

# Climate Change, Migration, and Emergencies: In Search of a Policy Framework

Robert Bach

13474  
November 2009

This document was prepared by CNA under a grant from the Rockefeller Foundation. This document represents the best opinion of CNA at the time of the issue. It does not necessarily represent the opinion of the Rockefeller Foundation.

Distribution Unlimited

**Copyright © 2009 CNA**

**All Rights Reserved**

Any copyright in this work is subject to the Government's Unlimited Rights license as defined in FAR 52.227-14.

# Table of Contents

<b>Executive summary</b> .....	<b>1</b>
Regional cooperation.....	2
Institutional change .....	2
Adaptation planning for population displacements .....	3
Conclusion.....	3
<b>Introduction and background</b> .....	<b>5</b>
Impact of climate change on migration .....	5
Current migration policy is lacking .....	7
<b>A Climate change-centered strategy for migration</b> .....	<b>9</b>
A U.S. regional cooperation strategy for the “near perimeter” .....	9
Institutional change .....	14
Adaptation planning for population displacements .....	16
<b>Conclusion</b> .....	<b>21</b>
<b>Endnotes</b> .....	<b>23</b>



## Executive summary

Climate change has the potential, even likelihood, to fundamentally transform our understanding of homeland security, public safety, and especially our capacities and capabilities to adapt to emergencies. In this report, the focus is on how climate change will interact with migration, both as cause of large-scale population displacements and, in turn, as consequence of shifting settlement patterns.

For the United States, the future of climate change-induced migration is deeply intertwined with the economic and social infrastructure of its “near perimeter” – an area encompassing the southern rim of the U.S. mainland from San Diego to Miami, and including the Caribbean, Mexico, and Central America. Although often ignored, the near perimeter is a highly interdependent region. What happens in one part of it will directly impact another.

Policy debate on these issues will involve at least three broad sets of strategic issues. First, the debate will need to focus on the “near perimeter” region as a whole. A feature of climate change is its capacity to generate multiple, simultaneous crises in various parts of the region, putting as much strain on the interdependencies in the region as on any particular community. Second, the new debate will require a focus on institutional change. The complexities of climate change call for crosscutting perspectives and initiatives that are multi-agency and multi-disciplinary. Third, adaptation planning will need to carefully reconsider the value of migration within a region affected by climate change. Migration itself is a powerful, viable adaptation to crises. Yet, it has both positive and negative consequences that do not necessarily or easily align with recovery needs.

Following are potential courses of action for U.S. policymakers to consider as they pursue a dialogue on these three sets of issues. In each case, homeland security and emergency management communities have a primary role, although in many situations, that role will be in support of broader economic, social or political goals. A more detailed discussion to

help policy-makers begin a dialogue on the potential courses of action is included in the main body of this report.

## **Regional cooperation**

U.S. strategists will need to strengthen the ability to work with regional allies to effectively plan for adapting to a complex and unpredictable future. These region-wide efforts should include the following:

- Improve and coordinate disaster response.
- Develop a common framework for assessing risk.
- Include social adaptation consequences in broader climate change adaptation strategies.
- Consider local gender roles in broader climate change adaptation strategies.
- Strengthen coordination between law enforcement agencies throughout the region.
- Re-evaluate security cooperation strategies for the impacts of climate change on borderline "failed states."

## **Institutional change**

By its character, climate change cannot be the purview of any particular agency or issue-driven agenda. Interagency-wide coordination is much needed to catch up to the U.S. intelligence community's own understanding of the risks of climate change, and to the international community's pursuit of new approaches. Interagency initiatives should include the following.

- Address how agencies within the Department of Homeland Security (DHS) should coordinate to adopt climate change adaptation and mitigation strategies.
- Encourage the Federal Emergency Management Agency (FEMA) to take on a broader role in climate change adaptation and mitigation strategies for the "near perimeter" region.

- Urge DHS to take a lead role in developing law enforcement strategies for climate change.

## **Adaptation planning for population displacements**

Discussions of climate change and population displacements are typically confined to the current framework of debates around immigration admissions policies -- who and how many migrants will countries allow to resettle inside their territory if climate change creates large displacements? Much work needs to be done to make a transition from this “admissions” framework to one that focuses more on the complex role of migration in fostering the region’s resilience overall. New perspectives should include the following:

- Integrate population displacement into regional adaptation planning.
- Factor future population displacements into large-scale investment strategies.
- Review the legal framework for migration due to climate-change.
- Incorporate labor migration programs into regional adaptation planning.

