

Environment: Science and Policy for Sustainable Development

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/venv20>

Protecting Climate Refugees: The Case for a Global Protocol

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Published online: 28 Jul 2011.

To cite this article: Frank Biermann & Ingrid Boas (2008) Protecting Climate Refugees: The Case for a Global Protocol, Environment: Science and Policy for Sustainable Development, 50:6, 8-17

To link to this article: <http://dx.doi.org/10.3200/ENVT.50.6.8-17>

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PROTECTING CLIMATE REFUGEES

The Case for a
Global Protocol

BY FRANK BIERMANN AND INGRID BOAS

In August 2006, the government of the Maldives organized a meeting of representatives of governments, environmental and humanitarian organizations, and United Nations agencies on an issue that had until then been largely outside the climate policy debate: the protection and resettlement of “climate refugees.”¹ For a small island nation like the Maldives, located only few meters above sea level, this question is surely at the heart of its national security, if not national survival. Such low-lying island nations are likely to be the first to suffer from global climate change, and many atolls may disappear or become uninhabitable over the course of the century.

Yet climate-related migration could also evolve into a larger, global crisis far beyond threats to a few island nations. According to some estimates, more than 200 million people might have to give up their homes due to climate change by 2050.² Such estimates have a large margin of error³ and depend on underlying assumptions about population growth, economic development, temperature increase, or the degree and timing of climate change impacts such as sea-level rise. And yet most scenarios agree on a general trend: in this century, global warming may force millions of people—mainly in Asia and Africa—to leave their homes and migrate to other places.

The Intergovernmental Panel on Climate Change’s 2007 assessment indicates that climate change will likely include regional increases in the severity and frequency of extreme weather events.⁴ In some worst-case scenarios, by 2080, with a global temperature increase of merely 1–2 degrees, storm surges could affect approximately 103 million people each year.⁵ Gradual sea-level rise, another major effect of climate change, will threaten low-lying coasts and further increase the damage caused by storm surges.⁶ Thousands of small islands will be at risk, and many possibly flooded.⁷ If sea levels rise by 1 meter, storm surges could make island nations such as the Maldives, the Marshall Islands, Kiribati, or Tuvalu largely uninhabitable.⁸ In addition, droughts and water scarcity may increase



Waves crash against the sea wall in Havana, Cuba, a city that will likely see more severe and frequent extreme weather events in the future.

because of global warming. Some studies predict that even under the lowest growth-rate assumptions, a world 1–2 degrees warmer could lead to water shortages for 700–1,500 million people.⁹ Hundreds of millions of people who depend for their water supply on glacier melt could experience severe water stress.¹⁰ For instance, increasing water scarcity may become a grim reality facing the nations that lie downstream from the Himalaya-Hindu Kush mountain ranges—a region that encompasses approximately 50 to 60 percent of the world’s population.¹¹

Asia, Africa, Latin America, and the small island states have the largest populations at risk of becoming climate refugees. Asia is vulnerable because of its highly populated, low-lying coastal regions¹² and high vulnerability to tropical cyclones.¹³ A temperature increase of 2–3 degrees could result in 39–812 million South Asians at risk of water stress.¹⁴ Climate refugees just from Bangladesh might outnumber all current refugees worldwide.¹⁵ Water scarcity and drought will also affect millions of Africans.¹⁶ Fourteen African countries experience

water scarcity at present. This may increase to 25 countries by 2030.¹⁷ Africa is also highly vulnerable to sea-level rise, notably in the river deltas of Egypt and Nigeria. In Latin America, thousands of people in Venezuela and Uruguay live in areas where the risk of flooding is high, while millions of Guatemalans and Mexicans may face increasing droughts. Water scarcity due to glacier melts in the South American Andes may affect 37 million people in 2010 and 50 million people in 2050, including larger cities such as Quito, Ecuador; La Paz, Bolivia; and Lima, Peru.¹⁸

