Climate Change Migration, Refugee Protection, and Adaptive Capacity-Building

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This article describes the potential for large-scale population displacements and migration as a result of climate change. Migration is one of many ways by which households exposed to climatic stresses may adapt. Given current trends in climate change, increased rural-to-urban migration in developing regions and increased levels of international migration along pre-existing social networks may be expected. Two international policy instruments that may be relevant for managing climate change-related migration are the Convention relating to the Status of Refugees and the United Nations Framework Convention on Climate Change (UNFCCC). People displaced by climate change would not qualify for protection as Convention refugees under the former convention, and there is little evidence this situation will change in the near future. The international community is, however, committed under the UNFCCC to assisting vulnerable developing nations build capacity to adapt to the impacts of climate change. This commitment provides an opportunity for developed nations to prevent future climate-related migrations by expanding the range of adaptation alternatives.

Cet article traite de l'éventualité d'une migration et d'un déplacement de la population à grande échelle résultant des changements climatiques. La migration est une voie, parmi d'autres, par laquelle les ménages exposés aux contraintes climatiques peuvent s'adapter. En raison des tendances climatiques actuelles, l'accroissement de l'urbanisation dans les régions en développement et de la migration internationale le long de réseaux sociaux préexistants est à prévoir. La Convention relative au statut des réfugiés et la Convention-cadre des Nations unies sur les changements climatiques (CCNUCC) sont deux politiques internationales potentiellement pertinentes pour gérer la migration résultant des changements climatiques. La première ne confère pas de protection aux personnes déplacées par les changements climatiques, et cette absence de qualification risque de demeurer inchangée dans un avenir rapproché. La communauté internationale est cependant engagée, par la CCNUCC, à soutenir les nations en développement, plus vulnérables, dans leur processus d'adaptation aux impacts des changements climatiques. Cet engagement, de par l'accroissement des mesures alternatives d'adaptation, constitue une opportunité pour les nations développées de prévenir les migrations reliées aux changements climatiques.

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There is widespread agreement in the international scientific community that humans, through the burning of fossil fuels and the steady clearance of the world's forested areas, have fundamentally altered key properties of the atmosphere that affect climatic conditions at the Earth's surface. The Intergovernmental Panel on Climate Change (IPCC), a body established by the United Nations Environment Program and the World Meteorological Organization to advise world governments on current developments in climate science, reports that average global temperatures have increased by three-quarters of a degree Celsius over the past century, that the sea level is rising by between 1.3 and 2.3 mm per year and that, by the end of this century, average temperature will rise by between 2 and 4 degrees Celsius if anthropogenic emissions of carbon dioxide and other greenhouse gas emissions are not rapidly stabilized and reduced.[1] The impacts of such changes are expected to include increased intensity of extreme storms and longer and more frequent droughts and heat waves.[2]

The consequences of such climate change will likely be catastrophic for many human populations. The vulnerability of human populations will vary from one place to another according to the particular type of climatic events to which each will be exposed, the sensitiv-

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1 S. Solomon *et al.*, "2007: Technical Summary" in S. Solomon *et al.*, eds., *Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007) 19.

2 Maarten K. van Aalst, "The Impact of Climate Change on the Risk of Natural Disasters" (2006) 30 Disasters 5; P.J. Webster *et al.*, "Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment" (2005) 309 Science 1844.

ity of socio-economic systems, and the capacity to adapt to changing conditions.[3] One of the ways by which human populations adapted to past climatic extremes and conditions is through migration, and this form of adaptation can be expected to occur in response to future extremes resulting from climate change.[4] Ten percent of the global human population presently lives within ten meters of sea level, including many of the world's largest urban centres, and is thereby potentially exposed to new risks associated with rising sea levels.[5] The combination of new risks and the exacerbation of existing ones has led a number of authors and agencies to suggest that global warming will lead to population displacements and migration in the future, at numbers never before witnessed.[6]

The window for reducing greenhouse gas emissions and averting such an undesirable future is rapidly closing. The current atmospheric concentration of carbon dioxide, the most significant greenhouse gas in terms of anthropogenic forcing, is approximately 380 parts per million (ppm) and is presently increasing at a rate of approximately 2 ppm per year.[7] At no point in the past 650,000 years has atmospheric carbon dioxide approached current concentrations.[8] As a result, there is no past analogue that might clearly indicate how the Earth's climate will respond. A number of scientists believe, however, that global warming of an additional 1 degree Celsius from today's average temperatures, which will only occur if atmospheric concentrations of greenhouse gases are maintained well below 450 ppm, will have dangerous consequences for human wellbeing.[9] To stabilize levels of atmospheric carbon dioxide at 450ppm,

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3 W.N. Adger *et al.*, "Assessment of Adaptation Practices, Options, Constraints and Capacity" in M.L. Parry *et al.*, eds., *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007) 717 at 720.

4 Robert McLeman & Barry Smit, "Migration as an Adaptation to Climate Change" (2006) 76 Climatic Change 31 [McLeman & Smit, "Migration as Adaptation"].

5 Gordon Mcgranahan, Deborah Balk & Bridget Anderson, "The Rising Tide: Assessing the Risks of Climate Change and Human Settlements in Low Elevation Coastal Zones" (2007) 19 Environment and Urbanization 17 at 22.

6 Norman Myers, "Environmental Refugees: A Growing Phenomenon of the 21st Century" (2002) 357 Philosophical Transactions: Biological Sciences 609; United Nations University, Institute for Environment and Human Security, Press Release, "As Ranks of 'Environmental Refugees' Swell Worldwide, Calls Grow for Better Definition, Recognition, Support" (12 October 2005), online: UNU-EHS <http://www.ehs.unu.edu/index.php?cat=7&menu=44&page=12_October_-_UN_Disaster_Day> [ENU-EHS]; Christian Aid, *Human Tide: The Real Migration Crisis* (London: Christian Aid, 2007).