## **Conclusion**

Climate change and migration are likely to be the core of complex interdependencies that determine the fundamental well-being of communities throughout the North American region. People will increasingly face risks to food and water supplies, the ability to maintain stable families and communities, public safety, and perhaps national security. A climate change-oriented adaptation strategy needs to develop a risk-based approach to migration issues that focuses on identifying and creating alternatives to existing patterns. If nothing else, climate change will create a number of unpredictable situations that require new core principles, values, and possibilities as understood throughout the region to adapt flexibly to circumstances as they arise.

Past and current policy frameworks are unlikely to guide us in anticipating and planning for these changes. Rather, it will take the full engage-

ment of the diverse leaders and communities throughout the region to find ways to continuously work together so that those caught up in crises will be able to successfully resist the worst impacts, recover, and get back to their lives quickly. The collective goal should be to renew their communities in ways that offer even more opportunities for advancement than they had before.



## Introduction and background

Climate change has the potential, even likelihood, to fundamentally transform our understanding of homeland security, public safety, and especially our capacities and capabilities to adapt to emergencies. A National Academy of Sciences review panel recently concluded, “Climate change will create a novel and dynamic decision environment that cannot be envisioned from past experience... Decision makers will need new kinds of information and new ways of thinking and learning to function effectively in a changing climate [1].”

This report is one of several from CNA examining the potential impacts of climate change on future U.S. policies and decision-making. This particular report focuses on climate change and migration, both the impact of climatic shifts on population flows, and on how reshaped migration patterns will affect the economic, political, and social well-being of the United States and its neighbors in the North American region. The intent of this report is to outline the complex interdependencies of climate change and migration. Mindful of the National Academy of Sciences’ warning, the parameters for these future policy developments will likely be substantially and perhaps radically different from current highly-charged debates over immigration reform.

## Impact of climate change on migration

The relationships between climate change and migration are challenging because of both the scale of their potential impacts and the complexities of the critical issues involved. Twenty years ago, the Intergovernmental Panel on Climate Change (IPCC) recognized that “the gravest effects of climate change may be those on human migration [2].” Since that analysis, the number of United Nations (UN) estimated ‘climate refugees’ has reached 25 to 50 million. If trends continue unabated, current estimates are that the number of displaced migrants at any particular time could reach 200 million by the year 2050 [3].

The scale of climate-induced migration has already begun to reshape humanitarian relief priorities. According to the International Federation of Red Cross, climate change disasters are now a bigger cause of population displacement than war and persecution [4]. Climate-induced migration is also deeply embedded in current national security concerns [5,6].

For the United States, the future of climate change-induced migration is deeply intertwined with the economic and social infrastructure of its “near perimeter” – an area encompassing the southern rim of the U.S. mainland from San Diego to Miami, and including the Caribbean, Mexico, and Central America. Although often ignored, the near perimeter is a highly interdependent region. What happens in one part of it directly affects another.

The potential impact of climate change on large-scale migration comes in many forms. It often concentrates complex behaviors and overlapping trends in smaller geographical zones to create “hot spots” that intensify negative consequences [7]. In Northern Mexico, for instance, severe water shortages undermine the sustainability of rain-fed agriculture, which pushes rural communities into overburdened cities, and often into a context where drug smuggling and human trafficking thrive [8]. Migration already occurs in Mexico because of pressures from changing environmental conditions in the southern state of Chiapas and in Tlaxcala in Central Mexico. Both areas are vulnerable to the effects of deforestation, erosion, and repeated tropical storms. Underlying poverty and social vulnerability combine with these climate effects to produce sustained outmigration.

In the coastal areas of some Caribbean islands, where a majority of the population lives, storm damage to infrastructure and rising sea levels that threaten fresh water and food supplies drive people and businesses from the area, generate political tensions, and undermine legitimate economic opportunities [9].

Along the U.S. southern rim, border and coastal communities are and will be recipients of increased population flows at the same time they experience similar risks of intensified storms, water shortages and drought, and challenges to economic viability. These mainland communities will also face increased crime, linked to both the smuggling and trafficking that accompany disorderly population displacements, and local struggles to adapt to widespread economic and social hardships [10].

