

**Symposium on
Environmental Change and Migration:
State of the Evidence***

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**KNOMAD Thematic Working Group on
Environmental Change and Migration**

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1. Executive Summary

On May 28-29, 2014 the KNOMAD Thematic Working Group on Environmental Change and Migration held its international symposium at the World Bank in Washington, D.C. The symposium aimed to assess the current state of the evidence on two dimensions of environmental change and migration: the environmental determinants of movements of people in both acute and slow onset situations; and the movements of people as an adaptation strategy in the context of environmental change. The goal of the symposium was to examine current knowledge about the interconnections between the environment and migration, discuss the policy implications of what is known, identify issues and methods to fill gaps in knowledge, and develop a research agenda to improve future evidence-based policymaking in this area.

The symposium resulted in four primary recommendations. First, longitudinal studies of adaptation are needed to ensure that the impact of adaptation programs, including those involving movements of people, are assessed over time. Economic, social, cultural and other impacts are likely to change as people move through the adaptation process. Understanding the long-term effects of different adaptation strategies will help policymakers and practitioners undertake better planning and implementation.

Second, since most migration, displacement, and relocation is likely to involve movements within and between developing countries, better understanding of internal migration, including rural-urban, urban-rural and rural-rural movements, as well as cross-border South-South migration will help policymakers plan more effectively to address the impacts on both source and receiving communities. Of particular importance is research on ways to ensure greater reliability, security and use of South-South remittance flows in the context of movements linked to climate change.

Third, the institutional frameworks for addressing migration, displacement and relocation in the context of climate change at the national, regional and global levels are not well articulated. A mapping exercise that identifies effective mechanisms for cooperation and coordination among different ministries and agencies would provide guidance to governments and international organizations as they move ahead in developing adaptation strategies involving human mobility.

Finally, decisions to migrate as well as the impacts of these movements are strongly affected by family and household vulnerability and resilience. A better understanding of ways to increase social protection of particularly vulnerable households will help policymakers identify ways to increase resilience among those who stay in place as well as those who move away from areas affected by climate change.

2. About the Symposium

In an effort to synthesize existing knowledge and generate new knowledge to guide policy decisions regarding migration and development, The Global Knowledge Partnership on Migration and Development (KNOMAD) has commissioned twelve Thematic Working Groups as a part of its initiative. In order to better understand the impacts of environmental change on migration patterns and their effects on development, a specific working group has been created to gather scholars who have engaged in recent research on the subject with policymakers, practitioners, and donors. The group is composed of representatives of key institutions with interest in environmental change and migration as well as leading researchers in the field. The institutions include those that have already done work in this area as well as those that bring perspective on specific populations and issues.

On May 28-29, 2014 the Thematic Working Group on Environmental Change and Migration held an international symposium at the World Bank in Washington, D.C. in order to help set the agenda for future KNOMAD activities in this area while providing important input to ongoing discussions in other international forums. The event helped assess future challenges and uncertainties, methodological gaps in knowledge, and identified areas where policy makers may need to intervene. The symposium, as the report shows, has proved to build a solid foundation for longer-term, more in-depth reflection throughout future global fora.

The symposium was structured around four sessions. On the first day, participants explored environmental change as a contributing factor in migration through acute events and slow-onset processes. The second day involved discussions about migration as a risk management strategy vis-à-vis environmental change and the economic and non-economic impacts of such movement. Afternoon breakout sessions divided both groups into smaller teams to identify research priorities to improve the evidence base regarding the interconnections between environmental change and human mobility. The groups discussed research topics, methodologies, and ways to disseminate findings to key policy makers and other stakeholders. The complete agenda can be found in Annex 2.

3. Background

Participants generally agree that the environment is but one of the many reasons that prompt people to migrate, sometimes operating on its own but more often through other mechanisms, particularly loss of livelihoods affected by environmental disruption (Black et al 2011, Foresight 2011, White 2011). Climate change may well increase the likelihood of both internal and international migration through four channels: increased drought and desertification, rising sea levels, more intense and frequent storms, and competition for scarce resources (Martin 2012). Recognizing these potential impacts, in 2010, Parties to the UN Framework Convention on Climate Change (UNFCCC) adopted the Cancun Adaptation Framework, which called on all countries to take “measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels.” To date, there is relatively little empirical research, however, that focuses on the impact of these forms of migration on the migrants who move, the communities they leave, or the destinations to which they migrate.

3.1. Environmental Change as a Driver of Migration

To better understand the determinants of movement—whether it is migration, displacement, or relocation—researchers should be able to tease out the various factors that influence movements. It is the combination of economic, social, political, demographic, and environmental variables that determines the decision to migrate or to stay in place and thus makes research on the determinants of migration from environmental change a complex, and multi-disciplinary undertaking.

The four ways in which environmental change may affect migration either directly or in combination with the other factors previously mentioned have only recently received attention from researchers. For example, changes in weather patterns can contribute to longer-term drying trends that affect access to essential resources and rising sea levels and glacier melt. The latter cause massive and repeated flooding and render coastal and low-lying areas uninhabitable in the longer-term and are hence likely to cause slow-onset migration. However, scenarios involving increased frequency and magnitude of weather-related acute natural hazards, such as hurricanes and cyclones, as a result of climate change and competition over natural resources that may exacerbate pressures contributing to conflict may create conditions that cause large-scale displacement.

In addition to studying how these four pathways interact with other variables to generate movement, other areas of research can focus on how vulnerability and resilience to environmental changes identify populations at risk and their ability to migrate. Understanding other types of movements, whether temporary or permanent, or internal or international, entails a thorough analysis of country immigration and resettlement policies, as well as international legal frameworks and government policies.

3.2. Migration as an Adaptation Strategy

To better understand the relationship among the multitude of drivers of migration, attention has recently begun to focus also on migration and adaptation. The Cancun Adaptation Framework placed migration firmly on the climate-change adaptation agenda. Climate adaptation strategies related to migration fall into two major categories: First, and more commonly, governments view adaptation to climate change as a way to reduce migration pressures and allow people to remain where they are. Second, migration may instead be seen as an adaptation strategy itself. Some countries see migration as a way to reduce population pressures in places with fragile ecosystems; others recognize that resettlement of some populations may be inevitable, but should be accomplished with proper planning. Research is scarce on both issues—the efficacy of strategies to reduce emigration pressures, and the impacts of migration on migrants and communities of origin and destination when used as an adaptation strategy. While a new body of research is beginning to assess the impact of migration as an adaptation strategy, further research is needed to fully understand the multiple impacts of migration on those most affected by environmental change.

Currently, a number of governments are considering planned relocation of their citizens from environmentally hazardous areas to new sites, and research should highlight lessons learned from other efforts to move people, in particular, development-induced displacement and resettlement, and refugee resettlement. The former occurs when development projects, such as hydroelectric dams, require the removal of large numbers of people and their relocation elsewhere. Early research on these projects raised many questions about their impacts on the resettled groups, many of whom were worse off after relocation than they had been previously. In contrast, refugees choose to apply for resettlement although they do not always have much real choice since they may be unable to return home or to integrate locally in their place of asylum.

Finally, examining law and policy may help researchers identify the opportunities and barriers of using migration as an adaptation strategy. In certain contexts, many likely destination countries do not have the legal frameworks for admission of those seeking to migrate across international borders because of environmental factors. Whereas protection of refugees derives from international legal obligations, migration law is discretionary. A gap exists for those who want to move but do not fall into a protected category, and who are ineligible for another kind of visa (work, education, etc.). Most countries use strict admissions categories that generally focus on ties to the destination—family and employment are most common. Many do have humanitarian categories but mostly related to refugees—that is, those who have a well-founded fear of persecution on account of their race, religion, nationality, membership in a particular social group or political opinion. The vast majority of persons moving at least in part because of environmental change would not qualify under these categories.

In summary, the symposium aimed to draw attention to a number of critical questions and assess the current state of the evidence regarding the environmental determinants of movements of people in both acute and slow onset situations, and how movements of people can be used as an adaptation strategy in the context of environmental change. Examining this current knowledge and the potential policy implications of what is known identified gaps and methodologies that helped develop a research agenda to improve future evidence-based policymaking in this area.

4. Environmental Change as a Driver of Migration

Migration decisions depend on a host of social, economic, political, and demographic factors that determine whether migration is feasible and desirable. During the symposium, these two forms of environmental hazard—acute and slow onset—were discussed separately to assess what is known about each aspect in terms of the forms of movement they generate.