7 *Solomon, supra* note 1 at 24.

8 *Ibid.* at 24.

9 This concept of "dangerous consequences" is given international legal significance under the UNFCCC, *infra* note 12, article 2, which states "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would *prevent dangerous anthropogenic interference* with the climate system." [emphasis added]. What exactly constitutes *dangerous* interference with climate is a matter of continuing discussion among the parties to the UNFCCC. For a technical perspective on what would constitute dangerous change, see James Hansen *et al.*, "Global Temperature Change" (2006) 103 Proceedings of the National Academy of Sciences 14288 at 14293.

worldwide growth in carbon dioxide emissions must be stopped by the year 2015, and overall global emissions must be reduced by 50 to 85 percent by 2050.[10]

There is no evidence such reductions will happen in the necessary timeframes. Greenhouse gas emissions in many developing countries, particularly China, India and Brazil, are rising quickly due to economic growth. The governments of the United States, the world's largest source of emissions, and of Canada and Australia, which are among the world's largest per capita emitters, have refused to take meaningful steps to curb their greenhouse gas emissions. With the exception of a number of European Union countries and former Soviet states – whose emissions fell dramatically with their economic collapse in the 1990s – many large emitters currently lack the political will and/or technological and economic wherewithal to reduce emissions. While pressure must continue to be brought upon policy makers to treat climate policy with the same degree of importance as economic and security policies, the international community's inability to curb greenhouse gas emissions means we must now plan to manage the consequences of anthropogenically-induced climate change. One of these consequences is the potential for increased population displacement and migration.

This paper reviews estimates of the potential scale of climate change-related population displacements and identifies the migration patterns most likely to emerge. Two key elements of the international policy framework relevant to climate change-driven migration are considered, the United Nations *Convention relating to the Status of Refugees*[11] and the *United Nations Framework Convention on Climate Change*.[12] The relevance of climate change-related displacements to Canada, and potential opportunities to develop adaptation policy are also examined.

2. PROJECTIONS OF FUTURE NUMBERS[13]

It seems that as our understanding of the science of climate change becomes better developed, estimates of the severity of the impacts and the number of people at risk also increase. A relative lack of empirical research means it is presently difficult to provide anything more than coarse predictions of the scale of population displacement and migration that might occur. Current estimates vary considerably (Table 1). The British charitable organization Christian Aid, which has been actively engaged in refugee assistance and protection for decades, has suggested that the number of displaced people worldwide may rise from its own current estimates

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10 Intergovernmental Panel on Climate Change, *Climate Change 2007 - Mitigation of Climate Change: Working Group III Contribution to the Fourth Assessment Report of the IPCC* (Cambridge: Cambridge University Press, 2007) at 9.

11 See *Convention relating to the Status of Refugees*, 28 July 1951, 189 U.N.T.S. 150 [*UNCSR*].

12 See *United Nations Framework Convention on Climate Change*, 9 May 1982, 1771 U.N.T.S. 107, 165, U.N. Doc. A/AC/237/18 [*UNFCCC*].

13 In the literature relating to the impacts of climate change on human population movements, consistent terminology that has legal significance to migration policy-makers is not always used, as is shown by the various terms capture in Table 1. Section 5 of this article speaks directly to the international policy framework, where the criticality of distinctions between terms such as "migrants," "refugees," "environmental refugees," and "internally displaced persons" is examined; until that point is reached, the reader is asked to accept loose use of terminology in this respect.

of 165 million to more than 1 billion by the year 2050, in large part due to climate change.[14] An oft-cited estimate made by British ecologist Norman Myers is that up to 200 million people may be displaced by climate change and other human-induced environmental changes by the end of the 21st century.[15] The United Nations University's Institute for Environment and Human Security estimates that there may be 50 million new environmental refugees within the next five years.[16]

Table 1: Sample estimates of human population displacements

Author/ source	**Estimated number to be displaced, with climate change as key driver**	**Time period**
Christian Aid	1 billion displaced persons	by 2050
Myers	200 million additional environmental refugees	by 2100
UNU-EHS	50 million additional environmental refugees	2010
Number of people currently displaced worldwide		
Agency	**Estimate**	**Year**
Christian Aid	165 million displaced persons	2007
UNHCR	20.8 million refugees & displaced persons of concern	2005

To put these estimates into context, at the end of 2005, the most recent year for which detailed figures exist at the time of writing, 8.4 million people worldwide were officially recognized as refugees by the United Nations High Commission for Refugees (UNHCR), with another 12.4 million being identified as persons of concern (such as stateless people and people displaced within the boundaries of their own country).[17] Christian Aid's projection represents a nine-fold increase in the number of people in refugee-like situations based on their own estimates of the current numbers of displaced persons, and a fifty-fold increase over current UNHCR figures.

The accuracy of these projections is influenced by a number of climatic and non-climatic factors. One key determinant will be the rate of onset of the impacts of climate change. If these impacts are realized in a gradual, linear and incremental fashion – for example, if sea level continues to rise at a slow and steady pace, and/or if average precipitation levels change but stay within the historical range of variability – then human societies will, at least in principle, have time to adjust and adapt their economies, infrastructures and livelihood strategies to

14 Christian Aid, *supra* note 6 at 1.

15 Myers, *supra* note 6 at 609.

16 UNU-EHS, *supra* note 6.

17 Khassoum Diallo & Tarek Abou Chabaké, eds., "2005 UNHCR Statistical Yearbook: Trends in Displacement, Protection and Solutions" (2007), online: United Nations High Commissioner for Refugees <http://www.unhcr.org/statistics/STATISTICS/464049e80.pdf> at 9.

respond to such changes. Under this scenario, the potential for population displacement will be strongly influenced by the level and nature of socio-economic development of populations living in areas at risk. Those populations that have the wherewithal to identify their adaptation needs and have the means to undertake the necessary actions will be least adversely affected, and would likely experience less out-migration as a result.