Most climate refugees are expected to remain within their home countries,¹⁹ especially when only parts of the country will be affected by climate change. Yet some studies suggest that climate refugees could potentially also cross international borders. For example, the Development, Concepts and Doctrine Centre Global Strategic Trend Programme of the United Kingdom's Ministry of Defense foresees large migration flows from sub-Saharan Africa toward the Mediterranean, the Middle East, and Europe between 2007 and 2036.²⁰ The German Advisory Council on Global Change projects mass migration to the United States from the Caribbean islands and Central America and many migration flows within Central America.²¹

Climate Change and the UN Refugee Regime

In light of this looming climate migration crisis, the current refugee protection regime of the United Nations seems poorly prepared. At present, the United Nations High Commissioner for Refugees (UNHCR) deals with merely 10 million refugees.²² It is doubtful, without major reforms, whether this institution can protect and support a stream of refugees that is possibly 20 times larger. Moreover, its current mandate covers only individual political refugees who flee their countries because of state-led persecution based on race, religion, political opinion, or ethnicity.²³



Vanishing Himalayan glaciers will negatively affect a number of Asian countries where, in many areas, glacial melt provides the principal water source during the dry season.

As a result, delegates at the Maldives meeting in 2006 proposed an amendment to the 1951 Geneva Convention Relating to the Status of Refugees that would extend the mandate of the UN refugee regime to include climate refugees.²⁴ Yet such an amendment does not promise to effectively resolve the emerging climate refugee crisis. Indeed, it is highly uncertain such a proposal is even politically feasible. The UN refugee regime is already under constant pressure from industrialized countries that seek restrictive interpretations of its provisions; it is highly unlikely these governments will agree to extend the same level of protection to a new group 20 times larger than those currently under UN oversight and equal to half the population of the European Union.²⁵ Moreover, extending the current UN refugee regime to include climate refugees will raise difficult moral issues. It will create unnecessary tensions and tradeoffs between the persons protected today under the Geneva Convention and the new additional streams of climate refugees.²⁶

More importantly, the proposal of extending the UN refugee regime misses

the core characteristics of the climate refugee crisis. Climate refugees do not have to leave their countries because of a totalitarian government. In principle, they still enjoy the protection of their home country's government. The protection of climate refugees is therefore essentially a development issue that requires large-scale, long-term planned resettlement programs for groups of affected people, mostly within their country. Often this will be in concert with adaptation programs for other people who are not evacuated but can still be protected, for instance, through strengthened coastal defenses. From this standpoint, then, international agencies such as the UN Development Programme (UNDP) and the World Bank are better equipped than the UNHCR to deal with the emerging problem of climate refugees.

A Role for the UN Security Council?

Scenarios of streams of millions of climate refugees have conjured up the risk of violent conflict, both within affected coun-

tries and internationally once refugees try to cross borders.²⁷ Climate migration could thus turn into a “threat to the peace” and international security, a phrase that is at the center of Article 39 of the United Nations Charter that mandates the Security Council to request all types of measures to respond to such threats, including the use of force.²⁸ Indeed, in April 2007, the council addressed the impacts of climate change on international peace and security. British Foreign Secretary Margaret Beckett, who chaired the session; Papua New Guinea UN Ambassador Robert G. Aisi, who spoke on behalf of the Pacific Islands Forum; and UN Secretary-General Ban Ki-Moon named climate change-induced mass migration as a possible factor that could lead to major conflicts and instability.²⁹

Representatives from most developing countries, however, forcefully maintained that the UN Security Council is the wrong institution to deal with climate policy.³⁰ One concern is that most climate-related migration will occur in Africa, Asia, and Latin America. Allowing the Security Council to exert a strong mandate will thus extend its sway over the internal affairs of developing nations. Yet the council lacks legitimacy in many developing countries because of the special voting power of its five permanent members (China, France, Russia, the United Kingdom, and the United States)—many of which are, at the same time, the largest emitters of greenhouse gases. Moreover, it is dubious what the Security Council could initiate that could not be done by other institutions such as the UN Framework Convention on Climate Change or intergovernmental agencies such as the UNDP and the UN Environment Programme (UNEP). The core function of the Security Council is the preservation of international peace, mainly through mandating UN member states to take forceful action against countries whose governments pose a threat to international security and do not comply with international rules and requests from the council. The emerging climate refugee crisis is clearly different in character, so it remains unclear whether a stronger role of the council is needed and what its added benefits would be. And,



A massive cyclone that hit the coast of Bangladesh killed many people and left others without homes, a scenario likely to recur in the Bay of Bengal region.

given that developing countries—including India and China—have clear objections toward any role of the Security Council in climate policy,³¹ a stronger involvement seems rather unlikely in any case.