4.1. Acute Onset Events

The Internal Displacement Monitoring Centre finds that 31.7 million people were displaced in 2012 due to sudden-onset disasters and that most of this displacement is due to weather-related events. In the last five years alone, about 80% of such displacements occur in Asia. Studies show that most displacement is internal and that disaster-induced displacement can be protracted, with recent reports from the Philippines claiming that 2 million people are still displaced 7 months after the disaster.

Displacement from disasters is increasing and is likely to increase in the future. The dramatic decrease in number of fatalities associated with sudden-onset disasters in the past few decades is evidence of success. Despite more people being affected by natural disasters, fewer people are dying. When people survive, though, their housing is destroyed and they are displaced. When focusing on climate change migration and displacement, it is important to remember those who are affected but not necessarily displaced.

Displacement from sudden-onset disasters is likely to increase in the future as a result of the effects of climate change. The IPCC has reported that sudden-onset disasters related to weather are expected to grow in intensity and unpredictability. Climate change may also increase sudden-onset disasters that do not displace large numbers of people, through increased heat waves similar to the events in Europe in 2003. With the exception of wildfires, heat waves generally do not destroy property or displace people.

Recent empirical work attempts to better understand the relationship between weather shocks and types of movements, particularly in distinguishing between short and long-term movements. In the case of rapid onset events, people often do not remain in place due to destruction at the place of origin, illustrated in the case of Typhoon Haiyan and coastal communities in the Philippines. A forthcoming World Bank study using household surveys in five Middle East and North Africa (MENA) countries and the Sundarbans suggests that people generally do not move for long periods because of acute onset events. Evidence from farmer evacuations in Karachi following the 2010 Pakistan floods illustrated that better economic situations in the place of destination influenced individuals' decisions to migrate. Yet, large weather shocks generally only temporarily affect migration and the general conclusion is that people do not want to move if they can avoid it.

Other research has determined that recurrent displacements often occur when the same communities are affected by recurrent acute events. A lack of longitudinal data makes it difficult to determine the longer term effects of such recurrent displacement. What types of adaptation strategies do people subject to recurrent acute events adopt? Are there tipping points that lead people who are routinely displaced for shorter periods to relocate permanently? To what extent are remittances received by households in communities affected by recurrent acute events used to build resilience in situ (for example, by constructing houses that can withstand storms) and/or pave the way for migration? These questions are difficult to answer with research that provides a snapshot of responses at only one point in time.

The use of mobile phone data has primarily focused on displacement but immense potential exists for its application toward other aspects of migration. Historical data often show where people go for holidays and vacations, which signals potential social networks. These networks may help predict where people go in the context of a natural disaster. Mobile data applications have been used primarily for health-related issues (i.e. tracking malaria in Zanzibar in 2009), with some population displacement and cholera tracking following the Haitian earthquake in 2010. A current project at the United Nations University-Bonn analyzes mobile data in the context of the 2013 Cyclone Viyaru in the Bay of Bengal. Nathan Eagle, in conjunction with Jana Mobile and MIT, is heading a pilot project that distributes cell phones in the wake of natural disasters with the understanding that people participate in follow up phone surveys.

The risks associated with increased acute onset events in the wake of climate change require attention from both development and disaster management efforts. Disaster Risk Reduction (DRR) and potential insurance mechanisms may help address the damage associated with climate change, but policymakers need to consider potential climate risks in Disaster Risk Management and DRR planning to identify vulnerable areas such as coastal urban cities. While the Disaster Risk Reduction agenda encourages countries to address the *root causes* of natural disasters through their development strategies, there still remains a need to incorporate migration, displacement, and relocation due to acute onset events directly into country DRR strategies themselves. Strong DRR strategies help reduce forced migration and stabilize populations in areas affected by degradation or natural disasters. Furthermore, the types of movement associated with sudden onset events need to be incorporated into country adaptation strategies as well. By helping to reduce risk to lives, livelihoods, and ecosystems, and diversify income, migration as an adaptation strategy should link to emergency response to ensure the safety and security of migrants facing environmental pressures.

4.2. Slow Onset Processes

Changes in weather patterns can contribute to longer-term drying trends that affect access to essential resources such as water and negatively affect the sustainability of a variety of environment-related livelihoods, including agriculture, forestry, and fishing. Rising sea levels and glacier melt may cause massive and repeated flooding and render some coastal and low-lying areas uninhabitable in the longer-term. These scenarios are likely to cause slow-onset migration, in which people seek new homes and livelihoods over a lengthy period as conditions

in their home communities worsen. In some cases, the migration will likely be permanent and in other cases to be circular.

Slow-onset processes present a host of methodological challenges for researchers. Disentangling environmental change as a driver of migration is difficult, but discussions highlighted the importance in focusing on migration that is already occurring with regard to risk. Environmental change will amplify existing migration trends, with population growth in urban areas and growing urban vulnerability signaling a double jeopardy future. Movement toward rapidly growing urban areas – an estimated 400 million by 2015 – presents enormous challenges for city planners. If slow onset processes lead to an amplification of existing trends, what are the impacts of environmental migration on urbanization and urban planning?

Slow-onset processes are especially challenging for governments. It is generally easier to find funding for acute crises than it is for addressing slow-onset situations. In addition, government bureaucracy complicates coordination as it often unclear which agencies share responsibility for climate change or migration initiatives. Migration that could occur sometime in the long-term future is difficult for governments to understand. In the United States, climate change and migration are especially difficult for governments to address due to their political nature. Adaptation may be the most politically feasible conceptual framework for policymakers to digest. However, policymakers need to recognize that this is a problem that is happening now and not just a challenge for the future.

Due to the politically sensitive nature of issues like climate change and immigration, more research should focus on public perceptions of environmentally induced migration to help frame the issue in a less divisive manner. Media representations of such migration tend to be sensationalized portrayals like “The Human Tsunami,” which make the topic even more politicized. Anthropologists and behavioral psychologists have studied the way in which the public perceives immigration reform, finding that the framing of the issues greatly affects responses to specific policy questions. Raising the visibility of environmentally induced migration may involve avoiding polarizing language that could potentially disengage policymakers.

Research is also needed to identify which migration may be temporary and which will be more permanent in the context of slow onset factors. The decision as to whether return is possible involves a range of variables, including the extent to which the environmental causes—either direct or through other channels—are likely to persist.

Policies in the receiving communities and countries will also affect the likelihood for return or settlement in the new location. Determining whether those crossing borders in slow onset situations should be permitted to remain are particularly difficult questions since the migrants may not be in imminent danger if returned home; yet, if conditions worsen, as may be expected in some countries affected by rising sea levels, they may face life threatening situations in the future. At present, no countries have explicit policies with regard to admission of such individuals. In addition to immigration policies, policies affecting return and settlement include land use and property rights, social welfare, housing, employment, and other frameworks that

determine whether individuals, households, and communities are able to find decent living conditions and pursue adequate livelihoods.

There is limited data on “hidden” migrants that fail to register, or fall outside of visa categories and bureaucratic descriptors. This creates certain biases between countries in the Pacific region, for instance, that have proper migration channels and those that do not. Jane McAdam’s work refers to the “Domino effect” to highlight another issue of invisibility as people move from rural to urban areas. These individuals may cite a range of reasons for moving (i.e. lack of livelihood opportunities, flooding, etc.) but never cross an international border. Yet, as urban centers like Dhaka become overcrowded, these individuals may move again but offer other reasons (e.g. education options) and will not be counted as persons who migrate in the context of environmental change.

5. Migration as a Risk Management Strategy

The language of the Cancun Adaptation Framework placed migration firmly on the climate-change adaptation agenda when it called on governments to take “measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels.” Governments commonly view adaptation to climate change as a way to reduce migration pressures and allow people to remain where they are by modifying agricultural practices, managing of pastoral lands, infrastructure such as dykes and coastal barriers, fishing patterns and other strategies to reduce pressures on fragile eco-systems.