If, on the other hand, the impacts of climate change occur in exponential or non-linear fashion – that is, if sea level rise accelerates due to rapid melting of continental ice shelves, and/or if precipitation regimes change suddenly from wet to dry – then the potential for distress migration is very high in many regions. The IPCC warns that in a worst-case scenario, billions of people worldwide could experience scarcity of food and/or water.[18] Hundreds of millions would likely be displaced by a sudden increase in sea level.[19] Current theoretical and empirical understandings of human migration behaviour are not particularly transferable to envisaging how migration would unfold under conditions of non-linear climatic changes.

In the past, both sudden-onset climate events (such as extreme storms and floods) and more gradual conditions of change (such as protracted droughts) are known to have led to population displacements and distress migration. For example, during the Dust Bowl years of the 1930s, hundreds of thousands migrated out of North America's Great Plains, and hundreds of thousands more were internally displaced within that region.[20] In Ethiopia, millions of people have been displaced since the 1970s by a combination drought and political instability, the causal influence of one being difficult to distinguish from the other.[21] In flood-prone Bangladesh, catastrophic flooding in 1987, 1988 and 1998 killed thousands of people, displaced tens of millions more, and caused billions of dollars in damages to housing and infrastructure.[22] Flooding along the Yangtze River valley in 1998 displaced an estimated 14 million people.[23] Later that same year, Hurricane Mitch left hundreds of thousands homeless in Central America, and tens of thousands fled Honduras and hard-hit areas of neighbouring countries in search of shelter and livelihood opportunities.[24] For years thereafter, US immigration authorities have had to maintain a special program for non-resident Hondurans unable to return to their home country as a result of the impacts from Hurricane Mitch. In the Sahelian region of western Africa, large areas are experiencing a multi-decadal drought. Farming house-

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18 Adger, *supra* note 3 at 18.

19 McGranahan, Balk & Anderson, *supra* note 5 at 24.

20 Robert McLeman, "Migration Out of 1930s Rural Eastern Oklahoma: Insights for Climate Change Research" (2006) 26 Great Plains Quarterly 27 at 28 [McLeman, "Migration Out of Oklahoma"].

21 Elizabeth Meze-Hausken, "Migration Caused by Climate Change: How Vulnerable are People in Dryland Areas?" (2000) 5 Mitigation and Adaptation Strategies for Global Change 379 at 382.

22 M. Monirul Qader Mirza, "Global Warming and Changes in the Probability of Occurrence of Floods in Bangladesh and Implications" (2002) 12 Global Environmental Change 127 at 130-131.

23 Hongfu Yin & Changan Li, "Human Impact on Floods and Flood Disasters on the Yangtze River" (2001) 41 Geomorphology 105.

24 Saul S. Morris *et al.*, "Hurricane Mitch and the Livelihoods of the Rural Poor in Honduras" (2002) 30 World Development 49 at 49.

holds have adapted by engaging in regular, seasonal migration to urban centres, while pastoral groups have been moving in increasing numbers to areas occupied by sedentary farmers.[25]

By considering how displacement and migration processes unfolded in the past, it is possible to shed light on how future climate change-related migration may unfold.[26] Having done so, two general predictions may be made with some confidence regarding future climate change-related migration.[27] The first of these is that climate change is likely to fuel increased levels of rural-to-urban migration, especially in the developing world. The second is that longer distance, international migration will increase from countries that have high levels of vulnerability to climatic stresses to other regions along established social and economic networks.

Rural-to-urban migration levels are already high in many parts of the world, and adverse impacts of climate change can be expected to further increase the rates at which this occurs.[28] This is because rural livelihoods are fundamentally linked to environmental and climatic conditions. Rural communities and systems often have a high capacity to adapt to climatic stresses, and are typically able to cope with floods, droughts and other stresses within a certain range of severity and duration.[29] When climatic stresses become extreme or protracted, that adaptive capacity can be exceeded. Migration is one way that rural households adapt to such climatic stresses.[30]

When climatic stresses coincide with social or economic stresses, the potential for distress migration out of rural areas increases significantly. In western Canada, rural out-migration occurred on a large scale in the late 1920s and early 1930s, when extreme drought conditions coincided with low commodity prices and a depressed economy.[31] Rural out-migration also occurs today in many parts of drought-stricken West Africa. Referred to locally as "eating the dry season," young adults as a matter of routine leave their rural homes during dry periods when there is no work to be done, and migrate to regional urban centres in search of work.[32] This strategy reduces pressure on household food reserves and, with luck, the migrant might be able to earn some extra money to remit home. In especially dry years, young children may be

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25 Anthony Nyong, Charles Fiki & Robert McLeman, "Drought-Related Conflicts, Management and Resolution in the West African Sahel: Considerations for Climate Change Research" (2006) 137 Die Erde 223.

26 McLeman, "Migration Out of Oklahoma", *supra* note 20; Meze-Hausken, *supra* note 21.

27 McLeman & Smit, "Migration as Adaptation", *supra* note 4; Robert McLeman & Barry Smit, "Changement climatique, migrations et sécurité" (2007) 63 Les Cahiers de la Sécurité 95 [McLeman & Smit, "Changement climatique"].

28 McLeman & Smit, "Changement climatique", *ibid*.

29 Barry Smit & Mark W. Skinner, "Adaptation Options in Agriculture to Climate Change: A Typology" (2002) 7 Mitigation and Adaptation Strategies for Global Change 85.

30 McLeman, "Migration Out of Oklahoma", *supra* note 20.

31 David C. Jones, *Empire of Dust: Settling and Abandoning the Prairie Dry Belt* (Edmonton: University of Alberta Press, 1987).