The Case for a Specific Regime on Climate Refugees

For these reasons, dealing with the climate refugee issue calls for a different approach: a separate, independent legal and political regime created under a Protocol on the Recognition, Protection, and Resettlement of Climate Refugees to the United Nations Framework Convention on Climate Change. Such a protocol could build on the political support from almost all countries as parties to the climate convention. It could draw on widely agreed principles such as common but differentiated responsibilities and the reimbursement of full incremental costs. It could aid climate refugees by linking their protection with the overall climate regime, including future advances in climate science in defining risks for people in certain regions. Given the increasing pressure from developed nations to inte-

grate advanced developing countries in a global mitigation regime of quantified reduction and limitation objectives, a protocol on the protection of climate refugees could become for developing countries a major bargaining chip in negotiations.

Such an agreement would operate under five principles. First, at the core of the agreement must be the objective of a planned and voluntary resettlement and reintegration of affected populations over periods of many years and decades, as opposed to mere emergency response and disaster relief. Spontaneous flights, often unavoidable during political turmoil or war, can then be prevented for climate change-driven events such as floods.

Second, climate refugees must be seen and treated as permanent immigrants to the regions or countries that accept them. Climate refugees cannot return to their homes as political refugees can (at least in theory).

Third, the climate refugee regime must be tailored not to the needs of individually persecuted people (as in the current UN refugee regime) but of entire groups of people, such as populations of villages, cities, provinces, or even entire nations, as in the case of small island states.

Fourth, an international regime for climate refugees will be targeted less toward the protection of persons outside their states than toward the support of governments, local communities, and national agencies to protect people within their territories. Essentially, the governance challenge of protecting and resettling climate refugees involves international assistance and funding for the domestic support and resettlement programs of affected countries that have requested such support.

Fifth and finally, the protection of climate refugees must be seen as a global problem and a global responsibility. In most cases, climate refugees will be poor, and their own responsibility for the past accumulation of greenhouse gases will be small. By a large measure, the wealthy industrialized countries have caused most past and present greenhouse gas emissions, and it is thus these countries that have the greatest moral, if not legal, responsibility for the victims of global warming. This does not imply transnational migration of 200 million climate refugees into the developed world. Yet it does imply the responsibility of the industrialized countries to do their share in financing, supporting, and facilitating the protection and resettlement of climate refugees.

Regarding terminology, some intergovernmental agencies—such as the International Organization for Migration and the UNHCR—reject the term climate “refugee” because of narrow legal definitions in the post-1945 system. In their view, the term “refugee” should remain limited to an individual recognized under the 1951 Geneva Convention Relating to the Status of Refugees: “a person who is outside his or her country of nationality or habitual residence” and cannot rely on the protection of his or her home state for fear of persecution.³² As an alternative, some international agencies prefer the notion of “environmentally displaced persons,” which is more in line with the UNHCR’s “internally displaced persons” designation that carries with it less responsibility on the part of the international community.³³ However, because



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Drought has hit some areas of Australia hard, but as an industrialized country, it has better means than many developing countries to adapt and protect people who may be forced to move due to such changes in climate.

climate change will cause both transnational and internal flight, the UNHCR’s traditional distinction between the two categories of involuntary migration does not seem germane; it is difficult to argue that a global governance mechanism for the protection of people who have lost their homes due to climate change should bestow a different status, and a different term, depending on whether they have crossed a border. Moreover, it does not stand to reason to reserve the stronger term “refugee” for a category of people who earned international attention after 1945 and to invent less appropriate terms—such as “climate-related environmentally displaced persons”—for new categories of people who are forced to leave their homes now, with similar grim consequences. Why should inhabitants of some atolls in the Maldives who require resettlement for reasons of a well-founded fear of being inundated by 2050 receive less protection than others who fear political persecution? There-

fore, it seems sensible to continue using the term “climate refugees” and adjust the outdated UN terminology accordingly by allowing for different types of refugees (for instance, political refugees that fall under the 1951 Geneva Convention and climate refugees that fall under the climate refugee protocol proposed here) as well as for different agreements on their protection.