## **Current migration policy is lacking**

The policy challenge is to initiate and renew U.S. involvement in its neighboring region, organizing around interest in climate change as an urgent shared value and goal. The complex interdependencies that climate change is likely to complicate even further will challenge existing policy and decision-making frameworks for migration. Current immigration policies in the United States and in most developed countries are rooted in the economics and interstate relations of the second half of the 20<sup>th</sup> century. In the next 20 to 50 years, climate change is likely to create new policy parameters involving changed economic fortunes, demographic recomposition of many communities, and recalibrated principles and goals of U.S. policy [11]. Unless this transformation is anticipated and prepared for, current policies will become an outdated drag on the ability to adapt successfully to climate change here in the United States and in the neighboring region [12].

This page intentionally left blank

## **A Climate change-centered strategy for migration**

Debate on changing policy parameters will likely involve at least three broad sets of strategic issues. First, it will need to focus on the "near perimeter" region as a whole. A feature of climate change is its capacity to generate multiple, simultaneous crises in various parts of the region, putting as much strain on the interdependencies in the region as on any particular community. Second, the new debate will require a focus on institutional change. The complexities of climate change call for cross-cutting perspectives and initiatives that are multi-agency and multidisciplinary. Third, adaptation planning will need to carefully reconsider the value of migration within a region affected by climate change. Migration itself is a powerful, viable adaptation to crises. Yet, it has both positive and negative consequences that do not necessarily or easily align with recovery needs.

## **A U.S. regional cooperation strategy for the "near perimeter"**

The long-term economic potential of much of the "near perimeter" region as a whole has already been and will continue to be weakened by the intensifying storms that routinely hit the area [13]. The science advisor to the Caribbean Community (CARICOM) Climate Change Centre in Belize points to the region's current vulnerabilities from rising sea levels and storm surges and predicts "entire coastal infrastructures under siege [14]." Many local economies may be near their tipping point. Continuous setbacks from natural disasters not only require them to start over in their development projects but to begin again at a level below the former starting point [15]. Before Hurricane Ivan struck the island in September 2004, Grenada's economy was expected to grow at nearly a five percent rate that year. After the storm, its tourism revenue collapsed, the cost of infrastructure damage skyrocketed, and overall economic growth dropped to a negative 1.4 percent. Without effective mitigation, the cost of com-

bined hurricane damage throughout the Caribbean could reach \$22 billion annually and rise to \$46 billion by 2100 [16].

Grenada is joined by other small Eastern Caribbean islands, including Dominica, Haiti, St. Kitts and Nevis, and Turks and Caicos in facing the vulnerabilities of climate change. A World Bank study points to early indicators of climate change in the Bahamas. Freshwater marshes are already becoming brackish from rising sea levels, and water sources on Andros and Grand Bahamas islands are still badly affected by storm surges from the accumulative impact of the past five years [17].

Cuba, the largest island in the Caribbean, also faces extraordinary climate-related problems. Its official state newspaper, *Granma*, calls the last decade "the most devastating in the history of these meteorological phenomena in Cuba [18]." Between 1952 and 2000, Cuba was hit by only one major hurricane, Flora, in 1963. From 2000 to 2008, Cuba absorbed six more intense storms. Hurricanes Gustav and Ike alone combined to cause an estimated loss of five billion dollars.

Facing these recurring setbacks throughout the region, humanitarian assistance efforts have struggled to keep up with immediate response needs, let alone support long-term recovery [19]. In 2006, the UN Environment Programme (UNEP) reported that the cumulative effect of the storms in the Caribbean created a tradeoff between mitigation and adaptation. A balance was needed, the report argued, between the urgency of immediate response involving shelter and protection, and the need to rebuild the infrastructure at a standard that would withstand future storms [20].

These setbacks are having a direct impact on the capacity of some parts of the region to fight crime, drug trafficking, transnational gangs and other forms of public insecurities. In Haiti, in particular, the combination of threats involving climate changes, public insecurities, and contested governance raises the possibilities of system-wide failure. Large-scale migration from the Island, which has occurred previously on several occasions, would pose a direct challenge to communities on the U.S. mainland [21]. In the face of future climate change, degraded state capacities in Haiti and other vulnerable states in the region will likely worsen [22].

