shestakov and Streletsky 1998). The resettlement of the contaminated areas shows an important specificity of the Chernobyl disaster.

Field Research and Findings

To summarize the objectives of the field research, the main interest was to find out the impact of the disaster on the quality of life of ordinary people who happened to become environmental migrants - the quality of life is presented as the state of their current life situation. The life situation (in this research) was defined as a complex of several related issues: quality of the housing, health, family and labour issues. The income and economic situation and its changes due to the resettlement were discussed during the interviews as well.

According to the research outcomes, the informants' decision as to where to resettle was dependent on the governmental offers of new places of resettlement. The government chose large Belarusian cities like Minsk or Brest for this purpose. The informants usually chose the "new" home according to family ties, but others had no possibility available to choose their place of resettlement. The main reasons that led environmental migrants to resettle were identified as concerns about the eventual impacts caused by the radioactive pollution on their health. Despite this fact, many informants, in particular the seniors, still have very intimate and sensitive relationships with the habitats of their origin and stay in touch with them as often as possible. The main reason of staying in the polluted area turned out to be the family's choice, accompanied by the strong personal relationship to the place of habitat.

Regarding the present quality of life, the environmental migrants agree that it is better than before the disaster. From the information obtained, it can be assumed that this consideration is mainly related to their new place of habitat - the capital, Minsk, represents a greater number of opportunities of well-paid and steady jobs as well as other features typical of capitals, for example, higher living standards. In comparison to the quality of life of people who did not migrate from the polluted areas, the quality of life of migrants living in Minsk is better. The quality of life in polluted areas seems to be mainly influenced by the fall of the Soviet Union and by the present bad economic situation of the country rather than by the consequences of the Chernobyl accident. But these two reasons are interrelated - the bad economic situation had roots in the Chernobyl accident.

Conclusion

Field research shows that the present quality of life of the environmental migrants currently living in Minsk is better in both ways – respectively to the time before the accident and, also, in comparison with the living conditions in the contaminated areas. There is a truly environmental cause of the migration in Belarus after 1986, followed by the people's concern for their own health. But besides this cause, it appears that the attractiveness of the capital city represents another reason for migration. Thus, the reason to migrate was the Chernobyl accident and contamination of land, forests and their houses, but it seems that it was strongly followed by the economic pull factors.

Even though many of the Minsk environmental migrants migrated from the areas because they were contaminated, they were also sometimes motivated to migrate because of the wealth of the capital city, so they cannot be labelled as economic migrants. The health risks due to the land contamination caused by the radioactive pollutants released during the nuclear power plant accident in Chernobyl were identified as the main reasons for the displacement.

The research also showed that interviews are very useful tool for exploring environmental migration related information. The interview method was able to truly detect the environmental reasons that eventually led to migration. The in-depth interviews with migrants and non-migrants also reveal the true reasons for migration as well as their personal opinions. It appeared that personal, behaviour and psychological factors do play a key role in the migration decision-making process: for example, the very deep relation between rural people and their home and agricultural ways compel them to stay instead of migrating despite the obvious threat to their health. The research also proved that economic and environmental reasons for migration are interlinked and ought to be taken as a joint structure. It is observed that a region's environmental problems are generally followed by socio-economic problems. The case of Chernobyl migration supports this hypothesis. Although, according to the *World Bank* (2002), the main factors that force people to migrate from contaminated areas are mainly unemployment and poverty and not the still impaired environment.

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4. Section

Legal and Institutional Framework

4.1 Forced Migration of Alaskan Indigenous Communities Due to Climate Change: Creating a Human Rights Response

Robin Bronen

Abstract

Forced migration due to climate change will present one of the most severe challenges to the resilience of communities forced to migrate as well as to local and national governments. The *Intergovernmental Panel on Climate Change* (IPCC) has identified the regions of the world most vulnerable to climate change and predicts that 150 million people will be displaced by 2050. Alaska is projected to experience increased climatic change more rapidly. Temperature increases since 1974 confirm this projection. Several communities in Alaska are faced with permanent relocation due to climate change. Erosion, flooding, and sea level rise are the primary causes of displacement. This paper describes the experience of Alaskan indigenous communities and outlines a legal and institutional framework, based in human rights doctrine, to respond to climate-induced human migration.

Keywords

climate, migration, indigenous, Alaska Governance

Defining the Displacement Category of Climate-Induced Migration

In Alaska, climate change is evident. Temperatures have increased 2 to 3.5 degrees Celsius since 1974, arctic sea ice is decreasing in extent and thickness, wildfires are increasing in size and extent and permafrost is thawing (IPCC 2007; Borenstein 2008). These ecological phenomena are creating a humanitarian crisis for the indigenous communities that have inhabited the arctic and boreal forest for millennia. Four Alaskan indigenous communities must relocate immediately and dozens of others are at risk. There is currently no organized institutional system in place, and government agencies are struggling to meet the enormous new needs of these communities.