But migration may instead also be seen as an adaptation strategy itself. Some countries see migration as a way to reduce population pressures in places with fragile eco-systems while others recognize that relocation of some populations may be inevitable, and should be accomplished with proper planning. Moreover, migrants already living outside of vulnerable areas may be important resources to help communities adapt and respond to climate change, a perspective that is of particular interest to development policy makers. Just as migrants are contributing to the broader development of their home countries, such strategies envision that the diaspora may have the technical knowledge and financial resources to help communities cope with the effects of climate change. Finally, in the absence of appropriate migration strategies, populations that should be relocated from hazardous situations may be trapped in place, unable to leave on their own. Discussions focused on who are the most vulnerable to environmental change, what are sources of resilience to adapt to environmental change, and what ways do vulnerability and resilience affect decisions to move and the timing, scale and form of migration that may take place.

Environmental drivers only partially explain migration decisions, as households facing similar environmental changes may respond differently. Understanding why people faced with similar macro-level factors move or stay is important, and research on vulnerability and resilience to environmental changes may help policymakers and practitioners assess the degree to which people need to move and their ability to avoid harm. The most vulnerable populations may well

be those who are trapped in fragile eco-systems, unable to support themselves there but unable to migrate to places of greater safety and opportunities.

Remittances and Social Networks

Remittances provide one of the most direct links between migration and adaptation in several ways. Remittances allow for household diversification, sectorial diversification, and geographical diversification. Studying remittances in the wake of natural disasters offers important insight, as it is often the first form of aid into the country. In Haiti, families most affected by hurricanes did not have access to remittances as a coping strategy. In post-drought circumstances, remittances serve as direct relief and are used to procure provisions during periods of extreme drought and flooding. Remittances are used to rebuild livelihoods by helping purchase agricultural inputs such as seeds, livestock, construction materials, and irrigation systems. Research on households in Nepal revealed that many considered remittances as a vital safety net for drought and flood seasons. Remittances also serve as a networking activity, and there is a need to understand how social networks relate to addressing and managing shocks. Historical data often show where people go for holidays and vacations, which signals potential social networks. These networks may help predict where people will go in the context of a natural disaster and tracking remittance flows may offer further insights.

Social networks help explain how households remain resilient when confronted with rapid or gradual environmental change. They also explain why people may choose to remain in place. Place attachment may illustrate why some prefer natural risks to the social risks that result from losing social networks. Migration could lead to a reduction in social capital, as evidenced in rural Thailand where places that witness large-scale migration have a disassociation of rural communities as a consequence of people leaving.

Risk Perception

Adaptation as a risk management strategy also involves understanding how individuals, households, or communities perceive risks. Risk response, risk interpretation, and risk perception all represent important nuances that factor into migrants' decision making. People may not even need to understand the hazard in order to be motivated to move, but they need to believe that the hazard really exists they need to protect themselves. How risks are perceived often dictates the management strategies used to mitigate those risks. It is important to distinguish what types of risks individuals may encounter in the wake of environmental change. Risk perception differs from risk interpretation, as the latter includes aspects such as cultural values and social norms. While a community may perceive environmental threats, movement from the area often depends on that community's past experiences with similar events or how the community confronted those threats. Even if individuals perceive and interpret an event as a significant risk, their risk response incorporates other factors. Migrants may suffer economic, physical, or cultural losses as a result of migration.. Risk perception and interpretation must be distinguished from risk response since people's responses incorporate their ability to move, the losses resulting from such moves, and the cost-efficiency of moving. The work of Yale professor Ahmed Mobarak focuses on incentive systems to move people out of famine prone areas.

Economic and cultural factors in migration as a risk management strategy

Disentangling purely economic and environmental migration is complex. In Pakistan, for example, researchers ran a seasonal migration model and found that 70 percent of respondents migrated due to a natural disaster. However, this was during monsoon season and respondents framed weather events as natural disasters, which signals that perceptions frame impacts. Quantitative analysis of flooding in Nepal reveals 20% of migration is attributed to such events, which is equivalent to historical flows and suggestive of economic drivers.

People may not move for several reasons, which may include issues of property rights and overall lack of institutions responsible for proper governance. Studies in Bangladesh reveal the positive impacts of flooding on agricultural production in the following year, which may explain why some seasonal weather shocks incentivize people to stay in place or return after the floods have diminished. Climate change is just one of many potential risks that individuals face, and they must often prioritize under resource constraints. Poverty is a significant problem and the most vulnerable are often the least likely to possess the means to move. Even those households with the financial means to migrate may choose to remain in place if proper information is not disseminated.

Economic and cultural factors can work in some combination to explain migratory decisions. In India, relocation entails a drop in social hierarchy as those resettled are considered a lower caste. They enter the labor market at a lower level as well, which has also been found in parts of the Pacific region as well. But focusing solely on material losses does not recognize the importance of social and cultural aspects that may have long-term consequences that could potentially impede the process of adaptation and recovery. This is especially relevant for indigenous populations, which number almost 370 million worldwide, who are most likely to suffer the impacts of environmental hazards such as deforestation, oil spills, or nuclear contamination. Anthropologist Stuart Kirsch studies indigenous populations and provides a framework that categorizes the various types of loss these communities experience. Large-scale infrastructure projects in Vietnam and China may leave migrants better off economically, but what about the cultural values and traditions lost in the process?

6. Policy Implications

Studying law and policy helps to identify the opportunities and barriers to the use of migration as an adaptation strategy to mitigate the risks associated with environmental change. With regard to displacement and protection frameworks, the Guiding Principles on Internally Displacement offer a bottom-up approach that demonstrates regional settings as a productive arena for potential initiatives. But while the Guiding Principles offer a normative framework for those who are internally displaced by disasters, the solutions for those displaced by disasters may differ from those displaced by conflict or other reasons, particularly when a community is destroyed or rendered uninhabitable because of the disaster. While most countries have some kind of legal framework for disaster response, and increasingly for disaster risk reduction, laws on disasters have not incorporated the Guiding Principles. And yet, there are clearly human rights issues

associated with disaster-induced displacement, which include security and gender-based violence in temporary shelters, evacuations, discrimination in assistance and solutions. The Brookings Institution has conducted workshops in regions throughout the world, finding that government officials have expressed significant interest in incorporating the concerns of the displaced. Mobility partnerships that the European Union is working on for non-member states or the E.U. Directive on Rights of Migrants who are seasonal workers present other areas that could inform research in the field.

Current human rights legal frameworks are able to protect certain categories of people, but application of “imminent risk of harm” remains an issue. The grey area that separates sudden events and slow-onset processes has severe policy implications as many of the current frameworks apply to when slow onset processes turn into rapid onset events, which is often too late.

Understanding the drivers that explain migratory decisions in the wake of environmental change is important, but a focus should shift to the political and institutional frameworks that are designed to keep people in place. Neil Adger and Oliver Bakewell, for instance, study place attachment and the sedentary bias of development actors that explain how development policy keeps people in place. What can be amended and applied from the existing frameworks, like development-forced displacement and resettlement framework, for environmental migration? Many resettlement policies tend to be sectoral, but these approaches need to be holistic in order to better understand vulnerability. Vulnerability shifts can occur that result in exchanging certain vulnerabilities for others. Recent research in Vietnam examines household assets and how resettlement programs allowed housing and hazard vulnerabilities to be overcome, albeit at the cost of assets that were critical to long-term resilience (financial assets, human-psychological assets, livelihood assets). In Vietnam, migration as an adaptation strategy is mainstreamed into development and urbanization policies, and is thus heavily regulated. However, such policies can neglect human agency and dignity.

While the World Bank case studies collected by Elena Correa provide a good start, there is an overall lack of understanding of good practices in relocations and preventive resettlement. Most are negative, which include people relocated from flood plains that returned due to livelihood opportunities or people who moved into areas vacated by those resettled to safer areas. Even if organizations can identify ecologically fragile and vulnerable areas, convincing people to relocate against their will is extremely problematic. Evidence from such areas, like the Sundarbans, suggests that governments are doing little to incorporate protection into legislation other than constructing embankments in West Bengal.

7. Knowledge Gaps

Terminology

Environmental Change and Migration

The multitude of drivers involved in environmental change and migration complicates clearly defining what constitutes environmentally induced migration. A grey area exists between forced and voluntary migration. Migrants often have mixed motives in moving. At times, certain factors, such as environmental change, may push people to leave their home communities but other factors, such as economic opportunities elsewhere, may pull people to new destinations. There may also be tipping points during which people who have chosen to remain at home find they can no longer do so. Helping policymakers better understand these processes could lead to more appropriate interventions.