Following are some potential courses of action for U.S. policymakers to consider as they pursue a dialogue on regional cooperation. These initiatives cover a wide range of issues. Homeland security and emergency

management communities will be in support roles in many of these activities. The special contributions these communities offer U.S. strategists will strengthen the ability of the U.S. and its regional allies to effectively plan for adapting to a complex and unpredictable future.

## **Improve and coordinate disaster response**

In the short-term, with a priority focus on life-saving and quick stabilization of essential services, the U.S. and its near perimeter partner states need to improve and coordinate disaster response, including interoperable communications, information-sharing, early warning systems, and other capabilities. Coordinated planning is limited. Current planning efforts for evacuations from storms or manmade disasters along the U.S.-Mexico border are promising starts. Still, they show how much work remains, especially if the impacts on large-scale population displacements are disorderly and sustained. In the Caribbean, enormous planning efforts have gone into preparing for a migration crises out of Cuba (Operation Vigilant Shield), but virtually no efforts have focused on potentially larger and more destabilizing impacts of climate change on the small islands of the Eastern Caribbean.

## **Develop a common framework for assessing risk**

Private sector and civil society groups throughout the region have extensive experience with adapting to natural disasters. They should form a sustained, joint effort to document lessons learned from the repeated storms and develop a common framework for assessing risk. For instance, although the protection of critical infrastructure in the Caribbean may focus on very different assets than on the U.S. mainland, both areas share common vulnerabilities, especially around the impacts of storms on coastal areas [23]. With U.S. participation, the common framework could focus especially on the direct interdependencies between communities in the region and on U.S. territory. Degraded region-wide infrastructure, water shortages, and bleached reefs, for instance, are not problems in only one or two areas. They affect the tourism industry of the entire region, which in turn increases consequences for communities in Florida and elsewhere on the U.S. mainland as much as those in the popular more southern destinations [24].

## **Include social adaptation consequences in broader climate change adaptation strategies**

Scientific cooperation should expand from a focus on analyzing weather patterns and their effects on crops and other natural conditions to include social adaptation strategies. As the Chairman of the National Intelligence Council has testified, much more needs to be learned about human and societal behavior to complement the increasingly rigorous study of environmental impacts [25]. Effective adaptation to climate change will require new learning on how to promote civil society and private sector involvement in ways that empower local populations and community organizations. For example, social scientific research would be invaluable to learning whether small-scale community preparedness is more effective in securing essential services for vulnerable populations compared to large-scale, long distance evacuations. Small-scale community adaptations might inhibit extensive disruptions and large costs, while improving protection of the internally displaced in migrant-sending or receiving areas [26].

## **Consider local gender roles in broader climate change adaptation strategies**

Region-wide adaptation strategies should also recognize and research more extensively the role that gender often plays in the resilience of local communities [27]. According to a few studies, men are often drawn back more quickly into broad market networks in search of jobs, while women carry the burdens and priorities of rejuvenation of local activities after a crisis. Strategies that strengthen complementary gender roles would increase both the speed and sustainability of adaptation to climate change-induced crises. Broadly engaged communities would also reduce the insecurities that women and children will face if social disorder and political tensions increase. Long before law enforcement officials have an opportunity to intervene, vulnerable women and children are driven into trafficking networks by the loss of secure livelihoods and social support. During periods of upheaval and disorder, alternative community support mechanisms are crucial to interrupting smugglers' coercive, false promises.



## **Strengthen coordination between law enforcement agencies throughout the region**

Strategies should include a program of law enforcement and security assistance that seeks specifically to strengthen interaction and cooperation among emergency management and law enforcement agencies throughout the region. The immediate aftermath of storms often places special burdens on local law enforcement, including taking a toll on personnel. In small communities affected by storms and drought, law enforcement personnel often hold several positions of authority, including elected office. During an emergency, some communities may be left entirely without any law enforcement officials able to protect local citizens. Long-term impacts include the need for expanded border security and expanded local policing activities to handle both an increase in crime and the emergence of new forms of crime [28].

## **Re-evaluate security cooperation strategies for borderline “failed states” to take climate change into consideration**

Security cooperation could be crucial to the development of a region-wide adaptation to climate change if it effectively integrates economic development strategies with longer-term efforts to combat destabilizing crime, smuggling and trafficking. Several states in the region are already borderline “failed states.” According to intelligence agencies’ estimates, the impact of climate change will be most consequential in these vulnerable areas [29]. A climate change-oriented agenda could provide a new set of cooperative strategies to bypass much of the political impasse that has prevented progress in areas such as Haiti and Cuba.