In order to create an appropriate humanitarian response, the first step is to define the displacement category of climate-induced migration and profile the population groups that must move. After creating a definition, a legal and institutional framework can be constructed to relocate communities. The disparate drivers of climate-induced migration can be segregated into three distinct categories: random extreme weather events, such as hurricanes and tornadoes, the depletion of ecosystem services, such as drought and salt water intrusion, and on-going ecological changes caused by the combination of random extreme weather events and depletion of ecosystem services that severely impact public infrastructure, such as health clinics and schools, as well as the livelihoods and lives of the people residing in the community.

These climate change drivers cause three distinct patterns of human migration: the migration of individuals and households where climate change is one of several factors causing migration, mass migration where entire communities are forced to temporarily evacuate and mass migration where entire communities are forced to permanently relocate. Each migration pattern requires a unique institutional adaptation strategy to ensure that the humanitarian response is appropriate and that people's human rights are protected.

"Climigration" is the word that best describes forced permanent migration of communities due to climate change. Climigration results from on-going climate-induced ecological changes in a community's environment that severely impact infrastructure, such as health clinics and schools, as well as the livelihoods and well-being of the people residing in the community. Climigration occurs when a community is no longer sustainable for ecological reasons. Climigration differs from migration caused by cata-

strophic random environmental events, such as hurricanes, where disaster relief and the temporary relocation of individuals and communities is the humanitarian response. Climigration means there is no ability to return home because home is under water or sinking in thawing permafrost.

Failure to recognize the signals of permanent socio-ecological changes will critically impede a community's capacity to adapt and can lead to social and economic collapse. Government agencies will also be hampered if they are unable to identify the early socio-ecological warning signals requiring a community to relocate. Funding will be one of the key factors which will facilitate the relocation process. The sooner a community and governmental agencies recognize that relocation must occur, the sooner funding can be diverted from disaster relief to the relocation effort. New funding can also be allocated to the relocation effort. Determining which communities are most likely to encounter displacement will require a complex assessment of a community's ecosystem vulnerability to climate change, as well as the vulnerability of its social, economic and political structures. In addition, communities forced to relocate must participate in the relocation process, including the decision to relocate.

Early indicators of socio-ecological vulnerability demonstrating that relocation is required may include: 1) repetitive loss of community infrastructure; 2) imminent danger to the community from the on-going ecological changes and repeated random extreme weather events; 3) no ability for community expansion; 4) number of evacuation incidents; 5) number of people evacuated; 6) predicted rates of environmental change (e.g., sea level rise) from IPCC; 7) repeated failure of hazard mitigation measures; 8) viability of access to transportation, potable water, communication systems, power and waste disposal; and 10) decline in socio-economic indicators, including food security, loss of livelihood, and public health.

Should the UN Convention Relating to the Status of Refugees be Expanded to Include Climate-induced Migration?

Twenty-three years ago, scholars began to advocate that the issue of environmental-caused displacement be incorporated into the international human rights framework of refugee protection and humanitarian assistance. Working for the *United Nations Environment Programme*, Essam El-Hinnawi coined the term "environmental refugee" in 1985 (El-Hinnawi 1985). He identified three categories of environmentally-displaced peoples: 1) those temporarily displaced due to natural hazards; 2) those permanently displaced because of a marked environmental disruption (natural and/or triggered by people); and 3) those who migrate permanently or temporarily because of ecological changes in their environment and can not afford to mitigate the changes (El-Hinnawi 1985).

The word "refugee" has enormous power in the English lexicon and traditionally has referred to a narrow category of people who need refuge because of horrific violence perpetrated against them. As Stephen Castles states: "Definitions reflect and reproduce power . . . it makes a big difference whether people are perceived as refugees, other types of forced migrants or voluntary migrants" (Castles 2002). The reason this distinction is so critical is because of the policy of sovereign nations to admit very few migrants. Those who are accorded refugee status receive not only the benefit of admission but access to services and resources that are unavailable to all other categories of migrants. In a time when sovereigns are hesitant to open their doors to any migrant, Castle correctly notes that expansion of the refugee definition to include "environmental" refugees may have the affect of making it more difficult for refugees fleeing violence to reach safety and sanctuary outside their country of origin (Castles 2002).