32 Kate Hampshire & Sara Randall, "Seasonal Labour Migration Strategies in the Sahel: Coping With Poverty or Optimising Security?" (1999) 5 International Journal of Population Geography 367; D. Rain, *Eaters of the Dry Season: Circular Labor Migration in the West African Sahel* (Boulder: Westview Press, 1999); Michael J. Mortimore & William M. Adams, "Farmer Adaptation, Change and 'Crisis' in the Sahel" (2001) 11 Global Environmental Change 49.

sent out of the drought-affected area to stay with relatives elsewhere, further reducing pressure on household food resources. Similar strategies are employed by rural populations in South Asia and China to cope with droughts.[33] It can therefore be expected that, as droughts become more frequent and pronounced in developing regions as a result of climate change, higher levels of intra-regional migration to urban centres may occur.

Levels of long-distance migration between geographic regions and across international boundaries will also likely rise due to climate change, but proportionally less than intra-regional and intra-national population movements. This is because migration over long distances is an adaptation that has significant financial and opportunity costs that not all households can afford. Rural West Africa again provides an illuminating example. Young men and women do, in significant numbers, migrate from rural West Africa to developed nations.[34] If drought has reduced a household's income, however, poorer households may not be able to finance a member to undertake such a long and risky journey. Moreover, the migrant will be away when the next production season begins, just when his or her labour will be greatly needed. Consequently, shorter distance, intra-regional migration may be the more likely household migration response after a drought.[35]

When the household has had a successful harvest, it can better afford a lengthy absence of one of its members. Even so, long-distance migration is costly, and the migrant must draw heavily upon social networks and contacts along the route and at his or her destination to be successful. Hence, such migrations tend to follow well-established routes that often date back to colonial linkages: French-speaking West Africans to France, English-speakers to the United Kingdom, and so forth. The strong influence of preexisting transnational social networks on long-distance migration has been noted in migration research elsewhere.[36] From such examples, it can be extrapolated that in areas where the future impacts of climate change depress household incomes, the option of out-migration would be constrained primarily to routes following established social networks. Globally, then, climate change may be expected to trigger percentage increases in movement along pre-established long-distance migration routes.

3. POTENTIAL FOR CONFLICT

While changing climatic conditions may directly increase migration in the ways described above, there is also a fear that climate-related stresses will increase competition between groups

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33 Elizabeth J. Croll & Huang Ping, "Migration For and Against Agriculture in Eight Chinese Villages" (1997) 149 The China Quarterly 128; P. Deshingkar & D. Start, *Seasonal Migration for Livelihoods in India: Coping, Accumulation and Exclusion* (London: Overseas Development Institute, 2003).

34 David Styan, "Security of Africans Beyond Borders" (2008) 83 International Affairs 1171.

35 Sally E. Findley, "Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983-1985 Drought" (1994) 28 International Migration Review 539 at 540; Carla Roncoli, Keith Ingram & Paul Kirshen, "The Costs and Risks of Coping with Drought: Livelihood Impacts and Farmers' Responses in Burkina Faso" (2001) 19 Climate Research 119 at 126; Kate Hampshire, "Fulani on the Move: Seasonal Economic Migration in the Sahel as a Social Process" (2002) 38 The Journal of Development Studies 15.

36 Douglas S. Massey & Kristin E. Espinosa, "What's Driving Mexico-U.S. Migration?: A Theoretical, Empirical, and Policy Analysis" (1997) 102 American Journal of Sociology 939; T. Faist, "Transnational Social Spaces Out of International Migration: Evolution, Significance and Future Prospects" (1998) 39 Archives Européennes de Sociologie 213.

for increasingly scarce resources, in turn raising the potential for violent conflict and refugee movements.[37] While there has been much theorizing about the relationship between resource scarcity and violent conflict, there are very few historical examples to draw upon. Indeed, some current violent conflicts, such as the struggle for control of oil in several regions, and the control of diamonds in Africa, have emerged over resources that are widely distributed and not particularly scarce at present. Some have argued that competition for increasingly scarce and degraded land contributed to the Rwanda conflict.[38] There is also a fairly widely-held belief that the current crisis in Darfur has its origins in the extended drought that brought pastoralists into competition with farmers.[39] Both conflicts have created, and in the case of Darfur, continues to create, large numbers of internally displaced persons and of international migrants that meet UNHCR's criteria for refugee protection.

Large-scale violence need not, however, be the outcome of competition for scarce resources, even in the extreme drought conditions that currently plague, for example, the Sahel. A dynamic similar to that encountered in Darfur exists in Sahelian regions of northern Nigeria. Pastoralists have been moving herds in large numbers from drought-stricken regions of neighbouring Niger and Chad into Nigeria.[40] Seasonal movements of pastoralists into Nigeria along established corridors have taken place for generations, but recent droughts to the north have led to far more cattle being brought into Nigeria. Overgrazing and destruction of Nigerian farmers' crops has increased, and pastoralists and sedentary farmers are in increased competition for wells and surface water.

Unlike Darfur, however, the Nigerian government has not actively fostered inter-group violence in dryland areas, and competition for resources is resolved by other methods. When a source of conflict occurs – such as the destruction of crops by stray cattle, the killing of a wayward animal, or arguments over use of a well – all parties to the conflict voluntarily refer the matter to a local elder or person of informal authority. This arbiter does not determine blame and mete out punishment as does the formal legal authority in Nigeria, which is based on British legal tradition. Rather, the elder resolves the dispute by determining what course of action will best maintain the resource in question for future use, which all parties recognize as being the overriding priority.[41]

So far, these traditional conflict resolution mechanisms have worked well at minimizing violent conflict, and have been especially effective in a region where government officials lack both presence and authority. There is clearly a strong link in such communities between sustainable development and conflict resolution, even if the local population themselves might not necessarily describe their practices in such terms. These findings from Nigeria are consis-

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37 Thomas F. Homer-Dixon, *Environment, Scarcity, and Violence* (Princeton NJ: Princeton University Press, 1999).