## **Institutional change**

The second set of issues involves the institutional changes that will support new strategies aligned with climate change. By its character, climate change cannot be the purview of a particular agency or issue-driven agenda. The new thinking and learning required to understand and anticipate the effects of climate change call for novel interagency and interdisciplinary cooperation. Concerted, interagency-wide coordination is much needed to catch up to the U.S. intelligence community's own understanding of the risks of climate change, and certainly the international community's pursuit of new approaches to preventing, mitigating, and adapting to the large-scale changes that climate change will likely induce [30].

Following are some potential courses of action for the broad "all-hazards" community to consider and to begin a dialogue on initiating institutional change.

### **Address how agencies within the Department of Homeland Security should coordinate to adopt climate change adaptation and mitigation strategies**

In this effort, the Department of Homeland Security (DHS) has a specific challenge. It contains the largest array of component agencies that are already on the frontlines of climate change and its impacts in the near-perimeter. Little is currently underway to coordinate an analytical and strategic approach to what climate change will mean for agencies such as the Coast Guard, the various border and immigration components, the Federal Emergency Management Agency (FEMA), and their continued cooperation with state and local governments. The potential impact of climate change in the near perimeter, especially from consequences related to large-scale migration, should energize a crosscutting strategy of cooperation, forcing integration among various components, and involving a much strengthened, long-term initiative with partners in the Caribbean, Mexico and Central America.

## **Encourage FEMA to assume a broader role in climate change adaptation and mitigation strategies for the “near perimeter” region**

Within DHS, FEMA should be a primary partner in a larger collaborative effort that expands upon its own experiences in the United States and integrates it with work done by the Department of State (DOS) internationally on internally displaced populations, refugees, law enforcement during crises, and long-term recovery. Currently, the interagency division of labor for assistance to the Caribbean and Mexico leans heavily on the prerogatives of the Department of State and the Department of Defense (DOD). This is an opportune time for FEMA to lead this effort in order to integrate international activities with its work in the mainland’s southern rim. FEMA’s primary capabilities may rest in its logistical and financial authorities, but it also has a much greater capacity to work across multiple jurisdictions than either DOS or DOD. This greater flexibility is especially useful for working on programs that simultaneously operate both internationally and domestically. FEMA’s involvement may also help to depoliticize issues related to disaster recovery and economic aid that remain stymied by resistance to previous U.S. policies toward the region.

FEMA’s involvement with long-term recovery of communities along the mainland’s southern rim is also a crucial component of the Caribbean and Mexico’s economic futures. Its planning efforts should fully recognize and embrace this critical interdependency and lead to much greater effort to work with partners throughout the near-perimeter. FEMA’s involvement with hurricanes and wildland fires show that its efforts are already intertwined with the behavior and consequences of communities on the other side of the border. From evacuation plans to temporary workers used in recovery operations, FEMA should step up to a new role in managing crossborder activities. Failure to do so effectively may undermine support for FEMA among local communities along the borders where residents fully understand how intertwined they are with their regional neighbors.

## **Urge DHS to take a lead role in developing law enforcement strategies for climate change**

Working across its various components, DHS has an opportunity to work with the Department of Justice to help lead the role of law enforcement in climate change adaptation. Many of its component agencies have specific border-related enforcement authorities and are involved in enforcing laws against illegal trade, smuggling, trafficking, and immigration that need to be coordinated with state and local law enforcement authorities. Climate change will dramatically increase that need. Climate change is likely to generate new types of crime and significantly shift enforcement priorities. State and local law enforcement may be drawn much more into crossborder criminal activities. They may also face new forms of community disorders and, with some certainty, novel combinations of social groups moving into their areas.

## **Adaptation planning for population displacements**

The third set of issues driving policy developments specifically involves how population displacements should become part of region-wide and local adaptation strategies. Discussions of climate change and population displacements are typically confined to the current framework of debates around immigration admissions policies -- who and how many migrants will countries allow to resettle inside their territory if climate change creates large displacements. Even current discussions about the total evacuation of the Pacific Island, Tuvalu, parts of the Maldives, or the smaller islands in the Bahamas and Eastern Caribbean appear constrained by efforts simply to adjust and manage current visa regimes to allow more people vulnerable to climate change to enter a country of resettlement.