Scholars using the term "environmental refugee" want to expand the traditional definition of "refugee" to include individuals fleeing environmental degradation so that they can have access to the same international structure of humanitarian assistance and protection (Myers 1995). The term "environmental refugee", however, has met with much controversy. Although there are similarities between the two groups of migrants, the most obvious being the forced nature of their flight and then their need for

material assistance and permission to live elsewhere, there are also important differences. Incorporating climigration into the refugee definition is not appropriate. Refugee law is based on the fundamental principle that a person needs legal protection because they are outside of their country of origin due to persecution by a government actor or an actor the government cannot control. Implicit in this definition is the understanding that the nation-state has failed in its responsibilities towards its citizens. Refugees cannot turn to their own governments for protection because nation-states are often the source of their persecution. Refugees need international intervention to ensure there is safe refuge. In contrast, in the situation of climate change migration, the majority of climigrants will migrate within their country of origin. Communities may still be able to rely on national protection to respond to the humanitarian crisis. Most significantly, persecution is not a contributing factor in forced migration due to climate change. In conflict-based refugee migration, international diplomacy plays a critical role in creating durable solutions to resolve the humanitarian crisis.

In comparison, scientists will play the critical role in responding to climate-induced migration. Clearly a spectrum of environmental events causes people to leave their communities. In some situations it is impossible to identify the specific cause of the flight. By analyzing socio-ecological data, scientists will assist communities and governments to determine a durable solution and the appropriate adaptation strategy. The spectrum of solutions may range from mitigation measures, such as erosion control, to relocation. For these reasons, the term "refugee" defined by the 1951 *United Nations Convention Relating to the Status of Refugees* should not be expanded. Climigration requires a completely new Protocol to define this displacement category and establish human rights principles to frame the humanitarian response.

In addition, forced migration due to climate change must have a unique framework of response that is distinct from other environmental catastrophes that cause people to migrate. Narrowly defining the circumstances of climigration will enable national, regional and local governments and international organizations to respond and ensure communities' resilience.

Alaska

In Alaska, climigration is happening. Shishmaref, Kivalina, Shaktoolik and Newtok are faced with the most critical situation because of their geographic location on the west coast of Alaska. These coastal communities must relocate because climate-induced disappearance of sea ice and sea-level rise create stronger storm surges that are eroding the land on which they are situated, thereby precluding a sustainable future of each community in its present location. Newtok is a Yupik Eskimo village located on the Ninglick River beside the Bering Sea. (ASCG, 2004). Shishmaref and Kivalina are Inupiat Eskimo villages and located further north on the Chukchi Sea. (Weyiouanna 2007); (Swan 2007a). Shaktoolik is a Malemiut Eskimo village located on Norton Sound. These villages have active subsistence lifestyles and have existed on the coast of Alaska for thousands of years. (US Corps of Engineers, 2006). Environmental studies conducted by the US Corps of Engineers and engineering firms hired by Newtok, Kivalina and Shishmaref indicate that a catastrophic climatic event could submerge all communities within the next 15 years. (US Corps of Engineers 2006; Tetra Tech 2004; Tryck, Nyman Hayes 2006; DOWL 2004; ASCG 2004). There is no higher or more distant ground to which these villages can move to avoid the encroaching erosion. Their only alternative is migration. Despite the consensus that these communities must relocate, no government funding has been specifically allocated to begin this process.

Each community is involved in an ad hoc process with state and federal government agencies that are struggling to provide protection to the communities while they figure out a relocation process. Climate change is challenging the disaster relief framework of response. Government agencies have responded to increased coastal erosion through their traditional methods of erosion control and flooding prevention. However, due to the severity of the erosion, these adaptation strategies have proved ineffective to protect the communities from a rapidly deteriorating environmental habitat. In Kivalina, the

Army Corps of Engineers built a new seawall to protect the community in 2006. The day after the dedication ceremony, a storm ruined a critical component of the seawall leaving the community vulnerable and exposed (deMarban 2006). In 2007, the community was forced to evacuate when a fall storm that threatened the lives of community members (Bragg 2007). Temporary evacuation of the villages, rebuilding public infrastructure and erosion control structures, and returning the population to original locations is no longer protecting the communities. Permanent relocation is the only durable solution.

Newtok is the most advanced in its relocation efforts. The community has identified a relocation site and has acquired the land through an act of Congress. A state agency planner has also been dedicated to coordinating the efforts of approximately 25 different government agencies to facilitate relocation. However, these agencies have no mandate or dedicated funding for relocation assistance (Cox 2007). Complex regulations that guide the work of each agency also present tremendous roadblocks to moving forward with the relocation effort. The regulations of several agencies require that an existing community with a minimum population be at the site before infrastructure is built. The agencies responsible for erosion control and flood prevention have no regulatory guidance to relocate the communities. In addition, there is no lead agency designated to create a relocation strategy and coordinate the various agencies working on housing, transportation, community infrastructure, education, health and related socio-economic needs (Cox 2007). The indigenous tribes are also hampered because of limited administrative and technical staff to work with multiple state and federal agencies on relocation activities. The Governor of Alaska created a *Sub-Cabinet on Climate Change* in 2007. A sub-committee of the Sub-Cabinet, the *Immediate Action Work Group*, has been meeting since November 2007 to develop an action plan to provide protection to endangered communities. Their work, however, has been challenging because relocation is the only durable solution, and no government agency has the authority or experience to relocate communities.