38 Peter Uvin, "Tragedy in Rwanda: The Political Ecology of Conflict" (1996) 38 Environment 6.

39 University for Peace Africa Programme, "Environmental Degradation as a Cause of Conflict in Darfur: Conference Proceedings, Khartoum, December 2004" (2006), online: University for Peace <http://www.steinergraphics.com/pdf/darfur_screen.pdf>.

40 Nyong, *supra* note 25.

41 O. Brown, A. Hammill & R. McLeman, "Climate change as the 'new' security threat: implications for Africa" (2007) 83 International Affairs 1141.

tent with work that has been done elsewhere.[42] The message to be taken from this Nigerian example is, therefore, that it should not be assumed that climate-related scarcity automatically increases the likelihood of violent conflicts, resulting in flows of internally-displaced persons, migrants and refugees. This creates an entry point for concerned governments and development agencies to moderate the relationship between the impacts of climate change and population displacements and migration.

Nevertheless, the Darfur and Rwanda cases do suggest that the international community should be prepared for the possibility that the impacts of climate change will exacerbate already-tense geopolitical situations and may trigger sudden pulses of violence and refugee outflows.[43] In several regions – South Asia, North Africa, the Middle East – climate change will increase pressure on water supplies in areas where there already exists a recent history of unstable governments, environmental degradation and violent conflicts.[44] The potential for climate change to exacerbate geopolitical tensions increases the urgency for greater international development assistance and active diplomatic engagement in those regions.

4. SMALL ISLAND STATES

Scattered in the Pacific and Indian Oceans, and the Mediterranean and Caribbean Seas, are tens of thousands of populated small islands that rise but a few meters above current sea level. Other island states, such as Samoa and Fiji, reach higher elevations but the majority of inhabitable land is close to current sea level. While dispersed in small numbers across large geographic regions, the total number of people living on small islands constitutes 5 percent of the world's population and 20 percent of the member states of the United Nations.[45] Coastal land loss and erosion is already a problem in many small island states, and rising sea level could, over the long term, render thousands of currently-populated islands uninhabitable. In addition to rising sea level, small island states also face increased intensity of tropical cyclones, more frequent heat waves, and increased spread of vector-borne diseases.[46]

What will become of the populations of islands that become no longer viable? A small number of historical cases suggest a possible direction. In the mid-1990s a volcano became active on the island of Montserrat, officially a British Overseas Territory. Eventually the risk of catastrophic eruption became such that the British government organized the evacuation of residents from the island. After the risk had passed, more than half of the original residents chose to remain permanently in Britain or relocate to Antigua, another British dependency in the Caribbean.[47] This was not the first evacuation organized by the British in response to a vol-

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42 S. Appiah-Opoku & B. Hyma, "Indigenous Institutions and Resource Management in Ghana" (1999) 7 Indigenous Knowledge and Development Monitor 15; Aaron T. Wolf, "Indigenous Approaches to Water Conflict Negotiations and Implications for International Waters" (2000) 5 International Negotiation 357.

43 McLeman & Smit, "Changement climatique", *supra* note 27.

44 *Ibid*.

45 Alliance of Small Island States, "The Alliance" (2007), online: Alliance of Small Island States <http://www.sidsnet.org/aosis/index.html>.

46 Murari Lal, Hideo Harasawa & Kiyoshi Takahashi, "Future Climate Change and its Impact over Small Island States" (2002) 19 Climate Research 179.

47 Richard Stone, "Bracing for the Big One on Montserrat (News)" (2003) 299 Science 2027.

canic eruption; a similar one was organized from its dependency of Tristan da Cuhna in 1963. In recent years, organized evacuations in response to risk from volcanoes have occurred on other islands, including Miyakejima (Japan) in 2000, Ruang (Indonesia) in 2002, Stromboli (Italy) in 2003, and Manam (Papua New Guinea) in 2004, among others. While volcanoes are geologic hazards and not climatic hazards, they nonetheless suggest an established practice that when an island becomes uninhabitable due to a natural hazard, the government on which that island is dependent undertakes an organized evacuation and relocation of its residents.

Such cases do not, however, provide guidance on what to do in the case where an entire, fully independent nation ceases to be habitable. In recent years Australian and New Zealand parliamentarians have held discussions about the future of island states within their sphere of geopolitical influence, but no decisions or policies have yet been developed. If the Montserrat case is interpreted as a guiding principle, then the lead responsibility for organizing population relocations would likely fall to the country or countries that the island state has the strongest colonial, political, economic and/or social ties. It would therefore be reasonable that Marshall Islanders would look to the United States for resettlement, Nauruans to Australia and New Zealand, and so forth.

Whether the governments of the likely destination countries would willingly accept residents seeking relocation from islands at risk is an open question. In the case of many Caribbean and South Pacific islands, however, there has already been considerable out-migration over recent decades, to the extent that large proportions of island populations now reside in developed nations.[48] These expatriate groups create a significant political lobby to act on behalf of those who remain on their home islands, as well as providing the types of social networks that would facilitate and support distress migration in the event of a climate-related crisis.

5. INTERNATIONAL POLICY FRAMEWORK

5.1 Protection of climate-change refugees

The protection of refugees is a fundamental part of the international community's commitment to sustainable development,[49] and is a key policy concern when considering how to plan for future adaptation to climate change. Yet, the international policy framework is silent on what should be done about climate change-related migration. One reality is that there is no generally agreed-upon way of describing such a phenomenon, which helps explain the high degree of variation among predictions of how many people will be displaced or migrate as a result of climate change-related stresses shown in Table 1.