Blueprint of a Protocol on Climate Refugees

How could a protocol on the recognition, protection, and resettlement of climate refugees work in practice?

International List of Affected Populations

The most important governance mechanism would be a list of specified administrative areas (such as villages, islands,

or districts) under the jurisdiction of member states with populations that have been determined in need of relocation due to climate change or threatened by having to relocate due to climate change. Any state party to the protocol—and in fact only state parties—would be entitled to propose areas under their jurisdiction for inclusion on the list of affected areas. The protocol would provide for an executive committee on the recognition, protection, and resettlement of climate refugees that would function under the authority of the meeting of the parties (which could meet back to back with the conference of the parties to the climate convention). In line with the sovereignty principle of the United Nations, the executive committee would determine the inclusion of affected areas, as well as the types of support measures, only upon formal proposal from the government of the affected country. (Thus, in rare cases of governments that reject international assistance, such as the situation in Myanmar in May this year, the proposed new institution would not be able to help.)

Regarding decisionmaking procedures, the executive committee could include an equal number of affected countries and donor countries, and its decisions could require a double-weighted majority; that is, the simple majority of donor countries and the simple majority of affected countries. This rule would allow both the affected developing countries and the donor countries to hold a collective veto right over the future evolution and implementation of the regime.

If certain groups of people from a number of coastal villages (for example) were included in a list of populations in need of relocation due to climate change, they would gain specific rights and would benefit from the support mechanisms under the protocol. This could include financial support; inclusion in voluntary resettlement programs over several years together with the purchase of new land; retraining and integration programs; and, in the special case of small island states, organized international migration (see the box on this page for an illustration on how the protocol might work).

THE CLIMATE REFUGEE PROTOCOL IN PRACTICE: A VIEW FROM THE FUTURE

How would a protocol on the recognition, protection, and resettlement of climate refugees work in practice? Assume a country “Lowtidia” has large population centers in flat river deltas as well as a number of smaller low-lying islands under its jurisdiction. Assume further that by 2050, global warming has raised the sea level and increased the frequency of storm surges in this region. Severe tropical cyclones may have wrecked many of the islands and delta areas of Lowtidia, destroying fields, polluting freshwater resources, and seriously damaging infrastructure and settlements. Many people may have perished in storms that have become more frequent. Eventually, the government of Lowtidia, which is a party to the climate refugee protocol, files a formal request to the executive committee of the protocol, demanding the international recognition of the populations of two coastal provinces and 10 atolls as climate refugees. In addition, Lowtidia requests financial and technical support for the resettlement of the affected populations within its own territory from the Climate Refugee Protection and Resettlement Fund.

The executive committee of the protocol would take immediate action according to the rules of the protocol. First, scientific and technical advice is requested by the relevant advisory bodies, including special working groups of the Intergovernmental Panel on Climate Change and a number of UN agencies. Based on the situation in Lowtidia and expected further climate changes, the executive committee decides that parts of the two river delta provinces can still be protected by increased coastal defenses with financial and technical support through the adaptation fund and related support mechanisms of the UN

climate convention. However, other parts of the river delta provinces, as well as all the islands, are deemed too difficult to protect in the long term. The executive committee therefore decides to recognize all people who are legal residents of these areas as climate refugees under the protocol and lend them the support that the protocol provides. This decision is taken by the simple majorities of the representatives of donor countries and developing countries in the executive committee and later reconfirmed by the conference of the parties to the climate refugee protocol.