Guiding Principles of Climigration

The humanitarian crisis in Alaska clearly demonstrates the need to create clear guidelines so that governments can protect and assist the communities forced to migrate due to climate change. Alaska is the logical place to develop climigration principles that can serve as a model for other regions because of the rapid pace of climate change, the inevitability of permanent displacement in many cases, and the large number of communities where this issue must be addressed in the coming years. Guiding principles on climigration, based in human rights doctrine, need to be developed. Refugee law, the *Universal Declaration of Human Rights*, the *Guiding Principles on Internal Displacement* and the recently adopted *Universal Declaration on the Rights of Indigenous Peoples* provide a theoretical basis for creating these principles. However, none of these legal documents address the complex and unique social, economic and political crises of populations facing climigration.

Guiding principles of climigration should ensure that the social, economic and cultural human rights of individuals and the communities forced to migrate are protected during displacement as well as during resettlement. (United Nations 1976). Forced migration creates significant stress and adverse impacts on the health and well-being of those forced to leave their communities. (World Bank 2004). These adverse consequences can be minimized only if the affected community is a key leader in the relocation process and culturally and linguistically appropriate mechanisms for participation and consultation are fundamental components of the relocation process. The guiding principles should also affirm that families and tribes remain together during the relocation process. For indigenous communities, tribal relationships are essential to cultural identity (United Nations 2007). The relocation process must ensure that socio-cultural institutions remain intact. (World Bank 2004). The guiding principles must also ensure that subsistence rights and the customary communal rights to resources are protected and that the relocation process is framed with an intent to improve income strategies (United Nations 2007).

The guiding principles should also affirm the human rights principles regarding access to safe and sanitary housing, potable water, education and other basic amenities. (United Nations 1976). The living standards of the affected communities must not be diminished in the relocation process and must implement sustainable development opportunities as part of the relocation process. (World Bank 2004). In this way, the relocation process will enhance the resilience of communities by addressing socio-economic issues that are currently contributing to the vulnerability of communities.

Creating an international institutional framework of response to migration caused by climate change is the next essential step that needs to be taken by the international community. Debates about the number of people forced to migrate delays the creation of institutional response mechanisms and ensures that a global humanitarian crisis will occur. The institutional response requires the identification of continua of conditions that cause communities to migrate for environmental reasons. The first continuum will identify the environmental causes of flight. Climigration will be at one end of the continuum when no other environmental issue, such as overuse of natural resources by humans, is causing the community to relocate. At the other end of the environmental displacement continuum, factors such as overuse of resources will be included. This continuum will define the variety of environmental factors that can force communities to migrate. Accurately defining the cause of the environmental displacement is critical in order to ensure that the institutional response is appropriate.

The second continuum will define the institutional response and will incorporate factors, such as the temporal nature of the displacement and the site of the relocation, i.e., whether international, state and local borders are crossed that impact the ability of the community to resettle in a particular location. The institutional framework created will mirror the environmental displacement continuum to ensure that the humanitarian response is appropriate. For example, the agencies that have traditionally provided "disaster relief" and erosion control will continue to engage in these activities until it is determined that relocation must occur to protect the life and well-being of the community. At this point, the community, along with tribal, state and federal governments, will shift their focus to create a relocation process.

Conclusion

Climate change is forcing communities to permanently relocate. There is no ability to return home. For these reasons, guiding principles and an institutional framework, based in human rights doctrine, need to be created to address the specific circumstance of climigration and ensure the resilience of communities forced to migrate. The experience of Alaskan indigenous communities is guiding the creation of these principles and the institutional response.

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4.2 Views on, and Possible Solutions to, the Environmental Refugees Issue Within the European Union

Aurélie Sgro

Abstract

Environmental disasters and global warming threaten to severely destabilise the planet, rendering millions of people homeless in the next few decades. The international community has to take drastic and reliable actions to provide support to environmentally displaced persons. At root level, there is a fundamental problem of definition which leaves those affected without appropriate protection. Terms such as environmental “refugee” or “migrant” remain highly controversial. The *European Union* (EU) has become aware of this growing and multifaceted problem. The present article seeks to describe the ongoing works within the EU and develop future perspectives, taking into account the limits set by the division of competences between the EU and its member states.