Adaptation

The most recent IPCC report implies four definitions for adaptation, clearly illustrating the lack of consensus regarding its use. Even though the Cancun Adaptation Framework brought attention to migration in the context of climate-change adaptation, it is necessary to build a consensus regarding the term and whether it is appropriate. Is adaptation an appropriate term? Not sure. We need to know what we are comparing to. Is it better than the situation before? Is it compared to the population in the host community? Sometimes those that relocate are in a better position than those in the host communities. If we are comparing to host communities, what is the common denominator? Is there a threshold to some internationally recognized standard (e.g. refugee field has Sphere standards)? Is it to be established? More research on receiving communities needs to be done. What does adaptation mean, and how is it distinguished from coping, risk management, and mitigation? While coping is an immediate reaction that involves short-term survival goals, adaptation implies a longer-term effort to mitigate chronic risks. The recent Rainfalls Study conducted by UNU-Bonn illustrates that households use migration as adaptation in various forms but outcomes depend on household profiles. Many of those who benefit most from migration are those who are already more resilient than their neighbors.

Slow Onset Versus Rapid Onset

With regard to environmental drivers of migration, there is a lack of clarity in the distinction between sudden and slow-onset disasters. An earthquake is a sudden-onset disaster, occurring in the course of a few minutes with little warning. A drought that develops over the course of a year is a slow-onset disaster, but a grey area exists between the earthquake and the drought. For example, it is difficult to categorize an event that develops over the course of several months, like the Pakistani floods in 2010. Heat waves and wildfires also present definitional challenges. These distinctions matter when discussing international and national preparedness and response systems. More attention needs to be devoted to the intersection between sudden and slow-onset disasters as sudden-onset disasters can exacerbate slow-onset processes. Robin Bronen, for instance, suggests that stronger storms are increasing coastal erosion in Alaska, making areas uninhabitable. Many times the natural hazard becomes the tipping point, as the drought in Somalia triggered a famine in the context of persistent political instability. What are adaptation strategies in slow-onset scenarios that create greater resilience in disasters situations that allow people to stay and adapt in situ?

Displacement and Cross-Border Movements

Launched in 2012 by the Governments of Switzerland and Norway, the Nansen Initiative is a state-led, bottom-up consultative process intended to build consensus on the development of a protection agenda addressing the needs of people displaced across international borders by natural hazards, including the effects of climate change. While the initiative's five regional consultations are attempting to address the issue, there is uncertainty regarding the extent of international migration and cross-border displacement. While some reliable information exists regarding movements out of resulting from the Haitian earthquake and Somalia famine, most estimates are haphazard. A big gap remains on the lack of data on cross-border displacement due to natural disasters; there is uncertainty regarding how large these numbers may be. The International Organization on Migration (IOM) collects significant amounts of information from displaced populations through its Displacement Tracking Matrix (DTM) and is currently looking for strategic partners to help analyze data from the Philippines. The Post-2015 Framework for Disaster Risk Reduction (HFA2) process is an example of potential government commitment to tracking post-disaster displacement.

While some overall estimates of the number of those displaced by sudden-onset disasters exist, little is known about the patterns and cycles of displacement. Governmental tracking systems are inadequate – particularly for those who are displaced and do not go to official shelters. For instance, figures are still uncertain for the number of people displaced by Hurricane Katrina in 2005, although research has provided interesting insights in recent years. But many questions remain on how many times people are displaced and where people go when they leave temporary shelters and are unable to return home. In addition, little is known about the particular challenges of displacement when disasters occur in urban settings. What are the particular needs of squatters? What do solutions mean in urban settings? What does displacement mean for those who were homeless before the disaster – can you be displaced if you had no fixed abode to begin with? Creating a set of criteria for the threat people are under and the extent to which they can come home would be helpful, as no work has been done on it. However, research should focus on what constitutes as “success” in the context of resettlement. Some research suggests that establishing success at the earliest stage can only occur at the second generation, Costa Rica's recent history offers a case study in managed planning resettled people in successful ways.

Migrants and Host Communities

Another knowledge gap focuses on the potential impacts on migrants in host communities. Interviews with Pacific Islanders migrating to New Zealand and Australia in both origin and destination countries have revealed the fear of becoming second-class citizens in receiving communities. In India, relocation entails a drop in social hierarchy as those resettled are considered a lower caste. In both India and the Pacific, these migrants also enter the host community labor market at a lower level than where they originated. There is a limited understanding of what happens when people go to host communities. The lack of data on these “hidden” migrants that fail to register, or fall outside of visa categories and bureaucratic descriptors, which often creates certain biases between countries in the Pacific region, for instance, that have proper migration channels and those that do not. In addition, very little research exists that captures the impact of migrants on the host communities themselves. The economic costs associated with social assistance programs (e.g. healthcare and education,) and

consumption of local natural resources can all significantly impact a host community. Competition over jobs can also exacerbate any underlying tensions between migrants and those living in potentially already impoverished host communities.

Remittances

Could incentives be put in place to encourage remittance income to be put towards resilience building efforts in home countries? For instance, government could provide matching funds. Are there ways to facilitate remittance flows by reducing fees or increasing mobile fund transfers (e.g. M-pesa in Kenya)? There is little evidence about the mechanisms for remittances to be facilitated as an adaptation strategy. National adaptation plans, for instance, do not generally mention remittances. Does migration create additional risks for those involved? Long-term studies are needed to better understand how households receive remittances. One criticism is that remittances service consumption (food, consumer goods, religious purposes, gifts). However, floods often constrain communication and transportation, so remittances are used to purchase means of transportation, such as motorbikes, and communication, such as cell phones. Research should also focus on targeting migrant sending households and offer financial advice.

A Bi-Directional Relationship: Migration as a driver of environmental change

Very little research focuses on the impact of migration patterns on the environment. Most empirical focuses on land use (i.e. forest cover, land degradation) and the relationship among migration, urbanization, and remittances are changing forest cover and forest use. The prevailing narrative of these few studies suggests that urbanization leads to deforestation in order to meet the dietary purposes and fuel needs of urban populations. However, some research in the United States demonstrates that migration and urbanization leads to forest recovery, but the issue is nuanced and requires more focus from researchers. Other examples of crop conversion programs in China, and trapped populations in the Amazon, highlight the need for further research into the bi-directional relationship between migration and environmental change.

8. Methodological Issues

The symposium discussed a number of methodological issues and methods to improve understanding of the interconnections between environmental change and migration.

Quasi-based Experimental Methods

Multidisciplinary approaches and qualitative research should supplement quantitative data in order to measure social norms and cultural aspects in the context of environmental migration. Micro-scale analysis is important since it questions assumptions researchers may have about human environmental systems. For instance, flooding is regarded as an abnormal threat, but in the Mekong Delta is a normal occurrence. A micro-scale households approach helps understand stressors and avoid imposing incorrect assumptions. At a basic level, hazards manifest themselves very differently. The impact of flooding on a vulnerable population depends on their

geographic location (i.e. elevation) and may actually be beneficial for farming practices. In the Amazon flood plains, migrants face a ten-year flood every year and there are often constant levels of multi-locality and forest dependent communities have complex forms of mobility that complicates settlement policies. Including environmental and migration questions on national census, Demographic and Health (DHS), Living Standards Measurement (LSMS), or Multiple Indicator Cluster (MICS) surveys may help capture household or regional specific characteristics. Asking participants what questions they think are most relevant helps avoid imposing incorrect assumptions.

Forecasting

Forecasting environmental migration remains an area of immense potential. Is it possible to locate vulnerable populations and identify who is exposed and at what points? No good forecasting tools exist that help identify those who may be displaced in the future, especially if research shows that trapped populations are in danger just as much as those who move. Better forecasting is essential in sudden- and slow-onset situations. Agent based methodologies, forecasting, and hot spot mapping may all help to locate vulnerable populations and identify who is exposed to the effects of environmental change. However, the use of big data—such as massive open source media archives—to forecast movements contains a level of “noise” that makes it difficult to distill useful information. While historical analogues are helpful to frame discussions, the scarcity of available land could make such comparisons with historical case studies not feasible. Vulnerable populations may not have the opportunity to move to uninhabited places, and thus move to areas of risk. Hotspot mapping may be one approach that helps project areas of vulnerability in both areas of origin and destination.

Longitudinal Research

Much of the symposium discussions centered on the need for longitudinal data and studies to help researchers understand the long-term effects of environmental change on migration decisions. Properly studying the impact of migration on adaptation and resilience also requires longitudinal studies. Longitudinal research may further help understand the distinctions between recurring movement in the face of repetitive shocks and first movements.