As a consequence, a “Lowtidia Working Group” is set up that includes representatives of the Lowtidia government; local governments of the affected provinces and islands; local civil society; and the UN Development Programme, the UN Environment Programme (which may by then have been transformed into a World Environment Organization), a number of other relevant UN agencies, and the World Bank. The Lowtidia Working Group decides on retraining programs; the construction of new infrastructures on the mainland for the fishing fleet of the islanders; emergency assistance for the transition period; and developing a number of specific projects, including the purchase of land on the higher mainland of Lowtidia. A few years after the decision under the climate refugee protocol, the first inhabitants of the islands would break up their settlements and relocate to the mainland to their new villages behind newly erected coastal defenses. All costs of the relocation are borne by a special program budget from the Climate Refugee Protection and Resettlement Fund, which is regularly replenished through international levies on air and maritime transportation.

Since wealthier countries will be able to support their own affected populations, the rights under the protocol should be restricted to inhabitants of developing countries (in technical terms: countries that are not listed in Annex I to the climate convention). For example, the climate refugee protocol would not support the hurricane-affected inhabitants of

New Orleans, who can rely in principle on the support of their own (wealthy) country and do not require international financial assistance.

Funding Mechanism

Resettlement of millions of people will require additional and, most like-

ly, substantial funds. Institutionally, the best governance mechanism would be a separate fund, which might be called the "Climate Refugee Protection and Resettlement Fund."³⁴ While one could link the operational aspects of this fund with existing financial mechanisms to increase efficiency, the governance of the fund should be independent and stand under the authority of the meeting of the parties to the climate refugee protocol. To generate the funds needed, the Climate Refugee Protection and Resettlement Fund could be coupled with currently proposed, novel income-raising mechanisms, such as an international air-travel levy.³⁵ A key question for this new facility will be the amount of funding required by the international community and the funding principle underlying the climate refugees' protection. For mitigation programs under the climate convention, industrialized countries have committed to reimburse developing countries the agreed full incremental costs, a concept originally developed in the 1990 London amendments to the Montreal protocol on the protection of the ozone layer.³⁶ Similar provisions apply to adaptation.³⁷ In addition, the climate convention obliges industrialized countries to assist the most vulnerable countries in meeting adaptation costs (Article 4.4) and gives special rights to least developed countries (Article 4.9). This suggests applying the principle of reimbursement of full incremental costs to the protection and resettlement of climate refugees, at least in situations where the causal link with climate change—namely sea-level rise—is undisputed. For other situations in which climate change is only one factor to account for environmental degradation—for example, in the case of water scarcity—a principle of additional funding instead of full reimbursement may be more appropriate. In any case, the costs of the voluntary resettlement and reintegration of millions of people who have to leave their islands, coastal plains, or arid areas will be substantial—probably in the order of billions of euros over the coming decades. Even if novel mechanisms are introduced, the final responsibility for

funding will rest with the governments of industrialized countries and possibly wealthier developing countries.

Implementation through Existing UN Agencies

A climate refugee protocol should not create new international bureaucracies; the resettlement of millions of climate refugees over the course of the century should be the task of existing agencies. Given the complexity of climate-related flight, the best model will be to mandate not one single agency but rather a network of agencies as implementing agencies of the protocol. A crucial role lies with the UNDP and the World Bank, both of which could serve as implementing agencies for the climate refugee protocol in the planned voluntary resettlement of affected populations. Although it lacks a strong operational mandate, the UNEP may provide further assistance in terms of scientific research and synthesis, information dissemination, legal and political advice, and other core functions of this program. A small coordinating secretariat to the climate refugee protocol would be needed, possibly as a subdivision of the climate secretariat in Bonn. In addition, although it is unlikely to be the main agency given the special characteristics of the climate refugee crisis, the UNHCR should play a role; its expertise in view of emergencies, as well as its legal and technical expertise in dealing with refugee crises, will be indispensable for the protection of climate refugees.