Keywords

environmental refugees, EU, protection / support

Introduction

Environmental disruptions exacerbated by climate change will likely become the primary cause of forced migrations, supplanting religious, ethnic and political reasons. The topic is one of growing concern at the European level as climate change and migration become increasingly central aspects of political debate.

The concept of “environmental refugee” emerged in the 1980's but it is still not universally recognised. Scholars argue over the correct legal term – environmental “refugee” or “migrant” – principally because of the complexity of environmental factors when establishing a (mono-) causal link (Black 2001). Despite those difficulties, one can refer to the following definition: “*Environmental refugees are those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardised their existence and/ or seriously affected the quality of their life*” (El-Hinnawi 1985: 4). The term “environmental refugee” will be used throughout this paper for reasons of convenience even if environmentally displaced persons are not defined as refugees in the narrow legal sense.

To date, environmental refugees receive no protection or assistance whatsoever. New tools need to be created by the international community in order to protect them. Europe will not be immune to this phenomenon and will bear unavoidable consequences such as mass migration, increased urbanisation, destabilisation of parts of the world vital to European security, radicalization of politics and populations and negative impacts on European industries.

Nevertheless, it is likely the region where evolution can be expected the most even if we should not be too optimistic for now. The EU has already taken significant steps to address the matter. On the one hand, this paper aims to map the current situation in the EU concerning the issue. On the other, it will try to assess the capacity of the existing tools to face this kind of migration and to ambitiously define new concepts and instruments.

The Current Situation

Debate has only just begun within the EU. At this day, no EU instrument makes mention of environmental refugees (or migrants). In 2001, *Green Members of the European Parliament* (MEPs) tried

unsuccessfully to insert a reference to environmental refugees into a *European Parliament report on the Common European Asylum Policy*. In 2004, Green MEPs asked for a community status of ecological refugees and for the insertion of the principle of ecological interference in community prerogatives. Unfortunately, these requests fell on deaf ears.

A seminar on climate refugees took place at the European Parliament on 11 June 2008. It aimed to draw the attention of European institutions to the issue of climate migrations through the adoption of a declaration that invites European and international institutions to “*organize legal protection for the victims of climate disruptions and of possible displaced persons who do not benefit today from any recognition*” (Declaration on Climate migrations 2008).

In June 2008 at the Agora on climate change held by the European Parliament, representatives of European civil society expressed their concern over environmental migrations. The workshop “*Solidarity*” called upon European institutions to develop a European strategy on climate forced migration and to launch a debate within the UN on the status of climate migrants and on a protocol to the *United Nations Framework Convention on Climate Change* (UNFCCC) on climate forced migration. It is regrettable that only a few MEPs attended those meetings, leaving Green MEPs isolated.

The European Commission addressed the matter by financing the EACH-FOR (“*Environmental Change and Forced Migration Scenarios*”) project from January 2007 onwards. In June 2008, the European Commission adopted a Communication on *A Common immigration policy for Europe: principles, actions and tools* and a Policy Plan on *Asylum – an integrated approach to protection across the EU*. The policy plan provides options for shaping the second phase of the Common European Asylum System (CEAS). This plan proposes to improve the definition of standards for protection at EU level by amending, in 2009, existing legal instruments such as the directive on standards for qualification as refugees or persons needing international protection. There is still no reference to environmental refugees but a window of opportunity has been opened. An important trend identified by the policy plan is that “*an ever-growing percentage of applicants are granted subsidiary protection or other kinds of protection status based on national law, rather than refugee status according to the Geneva Convention. This is probably due to the fact that an increasing share of today's conflicts and persecutions are not covered by the Convention. It will therefore be important during the second phase of the CEAS to pay particular attention to subsidiary and other forms of protection*” (Policy Plan 2008: 3).

This might be a start to the Commission’s work on the issue of environmental refugees. These proposals were endorsed by the European Council on 15 October 2008 leading to the adoption of a *European Pact on Immigration*. Apart from these measures, it is fair to say that the European Commission's awareness of this problem is still in its infancy.

At the Council of the EU in March 2008 Mr Solana predicted that “*there will be millions of environmental migrants, with climate change as one of the major drivers of this phenomenon*” (Commission and the High Representative 2008: 5). His intervention linked the matter to security considerations, and he invited the Council to formulate recommendations.