Much work needs to be done to make a transition from this “admissions” framework to one that focuses more on the complex role of migration in fostering the region’s resilience overall. New perspectives should emerge on the value of population movements throughout the region, how they contribute to saving lives and livelihoods, and how they may simultaneously undermine long-term economic and social sustainability.

Following are some potential courses of action for the homeland security and emergency management communities to consider as steps toward beginning a dialogue on migration and adaptation planning.

## **Integrate population displacement into regional adaptation planning**

Population displacement needs to be a core element of adaptation planning in the region [31]. Part of the challenge in moving in this new direction is that the current definition of resilience confuses the goals of an adaptation strategy focusing on population displacements. Most discussions of adaptation suffer from a “positive bias” that equates it with social and economic changes that improve conditions for the broad community. This “bias” is reflected in current efforts to certify resilient communities that have developed successful adaptation plans.

Population displacements, however, may be both positive and negative adaptations, often generating intense conflicts between different sectors and communities. Unless handled carefully, migration policies in the future may follow other well-meaning climate change initiatives that will have a counterproductive impact on the region. One example of similar consequences, according to senior leaders in the Caribbean, is the potential of a fuel tax on cruise ships. The cruise industry is one of the world’s largest carbon producers. Yet, positive efforts to change its impact on global warming may seriously impede the economy of the region and, in turn, the ability of Caribbean states to afford other mitigation efforts, such as improvements in the sea walls or replenishment of tropical fish stocks chased away by warming seas. Adaptation planning that involves migration as a core mechanism of change needs to fully recognize these complexities on a larger, regional scale.

## **Factor future population displacements into large-scale investment strategies**

In the short-term, enough is known about migration and its positive and negative contributions to encourage local leaders to anticipate and incorporate them into adaptation planning. One way to do that is to develop a process of review and perhaps certification of new large-scale investments in construction, water, and housing, among others, that takes a full look at exposures to and implications of future population displacements. Estimates of water supplies for new community developments are already serving this purpose, but the process is partial and does not include broader consequences of climate change.

Recent, more comprehensive efforts in Southern California, as an example, have shed light on how population trends may limit the direction and pace of current investments in development. Urban sprawl, fueled by growth in housing and transportation throughout the region, has had a direct impact on the area's vulnerability to wildland fires and damaged the region's biological diversity [32]. These unsustainable construction trends have also served as powerful pull factors for international migrants seeking work. An adaptation planning framework would focus on the interdependencies among these diverse trends. While anticipating conflicts between land use and environmental impacts, planning efforts should simultaneously search for effective alternatives for the thousands of Mexican immigrants who are on the move from sending communities that are similarly under pressure from water shortages and long-term drought.

## **Review the legal framework for migration due to climate-change**

Climate change could help develop a migration agenda for the region that focuses on these interdependencies rather than remains locked into current controversies over unilateral U.S. policies. A significant dimension of this agenda will need to be a reconsideration of the legal framework for climate-induced migrants. Current debates have until now focused primarily on using and stretching existing definitions of refugees and asylum-seekers to apply to people forced from their homes due to climate change.

In this and similar strategic debates, the challenge is to move beyond a legal framework that was initially crafted to respond to state failures and the inability and unwillingness of governments to protect displaced individuals. Although some human rights legal scholars argue that states have a legal obligation to protect individuals during disasters, inability to do so does not necessarily reach the level of systemic failure. A state might be both willing and able to protect its citizens but is simply overwhelmed by the magnitude of a particular incident or the accumulation of a series of impacts [33].

If the number of displaced persons reaches levels currently projected by the international community, no established migration policy framework will turn the potential chaos into orderly flows. Emergency response and longer-term adaptation will be necessary complements to any approach to

provide legal status and rights so that individuals and families, and perhaps entire communities, can be successfully protected from immediate harm and recover as fast as possible. The emergency management community has some experience with migration emergencies, especially in South Florida, and with the potential for more in the future, would provide valuable practical support for a broader strategy.

## **Incorporate labor migration programs into regional adaptation planning**

Current labor migration programs may also be recast in light of anticipated and realized climate change [34]. Temporary labor circulation programs, for instance, generate a large volume of earnings that are sent home to support households in the sending communities. These practices are one of the most visible forms of interdependencies throughout the near perimeter. Yet, these programs also have helped to destabilize sending communities, often reshaping local populations from a socially healthy, multi-generational and normal demographic structure to one with a preponderance of elderly and the very young. The working age adults have moved out.