A number of authors consider people displaced by climate change to be among a broader description of "environmental refugees,"[50] a term that came into frequent use following the

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48 Jon Barnett & Neil Adger, "Climate Dangers and Atoll Countries" (2003) 61 Climatic Change 321 at 331; Beth H. Mills, "The Transnational Community as an Agent for Caribbean Development: Aid from New York City and Toronto to Carriacou, Grenada" (2005) 45 Southeastern Geographer 174.

49 Robert McLeman, "Refugee Protection and Sustainable Development" *Canadian Issues* (Spring 2004) 37.

50 Myers, *supra* note 6; Mark Townsend, "Environmental Refugees" (2002) 32 Ecologist 22; L.R. Brown, *Troubling New Flows of Environmental Refugees: Report No. 2004-2* (Washington DC: Earth Policy Institute, 2004).

publication of a report in 1985 by the United Nations Environment Program. In this report, an environmental refugee was described as someone who:

- has been forced to leave his or her traditional habitat, temporarily or permanently;
- the reason for leaving is attributable to a marked environmental disruption (which is described as physical, chemical and/or biological changes in the ecosystem or resource base that render it unable to support human life, temporarily or permanently);
- the disruption has jeopardized that individual's existence or seriously affected their quality of life.[51]

A number of reservations have been identified with this definition.[52] One problem is that there are very few historical cases where an ecosystem or resource base has been rendered entirely incapable of supporting human life (the area around Chernobyl being one of the few examples that springs quickly to mind). Another problem is that most suggested examples involving environmental refugees, such as Darfur or Rwanda, have also been influenced by other significant, non-climatic drivers. In other examples, migration has been driven by deliberate decisions by governments to alter environmental conditions (such as populations displaced by flooding of areas upstream of China's Three Gorges dams). It remains to be determined if refugees that are in part the product of non-environmental processes satisfy the criteria of this definition.

People displaced by climate change would match El-Hinnawi's definition of environmental refugees. It is difficult to envisage any particularly adverse climate change scenario that would not be accompanied by severe economic hardship and social upheaval. Climatic drivers of migration will almost certainly go hand in hand with socio-economic drivers. For another, human modification of the atmosphere is at the root of climate change risks. And, most critically, the impacts of climate change are expected to place (and in some regions are already placing) severe stress on ecosystems, resources and livelihoods.

Although the concept of environmental refugees has now been around for several decades, there has been little appetite among governments or policy makers, especially in developed nations, to pursue the idea of adding environmental refugees as a possible new category of protected persons. A well-established international definition of a refugee already exists, and a person fleeing an environmental crisis (whether human-caused or of purely natural origins) does not begin to meet that accepted definition. The UN *Convention relating to the Status of Refugees* describes a refugee as someone who:

- is outside his/her country of nationality or habitual residence;
- has a well-founded fear of persecution because of his/her race, religion, nationality, membership in a particular social group or political opinion; and

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51 Essam El-Hinnawi, *Environmental Refugees* (Nairobi: UN Environment Programme, 1985) at 4.

52 D.C. Bates, "Environmental Refugees? Classifying Human Migrations Caused by Environmental Change" (2002) 23 Population and Environment 465.

- is unable or unwilling to avail himself/herself of the protection of that country, or to return there, for fear of persecution.[53]

Populations displaced by impacts of climate change would not meet such a definition for two key reasons. First, the largest degree of displacement and migration would likely occur within national boundaries, and such people would automatically fail to qualify for refugee protection under the first criterion. Second, even those who might be forced to move across international boundaries would not qualify for protection because persecution is a purely human action.

In cases where stressful environmental conditions have contributed to violent conflict, such as Darfur or Rwanda, the international community and the UNHCR have attempted to provide protection and assistance to those who fled. It is, however, by virtue of having been displaced by the fear of violence, not the loss of livelihood due to environmental stress, that qualifies those individuals for protection. International refugee policy is in part guided by the goal of helping refugees return to their home countries once conditions there improve, referred to by the UNHCR as "voluntary repatriation". In many refugee-receiving countries, especially where large flows of people have fled from conflict, refugees can acquire no more than temporary protection status. The consequence of this policy is that millions of refugees reside in makeshift accommodation along the periphery of the nations from which they have fled, often with little prospect of establishing new permanent homes or livelihoods.[54] Other developing nations have large populations of people in refugee-like conditions, people who receive even less international attention because they have fled violence and persecution but remain within their own national boundaries and are therefore not considered refugees under international law.[55]

The international community, and in particular its wealthier members, does a poor job of protecting those who meet the existing definition of a refugee. The UNHCR does not act supranationally. Every nation makes its own policies and programs regarding how it will interpret the *Convention relating to the Status of Refugees* and its protocols - how many refugees it will shelter and so forth. The outcome is that refugee protection in many cases means leaving developing nations to shelter refugees from their neighbours' conflicts in an *ad hoc* fashion, using whatever resources they can obtain from UNHCR and non-governmental organizations. Many developing nations host refugees numbering in the hundreds of thousands and even millions (see Figure 1). By comparison, Canada and France combined hosted approximately 278,000 refugees in 2005, about the same number of refugees hosted by the impoverished African nation of Chad.[56]