The Council of Europe, meanwhile, has been quite active on the issue. In 2006, Members of the *Parliamentary Assembly of the Council of Europe* (PACE) invited the Committee of Ministers to adopt a recommendation which recognises the existence and the scale of the problem of ecological refugees. A report is currently being prepared by the committee on migration, refugees and population. Furthermore, the *European Court for Human Rights* has been progressively integrating environmental problems into the domain of human rights. Some European countries have begun to give consideration to this issue. For example, in 2006, the committee of external relations and defense of the Belgian Senate adopted a resolution which calls for the promotion of the recognition of the status of environmental refugees in the relevant international conventions. Also, under Swedish and Finnish laws a person who has left his native country because of an environmental disaster may also be qualified for asylum. This

category is described as “*persons in need for protection*”. However, on the whole, most countries seem to be unwilling to give the problem the attention it deserves.

Future Perspectives

Chances to forge a consensus or a solution to this problem seem to be higher in the EU than elsewhere. According to its underlying values, environmental migrations cannot be ignored. Three points strengthen this theory.

First, the issue of migration and asylum is riding high on the European agenda even if this policy becomes more and more restrictive with the emphasis on security discourse. Second, it is possible to draw a parallel with the leadership taken by the EU in the fight against climate change. Finally, the EU is the world’s largest donor of aid. It should be pointed out that the division of competences between the EU and its member states is a basic guide to EU policy making. Legislation for the recognition and protection of, as well as support to environmental refugees would affect different fields such as environment, migration, human rights, humanitarian aid and development cooperation.

Consistent protection will inevitably be determined by several parameters such as the nature of the environmental disruption as well as level of migration or destinations of migrants. The diversity of possible scenarios causes us to consider different protection schemes which could be offered.

Many alternatives, using soft law (non-legally binding commitments) and/or hard law (binding laws or legally enforceable commitments), can already be analysed at EU level. We can distinguish completing actions to support environmental refugees and the development and implementation of a specific instrument for their recognition and protection.

Preventive and Completing Actions

Such actions can be developed at an early stage before new measures are enacted. The EU should support further research on the environment-migration nexus, strengthen its humanitarian aid and better control environmental disruptions by improving monitoring and tools for risk management.

The EU should also mainstream and support adaptation along with mitigation as part of its assistance to developing countries. EU aids could depend on the acknowledgement of the problem by local governments. Traditional knowledge and strategies of adaptation already developed by local people for achieving stable livelihoods should be supported. It should be noted that to favour migrations could be a legitimate coping strategy and a way to ensure adaptation. Adaptation has been incorporated in the updated *European Climate Change Programme* (ECCPII). A white paper on adaptation to the impact of climate change will be published in mid 2009. Governance will be an important topic within this document as well as integration of climate constraints in humanitarian and development policies. The financial aspect is a vital element but it is also the most contentious regarding the problem of its management and supply. One can imagine the creation of a special European fund similar to the one that already exists for refugees.

Lastly, development of cooperation and political dialogue with third countries will be crucial. This action should be particularly focused on good governance, management of natural resources, technology transfers, technical assistance and crisis management.

An Instrument of Protection Strictly Speaking

Given the weaknesses of the existing law to protect environmental refugees and the fact that only a small fraction of those victims can be granted international protection on an individual basis, new instruments must be developed (Cournil 2007). This section comes up with a range of suggestions un-

derlying the strengths and weaknesses of each of them. Some of the proposals can not be implemented by the EU alone but require larger international support.

- Possibilities of protection using existing tools

The 1951 *Geneva Convention* relating to the status of refugees is rooted in the notion of persecution, which excludes the new reality of enforced flight of civilians due to environmental degradation. “*The two criteria seen as preventing such a qualification are, for the majority, the recognized grounds of persecution and the notion of environmental disruption as amounting to persecution*” (Lafontaine 2007: 25). Furthermore, the mechanism does not fit with environmental refugees because of the individual recognition that mainly funds this system and it is not adapted to situations of crisis and urgency. European institutions and experts agree this convention should not be modified as protection towards currently recognized refugees could be weakened.

A protocol to the *Geneva Convention* would benefit from the experience of the convention and of the actual host authorities. Internally displaced persons (IDPs) would be left aside and the right of asylum would run the risk of implosion.

The existing category of IDPs could be considered. The *Guiding Principles on Internal Displacement* provide guidance covering all phases of displacement. There are nonetheless a number of significant gaps and grey areas needing to be addressed. The guiding principles are not legally binding and are far from being implemented. Such protection could be consistent for environmental refugees as most of them migrate internally after a natural disaster. But even if the list of persons covered is not exhaustive (“*in particular*”) it is not clear whether those who migrate due to gradual processes of degradation can be included. It could be a good way to skip the definition problem but the protection of environmental refugees would be diluted and questions of responsibility would be set aside. Nevertheless, the principles can be taken as a model for a similar development of international law for the protection also of environmental refugees.