Conclusion

Scientists predict serious impacts of climate change that could compel millions of people to leave their homes beginning sometime in the next decades. Yet the existing institutions and organizations are not sufficiently equipped to deal with this looming crisis. Reforms toward a system of global adaptation governance as part of a larger program toward comprehensive Earth system governance³⁸ are thus needed. As stated above,

some of the possible reform options—extending the definition of refugees under the 1951 Geneva Convention Relating to the Status of Refugees or giving responsibilities to the UN Security Council—are less promising and might even be counterproductive. A better solution appears to lie with a new legal instrument specifically tailored for the needs of climate refugees—a Protocol on the Recognition, Protection, and Resettlement of Climate Refugees to the United Nations Framework Convention on Climate Change, supported by a separate funding mechanism, the Climate Refugee Protection and Resettlement Fund.

The broad predictability of climate change impacts requires and allows preparation and planning. It is crucial, then, that this protocol not be framed in terms of emergency response and disaster relief but in planned and organized voluntary resettlement programs. There is no need to wait for extreme weather events to strike and islands and coastal regions to be flooded. All areas that we cannot protect over the long-term through increased coastal defenses, for practical or economic reasons, need to be included early in long-term resettlement and reintegration programs to make the process acceptable and enduring for the affected people. This, however, calls for early action in terms of setting up effective and appropriate governance mechanisms. The planning for a climate refugee protocol and the related institutional settings cannot wait until 2050 when it might be too late for orderly and organized responses. It must begin now.

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This research has been partially funded by the European Commission (Global Change and Ecosystem Priority of the Sixth Framework Research Programme, Integrated Project "Adaptation and Mitigation Strategies. Supporting European Climate Policy," contract no. 018476). All views expressed are of the authors and not necessarily shared by the European Commission. For valuable suggestions and comments, we are grateful to Harro van Asselt, Steffen Bauer, Klaus Dingwerth, Philipp Pattberg, and Fariborz Zelli, as well as the editors of *Environment*. In addition, Frank Biermann wishes to thank The Energy and Resources Institute, New Delhi, for generous hospitality during a research visit in September and October 2007, when most of his research on this article was undertaken.

More information is available at the Climate Refugee Policy Forum (<http://www.glogov.org/?pageid=80>), a new initiative set up by the Global Governance Project, a joint program of 12 European research institutions.

NOTES

1. See Republic of the Maldives Ministry of Environment, Energy and Water, *Report on the First Meeting on Protocol on Environmental Refugees: Recognition of Environmental Refugees in the 1951 Convention and 1967 Protocol Relating to the Status of Refugees* (Male, Maldives, 14–15 August 2006, on file with authors).

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5. See R. Warren, N. Arnell, R. Nicholls, P. Levy, and J. Price, *Understanding the Regional Impacts of Climate Change*, Tyndall Centre Working Paper 90 (Norwich, UK: Tyndall Centre for Climate Change Research, 2006), 67.

6. See R. J. Nicholls, F. M. J. Hoozemans, and M. Marchand, "Increasing Flood Risk and Wetland Losses Due to Global Sea-Level Rise: Regional and Global Analyses," *Global Environmental Change* 9 (1999): 72.

7. *Ibid.*, page 81; and N. W. Arnell et al., "The Consequences of CO₂ Stabilization for the Impacts of Climate Change," *Climatic Change* 53 (2002): 432.

8. See German Advisory Council on Global Change, note 4, pages 46 and 50.

9. See Warren, Arnell, Nicholls, Levy, and Price, note 5, page 20.

10. See T. P. Barnett, J. C. Adam, and D. P. Lettenmaier, "Potential Impacts of a Warming Climate on Water Availability in Snow-dominated Regions," *Nature* 438, no. 7066 (17 November 2005): 303–9.

11. *Ibid.*, page 306.

12. See, for example, Nicholls, Hoozemans, and Marchand, note 6, page 80.

13. Munich Re Group, *Megacities—Megarisks: Trends and Challenges for Insurance and Risk Management* (Munich: Münchner Rückversicherungs-Gesellschaft, 2004), 76.

14. Warren, Arnell, Nicholls, Levy, and Price, note 5, page 18.

15. For example, in Myers, note 2, page 611, it was projected that 26 million climate refugees will come from Bangladesh.