Longitudinal studies are particularly needed to assess the impacts of adaptation programs, including those involving movements of people, over time. Researchers often do not use the term “climate change” due to the use of cross-sectional data. Instead, specific weather shocks are often used in household surveys. Longitudinal data could help draw conclusions about longer-term occurrences such as climate change. Economic, social, cultural and other impacts are likely to change as people move through the adaptation process. Understanding the long-term effects of different adaptation strategies will help policymakers and practitioners undertake better planning and implementation.

Adequate funding is an issue for multi-year research. The few longitudinal studies usually result from government funding, which illustrates that environmentally induced migration is as much a policy question as it is a research question. The use of existing datasets, therefore, may serve as a useful approach when funding for longitudinal research is restricted. Few datasets possess all necessary pieces, particularly longitudinal datasets that capture slow-onset emergencies. Recent research focusing on internal migrants in Pakistan utilized existing panel data that covered a 21-

year period in order to study whether rainfall and extreme heat affect agricultural practices and long-term migration practices.

Mobile Data

Despite the potential for using mobile data to study migratory patterns of people in the wake of sudden onset events, several limitations exist and common misconceptions need to be avoided when attempting to apply “big data” toward any study of population movements. Data quantity does not equate to data quality. Mobile data is heterogeneous (e.g. socio-economic background of costumers, market share of among mobile operators) and it suffers the same limitations as other types of data, which requires that it be cleaned and vetted for proper analysis. Other challenges exist as well. For instance, billing information and privacy concerns complicate easy data collection while SIM cards can represent individuals, households, or communities.

While real-time analysis is technically possible when utilizing mobile data, it is important to consider other aspects such as scalability, cost-effectiveness, and the value added of such applications. Mobile data is a tool and not the solution. While it possesses significant potential, it still requires that those using it have expertise in the field. Remote sensing data should supplement, but not replace, qualitative field data and collecting methods like household surveys.. But questions need to be included to capture characteristics of migrants (e.g. motives) and not just see where they are going. Data is difficult to access and longitudinal data is desired despite the need for informed consent.

9. Conclusions and Next Steps

The symposium participants came to consensus on four priority areas for research and analysis. First, **longitudinal studies of adaptation are needed** to ensure that the impacts of adaptation programs, including those involving movements of people, are assessed over time. Economic, social, cultural and other impacts are likely to change as people move through the adaptation process. Understanding the long-term effects of different adaptation strategies will help policymakers and practitioners undertake better planning and implementation.

Second, since **most migration, displacement, and relocation is likely to involve movements within and between developing countries**, greater understanding of internal migration, including rural-urban, urban-rural and rural-rural movements, as well as cross-border South-South migration will help policymakers plan more effectively to address the impacts on both source and receiving communities. Of particular importance is research on ways to ensure greater reliability, security and use of South-South remittance flows in the context of movements linked to climate change.

Third, **the institutional frameworks for addressing migration, displacement and relocation in the context of climate change at the national, regional and global levels are not well articulated**. A mapping exercise that identifies effective mechanisms for cooperation and coordination among different ministries and agencies would provide guidance to governments and international organizations as they move ahead in developing adaptation strategies involving

human mobility. Also useful would be continuing monitoring of the ways in which National Adaptation Plans, Poverty Reduction Strategy Papers, and Disaster Risk Reduction strategies address issues related to environmental change, migration and development to identify improvements in planning for migration, displacement and planned relocation that could be made.

Finally, **decisions to migrate as well as the impacts of these movements are strongly affected by family and household vulnerability and resilience.** A better understanding of ways to increase social protection of particularly vulnerable households will help policymakers identify ways to increase resilience among those who stay in place as well as those who move away from areas affected by climate change. Making adaptation as feasible as possible for those who wish to migrate embodies elements of agency. This might mean removing unnecessary barriers for people who may want to participate in migration. For trapped populations, actively plan for situations in which these people may need to be relocated. Positive resettlement strategies allow individuals to maintain their livelihoods and social networks.

Participants emphasized that research alone will be insufficient in affecting policies, however, unless it is presented in a manner that is easily digestible and practical. This may entail disseminating information to advisors, as they are the direct channels to policymakers. This also means translating academic research in order to transmit message to donors as well. As one policymaker stated, researchers need to distill their findings into two-page briefs. There are several processes under way that provide opportunities to reach a wider policy audience. These include the deliberations of the Nansen Initiative on cross border movements in the context of natural disasters as well as upcoming international conferences on the post-2015 development agenda, the UN Framework Convention on Climate Change, the Hyogo Framework for Disaster Risk Reduction, and the World Humanitarian Summit.

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Annex 1 – List of Participants

Isabel M Borges

Isabel M Borges is a PhD Research Fellow from the University of Oslo, Faculty of Law at the Norwegian Centre for Human Rights. She is currently a visiting researcher at Georgetown Law. While at Georgetown she will be researching topics in environmental displacement and human rights. Previously, she worked for the European Commission in Brussels on the EC Communication on sustainable development and developed guidelines for European governments to enforce the Agenda 21 at local level. She also performed evaluation of tenders, impact assessments and followed-up the principles, priorities, intermediate objectives and conditions of the accession partnership with Bulgaria, Romania and Turkey and still acts as a Legal Adviser on internal market issues. Borges has also worked for several grass-roots international NGOs being responsible for development of policy initiatives, policy dialogue, and stakeholder capacity building, on EU and UN social and human rights issues such as fundamental rights, gender equality, corporate social responsibility, migration, health, poverty, social inclusion and violence against women, as well as, coordinating and managing several EU research funded projects.

Soumyadeep Banerjee

Mr. Soumyadeep Banerjee, an Indian national, is the Migration and Population Specialist at the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu. Mr. Banerjee specializes in research on labor migration, remittances, vulnerability, and adaptation. Soumyadeep has undertaken research studies in Bhutan, China, India, Nepal, and Pakistan. He is also pursuing a D.Phil. degree in Geography from the University of Sussex, United Kingdom. His D.Phil. research examines the circumstances under which labor migration can build adaptive capacity in sending households and/or increase community resilience. He holds an M.Phil. degree in Population Studies and a M.A. degree in Geography from the Jawaharlal Nehru University, India, and a M.A. degree in Migration Studies from the University of Sussex, United Kingdom.

David López-Carr

David López-Carr is Professor of Geography and Director of Latin American & Iberian Studies at the University of California, Santa Barbara, where he directs the Human-Environment Dynamics Lab (HED). López-Carr received a PhD in Geography from the University of North Carolina in 2002, where he held a two year NIH post-doctoral fellowship in Biostatistics in the School of Public Health and Carolina Population Center. He has lived, worked, and traveled extensively in Latin America and in over 70 countries worldwide and speaks Spanish, Portuguese, Italian, French, and rudimentary Q'eqchí Maya. López-Carr's research focuses on links among population, migration, health, rural development, agriculture, and forest resource use and conservation through ongoing projects in Latin America, Africa, and Asia. He has authored over 120 scientific publications. His research is conducted with colleagues and students thanks to funding from over 50 fellowships, grants, and awards from NASA, NSF, NIH, the Mellon and Fulbright Foundations, and numerous other sources.

Diji Chandrasekharan

Diji Chandrasekharan Behr is a Senior Natural Resource Economist in AES and manages the Program on Forests (PROFOR). Diji works on the economic and institutional dimensions of: natural resource management, small and medium-scale and community-based forest enterprises, adaptation to climate change, and scaling-up tree based systems in agricultural lands. She supports Bank operations in East Asia-Pacific, Africa, and Europe and Central Asia. Diji holds a Masters in Agriculture and Applied Economics from the University of Wisconsin-Madison and a Ph. D in Natural Resource Management and Policy from Cornell University.

Jane Chun

As a researcher and a humanitarian practitioner of six years, I have recently completed my DPhil at the University of Oxford in 2014, and have worked with various international organizations in the US, Sri Lanka, and Vietnam, in particular with UNDP and IOM. My DPhil thesis investigated the link between environmental stress and human mobility in the Mekong Delta, Vietnam, through the lens of vulnerability and livelihoods. This includes not only migration, but also immobility, and government resettlement programs targeting people living in areas prone to natural hazards. I have also worked as a consultant with the Refugee Studies Centre (RSC) in the areas of environmental displacement and durable solutions for protracted refugee situations. I received my MA from American University in International Peace and Conflict Resolution, and prior to this, was a classical pianist.