These sending communities are increasingly vulnerable to climate-induced risks [35]. Over a long-term, these programs also create an economic dependence on access to the United States. During crises, that access may be limited or even denied. The consequences would be heightened tensions, expansion of illegal activities, and increased harm to the migrants, their families and communities abroad.

This page intentionally left blank



## Conclusion

The ways in which climate change affects migration and, in turn, challenges U.S. policy development range widely from natural disasters to sustainable community safety. The U.S. faces this challenge especially in its southern rim and geographical near perimeter. The anticipated impacts are not marginal. They will produce far greater impacts than those measured by only a few percentage point changes in unemployment, slight increases in public assistance use, and temporary burdens on humanitarian aid. Climate change and migration are likely to be the core of complex interdependencies that determine the fundamental well-being of communities throughout the region. People throughout the region, stabilized in place or on the move, will face risks to food and water supplies, the ability to maintain stable families and communities, public safety, and perhaps national security.

A climate change-oriented adaptation strategy needs to develop a risk-based approach to migration issues throughout the region that focuses on identifying and creating alternatives to existing patterns. If nothing else, climate change will create a number of unpredictable situations that require capacities to adapt flexibly to circumstances as they arise. Strategic discussions are needed to focus on new core principles, values, and possibilities as understood throughout the region.

Past and current experiences are unlikely to guide us in anticipating and planning for these changes. Rather, it will take the full engagement of the diverse leaders and communities throughout the region to find ways to continuously work together in a way that, when crises occur, those caught up in them will be able to successfully resist the worst impacts, recover and return to their lives quickly, and renew their communities in ways that offer even more opportunities for advancement than they had before.

This page intentionally left blank

# Endnotes

---

[1] National Academy of Sciences, Informing Decisions in a Changing Climate. Panel on Strategies and Methods for Climate-Related Decision Support, Committee on the Human Dimensions of Global Change, National Research Council, Washington, D.C., 2009.

[2] Oli Brown. "Climate change and forced migration: Observations, projections and implications." A background paper for the 2007 Human Development Report 2007/2008, Geneva, Switzerland. Also see IOM: Migration. Climate Change the Environment. May 2009. IOM Policy Brief. Geneva. (<http://www.iom.int/envmig>)

[3] Norman Myers. "Environmental refugees: A growing phenomenon of the 21st century", *Philosophical Transactions of the Royal Society of London Series Biological Sciences* 357, 2002: 609-613. Norman Myers. "Environmental Refugees: An emergent security issue." *13th Economic Forum*, May 2005, Prague. Nicholas Stern ed. *The Economics of Climate Change: the Stern Review*, Cambridge: Cambridge University Press, 2006.

[4] Cited in Kit Batten, Kari Manlove, and Nat Gryll. *Climate Change, Migration and Social Conflict. America's Climate Debt. Climate Refugees: Global Warming Will Spur Migration*. Washington, D.C.: Center for American Progress, July 3, 2007.

[5] Brad Knickerbocker. "Where Climate Change Meets National Security," *Christian Science Monitor* March 13, 2008.

[6] Javier Solana. "Before the Flood," [guardian.co.uk](http://guardian.co.uk), March 10, 2008.

[7] Ben Vogel. "Climate change creates security challenge 'more complex than Cold War,'" [www.janes.com](http://www.janes.com), January 30, 2007.

[8] Cooperative for Assistance and Relief Everywhere, Inc. (CARE). *In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement*, 2008. [www.careclimatechange.org](http://www.careclimatechange.org)

---

[9] United Nations, *Framework Convention on Climate Change*, FCCC/CP/2001/13/Add.4, January 21, 2002.

[10] Chris Abbott. *Implications for Law Enforcement and the Police*, Oxford Research Group. *An Uncertain Future. Law Enforcement, National Security and Climate*. Briefing Paper, January 2008. (Oxford Research Group)

[11] Lori Hunter. *Climate Change, Rural Vulnerabilities, and Migration*. Population Reference Bureau, June 2007.

[12] P. Grier. "The great Katrina migration", *The Christian Science Monitor*, 12 September 2005. <http://www.csmonitor.com/2005/0912/p01s01-ussc.html>, cited in Renaud et al. "Control, adapt or flee? How to face environmental migration?" *UNU Publication Series Intersections* 5, 2007.