At EU level the enlargement of the 2004 *Council Directive on Qualification* would be a solution. This directive grants subsidiary protection to persons not falling within the scope of the *Geneva Convention* but nonetheless in need of international protection. To date, there are few openings for environmental refugees. Proposals for amendments, especially regarding article 15 that defines the concept of “serious harm”, are coming as part of the second phase of the CEAS (Policy Plan 2008).

The council directive of 2001 on minimum standards for giving temporary protection could protect environmental refugees under certain conditions. This protection was created outside of the CEAS in the event of a “mass influx” of displaced persons. However, it is governed by activation on a case-by-case basis by the council. Another solution would be to insert in the directive a reference to environmental refugees. This option is worth thinking about especially because many member states already have systems of temporary protection.

The development of the EU regional protection programmes that reinforce the external asylum dimension could be a solution for specific regions worldwide. They focus funding on relief, rehabilitation and regional development. Bilateral protection (like the *Pacific Access Category* (PAC) between Tuvalu and New Zealand) could be a pragmatic and immediate response when risks are known. In such an agreement a country agrees to receive an annual quota of immigrants. Notice that the term environmental or climate refugees is not employed in the PAC, nor does it refer to the threat of climate change or state any responsibility for the displacement of Tuvaluans. Two negative aspects arise: the unfairness of the burden and the privation of the place of destination for the victims.

Frameworks for a New Instrument

A possibility at EU level would be the creation of a community status of environmental refugees, which has been requested in a written declaration to the European Parliament in 2004. Following the idea of

the global governance project a protocol could be added to the UNFCCC on climate forced migration (Biermann and Boas 2007). It would be a protection *sui generis* but only for climate migrants. The link with the responsibility of developed countries in climate change issues would be highlighted. This project also proposes the creation of a *Climate Refugee Protection and Resettlement Fund*. A third option could be the creation of a new specifically tailored international convention recognising “environmental asylum” with an inclusive definition, an approach *prima facie* (by group) and a mixed committee of qualification (Magniny 1999). The problem of the efficacy of such an initiative has to be considered beforehand, especially due to the costs.

Proposals of the Council of Europe

A report, initially called *The problem of environmental refugees*, is currently being prepared by the committee on migration, refugees and population. This report seems to be proactive. In October 2008, the committee opted for a more neutral title: *The need for international recognition and protection of environmentally induced migrants*. The draft recommendation and the draft resolution were adopted by the committee on 11 December 2008. The Assembly will debate the report at the first part-session of 2009.

The rapporteur, Mrs Acketoft, has chosen “the recently coined term “environmentally induced migration” which she regards as the most comprehensive and inclusive term for defining the global phenomenon”. She advises that “the Council of Europe should contribute by elaborating its own Framework Convention for the Recognition of Status and Rights of Environmental Migrants and introduce an additional Protocol on the right to a healthy and safe environment to the European Convention on Human Rights” (PACE Report 2008). In May 2008, in a hearing held in Paris, Mrs Acketoft said that “European countries should be at the forefront in addressing the problem of environmental displacement”.

Conclusion

Environmental refugees are currently seen *de jure* as a minor problem but could become *de facto* a major global crisis.

The EU has to set an example and could begin by adopting a definition of environmental refugees. The absence of an applicable definition is a fundamental difficulty which hinders action. Mrs Jean Lambert pointed out very well that “by recognising environmental refugees you recognise the problem. By recognising the problem you start on the road to accepting responsibility and implementing solutions” (Lambert 2002). The use of the term “environmental refugee” by the EU is essential as it implies that those persons are in need of protection/assistance. At its root asylum protection is offered to persons who have to flee unviable situations and seek sanctuary elsewhere. The concept of “refugee” is not reserved to the *Geneva Convention* which is fifty years old. Furthermore, it expresses well the forced nature of the departure unlike the term “migrant” that reflects a (relatively) voluntary kind of movement. Due to the complex interrelation with the *Council of the European Union* a more neutral term such as “environmentally displaced person” is more likely to be considered. It remains crucial that the term is inclusive and covers the status of persons in need of protection.