Beth Ferris

Prior to joining Brookings in November 2006, Ferris spent 20 years working in the field of humanitarian assistance, most recently in Geneva, Switzerland at the World Council of Churches. There she was responsible for the Council's work in humanitarian response and long-term development. In this capacity, she worked with many local, national and international non-governmental organizations to support capacity building and to advocate for protection of refugees, internally displaced persons (IDPs) and other populations affected by conflict. She has also served as the director of the Church World Service's Immigration and Refugee Program, the Research Director for the Life & Peace Institute in Uppsala, Sweden and a Fulbright Professor at the Universidad Nacional Autónoma de México. Her teaching experience has included positions at Lafayette College, Miami University and Pembroke State University. Her articles have appeared in *Refugee Survey Quarterly*, *Forced Migration Review*, *Journal of Refugee Studies*, *The Washington Post*, *The Washington Times*, the *International Review of the Red Cross and Red Crescent Societies* and many others. Brookings Institution Press published her most recent book, *The Politics of Protection: The Limits of Humanitarian Action*, in April 2011. She was educated at Duke University (B.A., '71) and the University of Florida (M.A. '72, Ph.D. '76).

David Foran

David Foran is a Foreign Service Officer currently assigned as the Deputy Office Director in the State Department's Bureau of Population, Refugees, and Migration's Office of International Migration (PIM). PIM leads the United States' government's engagement on international migration. Prior to serving with PIM, he served as Deputy Program Manager in the Bureau of Political Military Affairs' Global Peace Operations Initiative Program and Deputy Coordinator in the Counter-Piracy Office. Mr. Foran has served in overseas assignments in the United States Embassies in Santo Domingo, Montevideo, Nassau and Bogota. Prior to joining the Foreign Service, Mr. Foran practiced law in Hartford, Connecticut. He graduated from Central

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Andrew Geddes

Andrew Geddes is Professor of Politics at the University of Sheffield. He was a member of the Lead Expert Group appointed by the UK Government's Chief Scientific Advisor to oversee the report: Migration and Global Environmental Change: Future Challenges and Opportunities. For the period 2014-2019 he will hold an Advanced Grant awarded by the European Research Council for a project on international migration governance.

Tara Magner

Tara Magner is a Program Officer in the Policy Research area of U.S. Programs. She joined the MacArthur Foundation after serving as Senior Counsel to the Chairman of the U.S. Senate Committee on the Judiciary, Senator Patrick Leahy of Vermont, from 2009 to 2012. Her issue responsibilities on the Committee included immigration, refugee protection, human rights, and national security matters. After the 2008 election, Magner was a member of President Obama's Transition Policy Working Group on Immigration. She also served from 2007 to 2009 as a Commissioner on the American Bar Association's Commission on Immigration. From 2006 to 2009, Magner was the Director of Policy at the National Immigrant Justice Center in Chicago. She previously served as a Counsel and Professional Staff Member to Senator Leahy on the Committee on the Judiciary. During that time (2001-2006), she handled matters relating to immigration, terrorism, human rights, Freedom of Information Act, and government secrecy. She has published articles with MIT Press, the *International Journal of Refugee Law*, and the *Georgetown Immigration Law Journal*. Magner received her undergraduate degree at Wesleyan University and her law degree at Georgetown University Law Center.

Jane McAdam

Jane McAdam is Scientia Professor of Law and Director of the Andrew & Renata Kaldor Centre for International Refugee Law at the University of New South Wales, Australia. She holds an Australian Research Council Future Fellowship, and is a non-resident Senior Fellow at The Brookings Institution in Washington DC and a Research Associate at the University of Oxford's Refugee Studies Centre. Professor McAdam publishes widely in international refugee law and forced migration, with a particular focus on climate change and mobility. She serves on a number of international committees, including as Co-Rapporteur of the International Law Association's Committee on International Law and Sea-Level Rise; a member of the Consultative Committee of the Nansen Initiative on Disaster-Induced Cross-Border Displacement; and as Associate Rapporteur of the Convention Refugee Status and Subsidiary Protection Working Party for the International Association of Refugee Law Judges. She is joint Editor-in-Chief of the *International Journal of Refugee Law*. In 2013, Professor McAdam was named a Young Global Leader of the World Economic Forum.

Valerie Mueller

Valerie Mueller is a Research Fellow in the Development Strategy and Governance Division at the International Food Policy Research Institute. She previously worked as a Post-doctoral Research Fellow in the Earth Institute at Columbia University. Prior to the fellowship, she obtained her PhD in Agricultural and Resource Economics from the University of Maryland,

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Walter Kaelin

Walter Kaelin is professor of constitutional and international law at the Faculty of Law of the University of Bern (Switzerland) and Envoy of the Chairmanship of the Nansen Initiative. His research focuses on international human rights law with an emphasis on internally displaced persons and refugees. He has extensive experience working with the United Nations. He was Member of the UN Human Rights Committee (2003 – 2008 and 2012 – 2014) and the UN Peacebuilding Advisory Board (2012 – 2014); Representative of the UN Secretary General on the Human Rights of Internally Displaced Persons (2004 – 2010); and Special Rapporteur of the UN Human Rights Commission on the situation of human rights in Iraqi occupied Kuwait (1991/92).

Dominic Kniveton

Dominic has been at the University of Sussex since January 2001. His first lecturing post was at Bristol for a year before spending one semester at the University of Durban-Westville and three years at the University of Leicester, all as a lecturer in Geography. Further back in the mists of time he started his higher education with a BSc in Environmental Sciences at the University of East Anglia followed by a Masters in Meteorology from Reading University and a PhD in satellite rainfall retrievals from University of Bristol. He has also been a researcher on NASA's Mission to Planet Earth's WetNet Project and the EU funded Landslides and Mudflows project.

Khalid Koser

Dr. Khalid Koser MBE is Deputy Director and Academic Dean at the Geneva Centre for Security Policy. He is also Non-Resident Senior Fellow in Foreign Policy Studies at the Brookings Institution, Associate Fellow at Chatham House, Research Associate at the Graduate Institute of International and Development Studies in Geneva, and Non-Resident Fellow at the Lowy Institute in Sydney. He is Extraordinary Professor in Conflict, Peace, and Security at the University of Maastricht. Dr Koser is chair of the World Economic Forum Global Agenda Council on Migration, and editor of the *Journal of Refugee Studies*. He was awarded the MBE for services to asylum seekers and refugees in the Queen's 2014 New Years Honours List.

Frank Laczko

Frank Laczko (Ph.D.) is Head of the Research and Publications Division of the International Organization for Migration (IOM) in Geneva. IOM is an inter-governmental organization. Dr. Laczko joined IOM in 1995, and his previous posts include, Head of the Migration Information Programme for Central and Eastern Europe, Budapest, 1995-1998, Head of Research at the IOM Technical Cooperation Centre for the CIS and Central and Eastern Europe, Vienna, 1998-2000. Prior to joining IOM he worked for UNHCR 1993-1994, and was a consultant to ILO, OECD, and the European Commission, was a Senior Lecturer in Social Policy in the UK. Educated in the UK and Sweden, Dr. Laczko, published widely on social policy issues relating to labour market policies, population ageing and poverty, before moving into the field of migration. Between 1987-1989, he was a member of the evaluation team at the University of Bath,

responsible for assessing the impact of the European Commission's Second Anti-Poverty Programme consisting of 92 pilot projects.

Susan Martin

Susan Martin holds the Donald G. Herzberg Chair in International Migration and serves as the Director of the Institute for the Study of International Migration in the School of Foreign Service at Georgetown University. Previously Dr. Martin served as the Executive Director of the U.S. Commission on Immigration Reform, established by legislation to advise Congress and the President on U.S. immigration and refugee policy. Prior to joining the Commission's staff, Professor Martin was the Director of Research and Programs at the Refugee Policy Group, a Washington-based center for analysis of U.S. and international refugee policy and programs. She was Assistant Professor at the American Studies Department of Brandeis University and Lecturer in the History of American Civilization Department at the University of Pennsylvania. Her recent publications include *A Nation of Immigrants; The Migration-Displacement Nexus: Patterns, Processes and Policies* (ed.); *Managing Migration: The Promise of Cooperation*; *Mexico-U.S. Migration Management: A Binational Approach* (ed.); and *Refugee Women*. Dr. Martin earned her MA and Ph.D. from the University of Pennsylvania and her BA from Douglass College, Rutgers University. She is the Past President of the International Association for the Study of Forced Migration and serves on the U.S. Comptroller General's Advisory Board, the Academic Advisory Board of the International Organization for Migration, and the Boards of the Advocacy Project and DARA-US.