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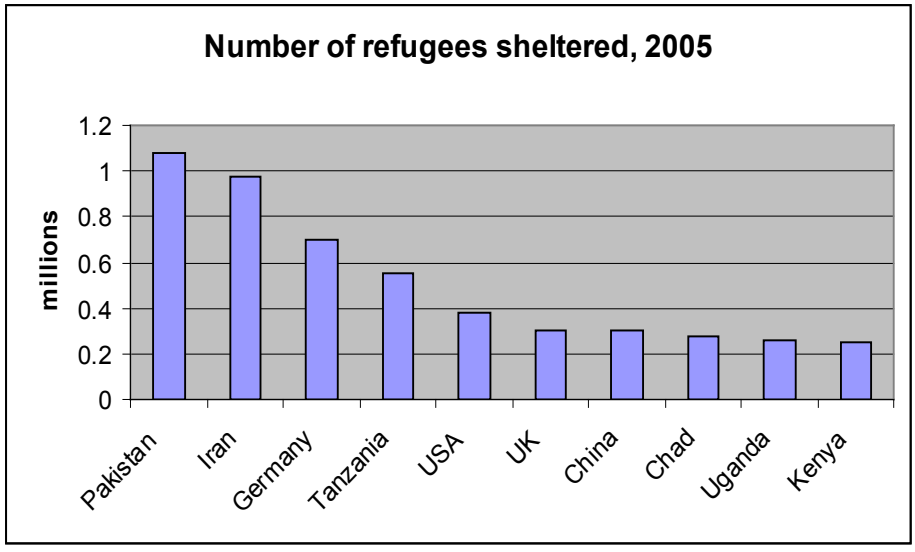
53 *UNCSR, supra* note 11.

54 Joan Fitzpatrick, "Temporary Protection of Refugees: Elements of a Formalized Regime" (2000) 94 American Journal of International Law 279.

55 For example, Colombia alone hosts over 2 million internally displaced persons. See Diallo & Chabaké, *supra* note 17 at 77).

56 UNHCR, *Statistical Handbook 2005* (Geneva: 2006), online: UNHCR <http://www.unhcr.org/cgi-bin/texis/vtx/home/opendoc.pdf?id=464062f52&tbl=STATISTICS>.

Figure 1: Top-ten countries of asylum for refugees, worldwide[57]



Because they are geographically removed from the world's major refugee source regions, it is not altogether surprising that developed nations receive a disproportionately small portion of the world's flow of refugees, although the large number of refugees sheltered in Germany suggests that national refugee resettlement policies are a significant determinant. Developed nations do play an additional role in refugee protection through donations to the UNHCR and other organizations engaged in refugee protection, resettlement and relief. The scale of such financial contributions is, however, often low in comparison with the donor country's economic means and the scale of the global refugee population. For example, Canada, with a Gross Domestic Product estimated at over US$1 trillion, was the UNHCR's seventh-largest donor in 2007, having donated US$32 million as of July 31 (the last information available from UNHCR at the time of writing). To put this donation into context, it represents about USD$1.50 for each refugee and person of concern to the UNHCR, and is less than what a thrifty professional North American hockey team spends on player salaries in one season.

5.2 Prevention of climate-change refugees through adaptation assistance

A second key element of the international policy framework relates to preventing climate change-related migration by enhancing adaptive capacity in vulnerable regions. The international community has formally committed itself to this element under the UNFCCC, but results have been slow in coming.

The UNFCCC was a product of the 1992 Earth Summit, and entered into force in March 1994. One hundred and ninety-one countries have signed and ratified the UNFCCC, including Canada, the USA and most other developed nations. The UNFCCC serves several purposes. It requires signatories to record and report their national greenhouse gas emissions, to

[57] *Ibid.*, note Annex I.1. Figures include only estimates of Convention refugees and not internally displaced persons, seekers of political asylum, stateless persons or other persons of concern to UNHCR.

develop co-operative strategies to reduce emissions, and to help one another increase capacity to adapt to the impacts of climate change. In recent years, much attention and contention has been focused on the 1997 *Kyoto Protocol*[58] to the UNFCCC. *Kyoto* lays out the first stage of greenhouse gas emissions reductions to be undertaken by developed nations, which are far and away the largest per capita emitters of greenhouse gases, and whose historical emissions have been the principal driver of atmospheric change. Not all signatories to the UNFCCC have ratified *Kyoto*, the USA being the most notable exception. Other nations that have ratified *Kyoto*, most notably Canada, have shown little intention to abide by their commitment.[59] The European Union, which has undertaken a collective emissions-reduction program, is presently on track for meeting its overall reductions targets under *Kyoto* through implementation of a 'cap and trade' system to regulate greenhouse gas emissions.[60]

Overshadowed by the push for emissions reductions has been the commitment made by developed countries to provide financial assistance to nations vulnerable to the impacts of climate change. This commitment is found in s. 4 of a. 4 of the UNFCCC, which reads:

> 4. The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.[61]

Unlike the commitment to emissions reductions, the commitment to helping developing country Parties to meet the costs of adaptation is not accompanied by a protocol that spells out specific commitments. Instead, a piecemeal collection of committees, technical strategies, action plans, accords and programs have been floated over the years at Conferences of the Parties to the UNFCCC (COP). In the absence of a protocol with binding targets for adaptation assistance, the amount, nature and mechanism of contributions being made under this commitment are done at the discretion of each individual party.

At the Nairobi COP in 2006, the lack of concerted progress on adaptation assistance was a key agenda item, and resulted in the creation of the Nairobi Work Program (NWP).[62] For the five year period ending in 2011, the NWP is intended to help developing nations better assess their respective vulnerability to the impacts of climate change and their adaptation needs, and to assist them in making adaptation decisions and action plans. One hundred and sixty-five different organizations are or will be engaged in NWP activities, including a range of intergovernmental and non-governmental organizations and development assistance agencies.[63]

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58 *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 10 December 1997, UN Doc. FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 [*Kyoto Protocol*].

59 Agence France-presse, "Canada faces lawsuit over failure to meet Kyoto commitment" (31 October 2006), online: AFP < http://www.afp.com/english/home/>.

60 M.R. Hill, "The European Union's Emissions Trading Scheme: A Policy Response to the Kyoto Protocol" (2006) 14 Journal of Contemporary European Studies 393.

61 *UNFCCC, supra* note 12 at 4.