16. See, for example, Warren, Arnell, Nicholls, Levy, and Price, note 5, page 18; and Barnett, Adam, and Lettenmaier, note 10, page 306.

17. Tearfund, *Fleeing the Heat* (Teddington, UK: Tearfund, 2006), 12.

18. For estimates on Egypt and Nigeria, see Myers and Kent, note 2, pages 137, 143, 148, and 149; for estimates on Venezuela and Uruguay, see L. Bijlsma et al., "Coastal Zones and Small Islands," in R. T. Watson, M. C. Zinyowera, and R. H. Moss, eds., *Climate Change 1995—Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses* (Cambridge, UK: Cambridge University Press, 1996), 289–324 (cited in R. J. Nicholls, "Case Study on Sea-level Rise Impacts," Organization for Economic Co-operation and Development (OECD) Workshop on the Benefits of Climate Policy: Improving Information for Policy Makers (Paris: OECD, 2003), 16); for estimates on drought and water scarcity in Latin America, see G. J. Nagy et al., *Understanding the Potential Impact of Climate Change and Variability in Latin America and the Caribbean*, report prepared for N. H. Stern et al., *The Stern Review on the Economics of Climate Change* (London: UK Government, 2006), 10 and 20.

19. German Advisory Council on Global Change, *World in Transition: Climate Change as a Security Risk* (Berlin: German Advisory Council on Global Change, 2007), 118; and Christian Aid, *Human Tide: The Real Migration Crisis* (London: Christian Aid, 2007), 6.

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21. German Advisory Council on Global Change, note 19, pages 151 and 163.

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24. See Republic of the Maldives, note 1.

25. See the discussion in Myers and Kent, note 2, pages 151–53; and McGregor, note 23, page 128.

26. See discussion in McGregor, note 23, page 128; and G. Kibreab, "Environmental Causes and Impact of Refugee Movements: A Critique of the Current Debate," *Disasters* 21, no. 1 (1997): 21.

27. German Advisory Council on Global Change, note 19, page 174; and DCDC, note 20, pages 78–79.

28. United Nations, *Charter of the United Nations* (New York: United Nations, 1945), <http://www.un.org/aboutun/charter/> (accessed 6 September 2008).

29. United Nations Security Council, "Security Council Holds First-Ever Debate on Impact of Climate Change on Peace, Security, Hearing over 50 Speakers," 5,663rd Meeting of 17 April 2007, United Nations Department of Public Information News and Media Division. For a review of the debate, see F. Sindico, "Climate Change: A Security (Council) Issue?" *Climate Change Law Review* 1 (2007): 29–34.

30. See the various statements from developing country representatives in United Nations Security Council, *ibid.*

31. United Nations Security Council, note 29 above.

32. General Assembly of the United Nations, 1951 Convention Relating to the Status of Refugees, Geneva, Switzerland, 25 July 1951, Article I.

33. See discussion in Keane, note 23, pages 214–17.

34. See also German Advisory Council on Global Change, which proposed an Environmental Migration Fund, note 19, page 211.

35. See B. Müller and C. Hepburn, *IATL—An Outline Proposal for an International Air Travel Adaptation Levy* (Oxford, UK: Oxford Institute for Energy Studies, 2006).

36. See F. Biermann, "Financing Environmental Policies in the South: Experiences from the Multilateral Ozone Fund," *International Environmental Affairs* 9, no. 3 (1997): 179–218.

37. Article 4, paragraph 3 of the climate convention reads: "The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources . . . including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of [Article 4] and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article." Paragraph 1 of Article 4 includes in section (e) the commitment of developing countries to "cooperate in preparing for adaptation to the impacts of climate change and develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods." United Nations, *United Nations Framework Convention on Climate Change* (New York: United Nations, 1992).

38. On Earth system governance in general, see F. Biermann, "'Earth System Governance' as a Cross-cutting Theme of Global Change Research," *Global Environmental Change* 17, 3–4 (2007): 326–37. See also *Earth System Governance Project*, <http://www.earthsystemgovernance.org> (accessed 6 September 2008).



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