[13] Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, eds. *Global Climate Change Impacts in the United States*, Cambridge University Press, 2009.

[14] Larry Smith. "Climate Change and Tourism in the Caribbean." [www.bahamapundit.com](http://www.bahamapundit.com), July 28, 2008.

[15] Ramon Bueno et al. *Costs of Inaction*. Stockholm Environment Institute—US Center Global Development and Environment Institute, Tufts University, May 2008.

[16] Ibid.

[17] Susmita Dasgupta et al *The Impact of Sea-Level Rise on Developing Countries: A Comparative Analysis*. World Bank Policy Research Working Paper 4136, 2009.

[18] Patricia Grogg. "Caribbean: The Stormy Face of Climate Change." *Inter Press Service*. Thursday, January 29, 2009.

[19] UN Office for the Coordination of Humanitarian Affairs (OCHA). *Climate Change Risks Overwhelming Current Global Humanitarian Capacity*, 2008.

<http://www.reliefweb.int/rw/rwb.nsf/db900sid/EDIS7LYLUA?OpenDocument>.

[20] CARICOM, Caribbean Planning for Adaptation to Climate Change (CPACC). Project 2009. Caribbean Community (CARICOM) Secretariat. Georgetown, Guyana.

---

[21] *Global Climate Changes Impacts in the United States*. U.S. Global Change Research Program, New York: Cambridge University Press, pp. 99-106. Also see Council on Environmental Quality, Office of the White House Press Secretary, *The United States and the 2009 Summit of the Americas: Securing Our Citizens' Future*. April 19, 2009 [http://www.whitehouse.gov/the\\_press\\_office/The-United-States-and-the-2009-Summit-of-the-Americas-Securing-Our-Citizens-Future](http://www.whitehouse.gov/the_press_office/The-United-States-and-the-2009-Summit-of-the-Americas-Securing-Our-Citizens-Future).

[22] Kelly Hearn. "Climate change poses U.S. security risks," *The Washington Times*, November 13, 2008.

[23] Murray C. Simpsons. "The Caribbean: Towards Becoming a Carbon Neutral Destination." *Carbon Management in Tourism* ITB Berlin 13th March 2009.

[24] "Special: Crisis in Tourism." *BBCCaribbean.com*. January 8, 2009.

[25] Thomas Filgar. "Statement for the Record, National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030," Statement before the Permanent Select Committee on Intelligence and the Select Committee on Energy Independence and Global Warning, House of Representatives, June 25, 2008.

[26] Bryan Schaaf. *Haiti Food Security Update*, European Commission - Humanitarian Aid Office (ECHO). Tuesday, February 3, 2009.

[27] UNHCR. *Sexual and Gender-Based Violence against Refugees, Returnees and Internally Displaced Persons: Guidelines for prevention and response*. Geneva, 2003: 1.

[28] Chris Abbott. *Implications for Law Enforcement and the Police*, Oxford Research Group. *An Uncertain Future. Law Enforcement, National Security and Climate*. Briefing Paper, January 2008. Oxford Research Group, 2008.

[29] Roberto Foa. *Social and Governance Dimensions of Climate Change: Implications for Policy*. Background paper for the World Development Report 2010: Development in a Changing Climate—The World Bank Social Development Department and Development Economics World Development Report Team. May 2009. Policy Research Working Paper 4939.

[30] Director of National Intelligence. *Global Trends 2025: A Transformed World*. Washington, DC: US Government Printing Office, November 2008.

---

[31] German Advisory Council on Global Change, *Climate Change as a Security Risk*. Earthscan. London and Sterling, VA., 2008.

[32] San Diego Foundation. *San Diego's Changing Climate: A Regional Wake-Up Call. The First Comprehensive Regional Assessment of Climate Change Impacts to San Diego County*. A Summary of the Focus 2050 Study. San Diego, CA. 2008.

[33] Elizabeth Ferris. "Internally displaced persons: A neglected issue on the international agenda," *New Routes* 4, 2008: 10-14.

[34] K. Hampshire. "Seasonal labour migration strategies in the Sahel: coping with poverty or optimising security?" *International Journal of Population Geography* 5, 2002: 367-385.

[35] Steve Lonergan. "The role of environmental degradation in population displacement", *Environmental Change and Security Project Report* 4, Spring 1998.