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Acronyms

ACIA	Arctic Climate Impact Assessment
CEAS	Common European Asylum System
CLIM	Temporary Committee on Climate Change
CRPRF	Climate Refugee Protection and Resettlement Fund
DCRA	Department of Community and Regional Affairs
DIPECHO	Disaster Preparedness ECHO
EACH-FOR	Environmental Change and Forced Migration Scenarios
ECCP	European Climate Change Programme
ECHO	European Community Humanitarian Aid Department
ECHR	European Court for Human Rights
EC Treaty	European Community Treaty
EFA	European Free Alliance
EPP-ED	European People's Party (Christian Democrats) and European Democrats
EU	European Union
GGP	Global Governance Project
GOA	United States General Accounting Office
IAWG	Immediate Action Working Group, a subset of the Alaska State Governor's subcommittee on climate change
IDP	Internal Displaced Person
IOM	International Organization for Migration
IPPC	Intergovernmental Panel on Climate Change
IPPR	Institute for Public Policy Research
MEP	Member of the European Parliament
NGO	Non-Governmental Organisation
PAC	Pacific Access Category
PACE	Parliamentary Assembly of the Council of Europe
PSE	Socialist Group in the European Parliament
RPP	Regional Protection Programme
UK	United Kingdom
UN-DES	United Nations Department of Social and Economic Affairs
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
USD	United States Dollars

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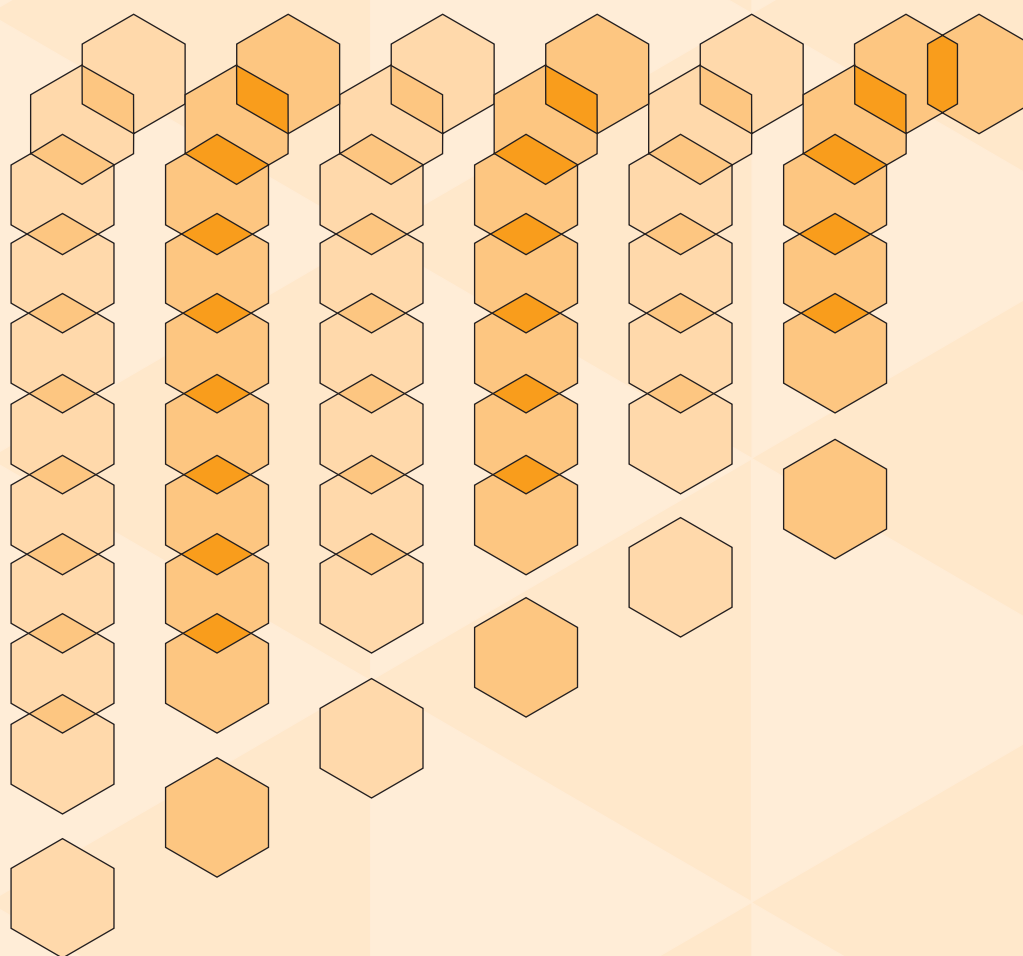
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UNU-EHS is part of the United Nations University (UNU) system comprised in a worldwide network of Research and Training Centres and Programmes (RTC/Ps).

The Institute aims academic excellence in principal priorities of its programme:

- **Vulnerability assessment**, resilience analysis, risk management & adaptation strategies within linked human-environment systems; and
- Internal displacement and trans-boundary **migration** due to environmental push-factors,

whereby the major drivers like land degradation, desertification; natural hazard events; gradual man-made and natural environmental and climatic change and variability including water depletion and quality deterioration are considered. Preparedness, adaptation and response are the main dimensions along which human security can be strengthened.



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