Robert McLeman

Robert McLeman is Associate Professor of Geography and Environmental Studies at Wilfrid Laurier University in Waterloo, Canada. A former foreign service officer, Dr. McLeman researches the interactions between environmental change, human wellbeing, migration, and security. He has led multi-investigator studies on drought-related migration, on how environmental pressures in developing countries influence international migration, and on how rapid demographic change and migration affects the capacity of communities to adapt to climate change. He is author of the new book "Climate and Human Migration: Past experience, future challenges" (Cambridge University Press, 2014) and of several frequently-cited scholarly papers on migration as a household adaptation to environmental change. A frequent contributor to the popular media, Dr. McLeman is regularly consulted by governments and UN agencies on matters related to environment and migration.

Marcos Morales

Marcos Morales is associate researcher at Observatorio Migrantes del Caribe (OBMICA). He holds degrees on Business, Geography and Gender Studies. His research interests focus on the impacts of human activities on the geographic space through the appliances of concepts such as landscape and space; he applies this perspective to study rurality, urban dynamics, migration processes, environment ecology and state oriented development projects. His work have been published and presented on venues like International Geographical Union, Latin American Social Studies Association, Global Magazine among others. He teaches courses in methodology, philosophy of Geography, and the spatial organization of rural and urban areas. He is currently assistant professor of Geography at Universidad Autónoma de Santo Domingo, and assistant researcher at Instituto Geográfico Universitario.

Christine Padoch

Christine Padoch is an anthropologist and currently the Director of the Forests and Livelihoods Programme. She has spent more than 35 years carrying out research on smallholder patterns of forest management, agriculture, and agroforestry in the humid tropics, principally in Amazonia and Southeast Asia. She recently came to CIFOR from the New York Botanical Garden where she was the Matthew Calbraith Perry Curator of Economic Botany. Christine Padoch holds a Ph.D. in anthropology from Columbia University.

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Alex de Sherbinin is a senior researcher at the Center for International Earth Science Information Network (CIESIN), an environmental data and analysis center within the Earth Institute at Columbia University. He serves as Deputy Manager of the NASA Socioeconomic Data and Applications Center hosted by CIESIN and Coordinator of the Population-Environment Research Network, a network of 2,000 researchers from around the world. He is also a co-author of the Environmental Sustainability Index and Environmental Performance Index reports. Alex is currently enrolled as a fast-track PhD candidate at the Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Netherlands. His dissertation is on spatial approaches to climate vulnerability assessment. He has published widely on the human aspects of environmental change at local, national and global scales, including on climate change impacts, vulnerability, and adaptation. Prior to CIESIN he worked at the International Union for Conservation of Nature (Switzerland) and the Population Reference Bureau (Washington, DC), and also served as a Peace Corps Volunteer (Mauritania, West Africa).

Benjamin Schraven

In his current position as a Senior Researcher in the department Environmental Policy and Natural Resources Management of the German Development Institute Benjamin Schraven's work focuses mainly on the interrelation between environmental change and migration, rural and urban livelihoods as well as local adaptation strategies to processes of climate change and environmental degradation. He holds a PhD in Development Research from the Center for Development Research of the University of Bonn, Germany, where he also worked as a Senior Researcher until 2011. Prior to his PhD studies, he received a Master degree in Political Science, Sociology and History from the University of Bonn. Since 2007, he is also giving lectures in household survey methodology and quantitative data analysis (e.g. for the German Academic Exchange Service). Benjamin Schraven cooperates with the International Labour Organization (ILO), UNICEF, the United Nations University and other (international) organizations and research institutes on migration and livelihood issues.

Anthony Oliver-Smith

Anthony Oliver-Smith is Professor Emeritus of Anthropology at the University of Florida. He also held the Munich Re Foundation Chair on Social Vulnerability at the United Nations University Institute on Environment and Human Security in Bonn, Germany from 2005-9. In 2013 he won the Bronislaw Malinowski Award of the Society for Applied Anthropology for his contributions to the fields of disaster research and resettlement studies. His work on disasters and displacement and resettlement focuses on development forced displacement, climate change and migration, post-disaster aid and reconstruction, and vulnerability analysis. He has done research

and consultation in Peru, Honduras, India, Brazil, Jamaica, Mexico, Japan, and the United States. He is the author, editor or co-editor of 8 books and over 80 journal articles and book chapters.

Patrick Sakdapolrak

Patrick Sakdapolrak's research is primarily concerned with the question of how vulnerable groups live with risk. He is particularly interested in how people cope with and adapt to environmental and social stresses. The role of migration and translocal strategies within this context features centrally in his research. He worked on the conceptual development of vulnerability, livelihoods and resilience approaches, as well as translocality. He has worked empirically in Thailand, India and Kenya, and took his Diplom in geography with minors in sociology and social anthropology at the University of Heidelberg. At the University of Wollongong in Australia, he obtained a Master's degree in Social Change and Development. Patrick's Ph.D. thesis focused on health vulnerability among poor urban groups in India, carried out in the Department of Geography in Bonn, where he was awarded a special prize for excellent practice-relevant research in the field of development studies (the KfW-Förderpreis). In 2013 he had a temporary professorship for social geography and sustainability research at the LMU in Munich. Since October 2013 he has been leading a Research Group on Migration and Environment in Bonn.

Robert Stojanov

Robert Stojanov is Assistant Professor at the Department of Social Geography and Regional Development, Faculty of Science, Charles University in Prague. Robert received PhD in Environmental Geography and his research interests include environmental (climate) change and population dynamics; migration and development; social and economic impacts of climate change and adaptation strategies in South Asia and Central Europe; and effectiveness of development interventions and financial flows. Robert has experience from many field surveys dealing with links between environment, population and development. Robert is member of Management Committee and the Czech Republic representative at COST Action IS1101 'Climate Change and Migration: Knowledge, Law and Policy, and Theory' which is supported by European Commission. Robert published about 15 papers in peer-reviewed journals, 10 books and more than 20 book chapters.

Abbie Taylor

Abbie Taylor holds a Master of Arts in Arabic and International Relations from the University of Saint Andrews, Scotland, and a Master of Arts in Arab Studies from Georgetown University. Prior to joining ISIM, Abbie lived in Syria, studying Arabic and working for local NGOs in the related fields of education and development. Abbie has also worked as a consultant for the Displacement Monitoring Program of the International Organization for Migration's Iraq Mission in Amman, Jordan. In her native Scotland, she has provided support to female refugees and asylum-seekers as part of the British Red Cross Refugee Orientation Services.

Alice Thomas

Alice Thomas joined Refugees International (RI) in 2010 to launch the Climate Displacement Program, which advocates for solutions to address the devastating impacts of extreme weather and the effects of climate change on displacement of vulnerable populations. Prior to joining RI, Ms. Thomas was a staff attorney in the international program at Earthjustice (formerly the Sierra

Club Legal Defense Fund) where she devised and implemented legal and policy strategies to mitigate climate change. She also served as Deputy Director of the American Bar Association's Asia Law Initiative, where she devised and implemented programs in Asia to promote environmental good governance. She has a law degree from the University of Wisconsin Law School and a Bachelor's in History from Princeton University.

Koko Warner

Dr. Koko Warner is the Head of the Environmental Migration, Social Vulnerability and Adaptation Section at UNU-EHS. Warner is a Lead Author for IPCC's 5th Assessment Report, Working Group 2 on Adaptation (chapter 20). Warner researches risk management strategies of the poor in adapting to changing environmental and climatic conditions. She directs three research tracks at UNU related to adaptation: the use of risk management and risk transfer measures, social resilience and environmental change, and environmentally induced migration. Warner served on the management board of the EACH-FOR project, a first-time global survey of environmentally induced migration in 23 countries. She was Co-Chair of the German Marshall Fund project on Climate Change and Migration. She helped found and is on the Steering Committee of the Climate Change, Environment, and Migration Alliance (CEEMA) and works extensively in the context of the UNFCCC climate negotiations on adaptation (particularly in risk management and migration). Koko Warner studied development and environmental economics at George Washington University, and the University of Vienna where she received her PhD in economics as Fulbright Scholar.