62 For further details on the NWP and other UNFCCC adaptation initiatives, visit the UNFCCC website at <www.unfccc.int>.

63 *Ibid.*

Because migration is one of a broader range of possible adaptive responses to climate change, assisting vulnerable populations increase their adaptive capacity provides a potentially effective strategy to reduce the potential for large-scale population displacements and migration caused by climate change. Migration is typically not the first response households take when confronted by a climatic stressor; rather, it is undertaken when other means of adaptation are insufficient to meet their immediate needs, and often when their communities or governments have proven incapable of providing assistance.[64] Building capacity and stability in developing regions, be it through the NWP or other UNFCCC initiatives, or through an expansion of the flow of international development assistance more generally, would serve not only the interest of avoiding climate-related migration crises, but would go some way in addressing the root causes of poverty and inequity that underlie vulnerability to climate change in the first place.

6. A ROLE FOR DEVELOPED NATIONS

In the long run, it will be the international community's success at helping vulnerable populations adapt to the impacts of climate change that will determine the size and extent of future population displacements and migration. One key step is the need for Australia, Canada and the United States to meet their *Kyoto* targets. It simply will not be possible to get large, fast-growing economies like China, India and Brazil to limit their own greenhouse gas emissions so long as large developed countries refuse to meet their own *Kyoto* targets. In the case of Australia and the United States, this requires going through the contentious political process of ratifying *Kyoto* in their national houses of assembly. In the case of Canada, which has already ratified *Kyoto*, the next step is for federal politicians to resolve the acrimonious debate over how best to reduce greenhouse gas emissions. It is now abundantly clear that, whatever course is taken, Canada will not meet its commitment under *Kyoto* to reduce Canadian greenhouse gas emissions for the period 2008-2012 to a level 6 percent below 1990 levels.[65] Once regarded as an international leader on global environmental issues like regulation of ozone-depleting substances,[66] Canada has become an object of derision in international climate policy circles.[67]

The risk of future climate change-related migration will not be avoided by emissions reductions alone; developed nations will also need to commit greater resources to adaptation assistance in vulnerable developing regions. For example, Canada's contributions to helping developing nations enhance their adaptive capacity, through technology transfers and funding of UNFCCC initiatives, currently receive far less attention than its failures to reduce emissions. This is partly due to the fact that Canadian contributions have been modest. Since the demise of the Canadian International Development Agency (CIDA)'s Climate Change Development Fund program in 2006, no federal government entity has taken on a visible,

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64 McLeman & Smit, "Migration as Adaptation", *supra* note 4.

65 Canadian emissions are currently about 25 percent above 1990 levels; see "Canada's 2005 Greenhouse Gas Inventory: A Summary of Trends" (2007), online: Environment Canada <http://www.ec.gc.ca/pdb/ghg/inventory_report/2005/2005summary_e.cfm>.

66 The stratospheric ozone-protection equivalent to the *Kyoto Protocol* is the highly successful *Montreal Protocol*.

67 R. Black, "Will Kyoto Die at Canadian Hands?" *BBC News* (27 January 2006), online: BBC News <http://news.bbc.co.uk/1/hi/sci/tech/4650878.stm>; Climate Action Network, "Canada Wins 'Fossil' Award for Second Day" (2006), online: <http://www.climatenetwork.org/media-center/press-clips/canada-wins-fossil-award-for-second-day>.

leading role on this issue on behalf of the government of Canada. CIDA is currently in the process of attempting to mainstream adaptation to climate change into existing development assistance programs. Periodic financial contributions are still being made by the government of Canada on a periodic basis to the Global Environment Facility, through which vulnerable countries seek funding for adaptation projects pursuant to the UNFCCC.[68] There is, however, no clearly articulated vision of how Canada will address its commitments to adaptation assistance under article 4.4 of the UNFCCC.

Developed nations should expand their support of adaptive capacity-building not simply out of altruism; they have a vested self-interest in avoiding the political, social and economic fallout of climate change. A former chief economist of the World Bank predicts global economic hardship on a scale worse than the Great Depression years of the 1930s if no action is taken to abate climate change.[69] Most developed-nation economies are tightly integrated into global trading markets, and so western countries are linked through trading relationships to the impacts of climate change in developing regions. Most developed nations also have very strong social links to the developing world through large and growing immigrant communities. Many of the largest source countries of immigration to Canada, the US and the EU are developing nations that have been identified as being vulnerable to the impacts of climate change.[70] Some large source countries for international migration, such as Pakistan, Sri Lanka and Colombia, are suffering through ongoing political instability and violence, and the impacts of climate change may exacerbate this instability, and increase the potential for distress migration.[71] Western nations are also regularly called upon by the international community to provide peacekeeping assistance in conflict regions. Military interventions to establish peace and security are tremendously prohibitive, in terms of both human life and financial costs, in comparison with development assistance.

In international policymaking, bold speeches and commitments to the pursuit of noble goals like refugee protection, conflict resolution, and sustainable development typically give way to narrow geopolitical interests when the time for action arises. That being the case, it should be clear that it is in developed nations' narrow self-interests to pursue an ambitious policy of supporting and assisting capacity-building in regions vulnerable to the impacts of climate change. As Stern has shown, the financial costs of prevention of climate catastrophe are affordable and modest in comparison with the risks of inaction.[72] Inaction will very likely result in increased levels of population displacement and migration, undermining any forward progress that may be made in efforts to foster international sustainable development and refugee protection in the near future. Developed nations will not be exempt from the repercussions that may follow.

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68 See the GEF website portal for information regarding replenishment funding at <http://www.gefweb.org/interior.aspx?id=48>.

69 Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007).

70 R. McLeman, "Changement climatique, migration et avenir de la sécurité canadienne" (2007)1(2) Le Multilatéral 20.

71 McLeman & Smit, "Changement climatique", *supra* note 27.

72 Stern, *supra* note 69.