Erik Wetter

Dr. Wetter is Assistant Professor at Stockholm School of Economics (SSE), and co-founder of Flowminder.org, a non-profit, applied R&D and capacity-building organization that pioneered the use of anonymous cellphone data for displacement analysis in crisis response (Haiti 2010 earthquake and cholera outbreak). Flowminder.org conducts research and method development, and works in close collaboration with mobile operators and aid & relief agencies to develop the robust and responsible use of anonymous mobile data and satellite data for public good.

Sanjula Weerasinghe

Sanjula Weerasinghe is an Australian attorney. Prior to joining the Institute for the Study of International Migration, she worked as the Director of Casework at the Hong Kong Refugee Advice Centre, the Founding Director of Asylum Access Thailand, a consultant to the Brookings Institution (the Brookings-LSE Project on Internal Displacement) and the Organization for Refuge, Asylum and Migration (ORAM), and as a practicing attorney with Mallesons Stephen Jaques. Ms. Weerasinghe holds a Bachelor of Laws (hons) from Monash University in Melbourne, and a Master of Laws (dist) with a Certificate in Refugees and Humanitarian Emergencies from Georgetown University.

Quentin Wodon

Quentin Wodon is an Adviser/Lead Economist in the Education Department of the World Bank. Previously, he managed the Bank's unit on faith and development, served as Lead Poverty Specialist for Africa, and as an Economist/Senior Economist for Latin America. He previously worked as an Assistant Brand Manager for Procter & Gamble Benelux, volunteer corps member with the International Movement ATD Fourth World, and tenured Assistant Professor of

Economics at the University of Namur. He is a fellow with IZA in Bonn and ECARES in Brussels, and has taught at American University and Georgetown University apart from the University of Namur. Quentin has more than 350 publications. In the area of weather shocks, climate change, and migration, he recently completed two major studies for the World Bank, one on the Middle East and North Africa and the other on the Sundarbans in South Asia. He is a recipient of the Prize of Belgium's Secretary of Foreign Trade, a Fulbright grant, and the Dudley Seers Prize. He serves on various advisory boards, as Associate Editor for journals, and is a past President of the Society of Government Economists. He is also actively involved in service work with Rotary and through pro bono consulting for nonprofits. Quentin holds a BSc/MSc in Business Engineering, a MA in Economics, and a MA in Philosophy from the Université Catholique de Louvain, as well as a PhD in Economics from American University and a PhD in Theology and Religious Studies from Catholic University of America.

Hanspeter Wyss

Hanspeter Wyss is a Senior Program Officer at the World Bank's Development Economics - Prospects Group. In the Migration & Remittances team his responsibilities include the contribution to the implementation of the Global Knowledge Partnership on Migration and Development (KNOMAD), primarily in the areas of environmental change and migration, migrants rights and integration in host communities. Prior to joining the World Bank, he worked at the Swiss Agency for Development and Cooperation (SDC), which is part of Switzerland's Ministry of Foreign Affairs. He was SDC's focal point for both the Multilateral Network and for Management for Development Results (2008-13), program manager for multilateral negotiations in sustainable development & environment (2005-2008), as well as deputy head of the Swiss Cooperation Office in Benin (2002-2005). He holds a master degree in development economics (University of Zurich).

Annex 2 – Symposium Agenda

Symposium on

Environmental Change and Migration: State of the Evidence

May 28 & 29, 2014, Washington DC

Objectives

To assess the state of knowledge on the interrelationships between environmental change and migration, with a particular focus on migration as an adaptation strategy;

To examine the policy implications of current findings on environmental change and migration; and to identify gaps in knowledge and methods to fill those gaps.

Potential Outcomes

A fact sheet summarizing the state of knowledge on environmental change and migration;

An agenda of needed research to fill gaps in knowledge about environmental change and migration; and a set of policy reflections relevant for the post-2015 development agenda, 2015 Paris climate agreement, 2015 Hyogo Framework II, and 2016 humanitarian summit

28 May 2014

8:30 Continental Breakfast

9:00 Welcome and Introductions

Dilip Ratha, Director, KNOMAD

Chairs of TWG on Environment Change and Migration

Jane Ebinger, Manager, Climate Change Policy, Climate Policy and Finance, Climate Change Group

9:30 Environmental Change as a Contributing Factor in Migration: Acute Onset Events

This session will review the current evidence base on displacement resulting from acute onset environmental events such as floods and storm surges and the implications of research in this area for policymaking.

Moderator: Susan Martin

Opening Remarks: Walter Kaelin, Nansen Initiative

Elizabeth Ferris, Brookings Institution
Alice Thomas, Refugees International
Erik Wetter, Flowminder and Stockholm School of Business
Quentin Wodon, World Bank

11:00 Break

11:15 Environmental Change as a Contributing Factor in Migration: Slow Onset Processes

This session will review the current evidence base on migration and other movements related to slow onset processes such as rising sea levels and persistent drought and the implications of research in this area for policymaking. An underlying question in this session is long-term habitability and mobility dynamics.

Moderator: Koko Warner

Opening Remarks: Andrew Geddes, Sheffield University
Dominic Kniveton, University of Sussex (modeling)
Jane McAdam, University of New South Wales
Benjamin Schraven, DIE
Christine Padoch, CIFOR

12:45 Working Lunch (Public Event)

During the lunch, we will hear about current initiatives under way to improve policy responses in addressing human mobility stemming all or in part from environmental determinants (e.g., Nansen Initiative, evacuation and relocation guidelines, Migrants in Countries in Crisis initiative)

Moderator: Dilip Ratha, Director, KNOMAD
Opening Remarks: Walter Kaelin, Nansen Initiative
Frank Laczko, IOM
David Foran, US Bureau of Population, Refugees and Migration
Koko Warner, UN University
Susan Martin, Chair, TWG

2:15 Break-Out Session

The group will divide into smaller teams to identify research priorities to improve the evidence base regarding environmental change as a determinant of different forms of human mobility. The groups will discuss research topics, methodologies and ways to disseminate findings to key policymakers and other stakeholders.

4:00 Break

4:15 Report of small groups

7:00 Dinner

29 May

8:30 Continental Breakfast

9:00 Migration as a Risk Management Strategy vis-à-vis Environmental Change: Economic Impacts

This session will review the current evidence base on the impact of environmental migration on the economic well-being of migrants, communities of origin, and communities of destination and the implications for policymaking, particularly in the context of adaptation planning. The discussion will draw upon empirical evidence specifically related to environmentally induced movements as well as the literature on similar forms of relocation (e.g., those resulting from development projects). The session will examine economic and other policies that are needed to address potential negative impacts and enhance potential benefits deriving from environmental migration.

Moderator: Diyi Chandrasekharan, World Bank

Remarks: Soumyadeep Banerjee, International Centre for Integrated Mountain Development
Valerie Mueller, IFPRI
Robert McLeman, Wilfrid Laurier University
Jane Chun, Green Templeton College
Robert Stojanov, Charles University in Prague
David-Lopez Carr, University of California Santa Barbara

10:30 Break

10:45 Migration as a Risk Management Strategy vis-à-vis Environmental Change: Other Impacts

This session will review the current evidence base on the impact of environmental migration on the psychological, health, social, environmental well-being and the security of migrants, communities of origin, and communities of destination. It will also focus on the ways in which political and legal frameworks affect and are affected by migration, displacement and planned displacement occurring in the context of environmental change. The discussion will draw upon empirical evidence specifically related to environmentally induced movements as well as the literature on similar forms of relocation (e.g., those resulting from development projects and refugee resettlement programs). The session will examine natural resource, social protection, urban planning, immigration and other policies that address potential negative impacts and enhance potential benefits deriving from environmental migration, particularly in the context of adaptation planning.

Moderator: Hanspeter Wyss

Remarks: Anthony Oliver Smith, University of Florida
Alex de Sherbenin, Columbia University
Marcos Morales, Autonomous University of Santo Domingo

12:15 Lunch

1:30 Break-Out Session

The group will divide into smaller teams to identify research priorities to improve the evidence base regarding migration as an adaptation strategy. The groups will discuss research topics, methodologies and ways to disseminate findings to key policymakers and other stakeholders.

3:30 Report of Small Groups

4:30 Next Steps

5:00 Adjourn