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Preparing for a Warmer World

Towards a Global Governance System to Protect Climate Refugees

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The Global Governance Project is a joint research programme of eleven European research institutions. It seeks to advance understanding of the new actors, institutions and mechanisms of global governance, especially in the field of sustainable development.

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Abstract

Climate change threatens to cause the largest refugee crisis in human history. More than 200 million people, largely in Africa and Asia, might be forced to leave their homes to seek refuge in other places or countries over the course of the century. Yet the current institutions, organizations and funding mechanisms are not sufficiently equipped to deal with this looming crisis. The situation calls for new governance. We outline and discuss in this paper a blueprint for a global governance architecture for the protection and voluntary resettlement of climate refugees. We provide a definition of climate refugees as well as an extensive review of current estimates of their likely numbers and probable regions of origin. Regarding existing institutions, we argue against the extension of the definition of refugees under the 1951 Geneva Convention Relating to the Status of Refugees and against any role of the UN Security Council. Key elements of our proposal are, instead, a new legal instrument specifically tailored to the needs of climate refugees—a Protocol on Recognition, Protection, and Resettlement of Climate Refugees to the United Nations Framework Convention on Climate Change—as well as a separate funding mechanism, the Climate Refugee Protection and Resettlement Fund.

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Foreword

This working paper was written as part of the Global Governance Project, a joint research programme of eleven European research institutions that seeks to advance understanding of the new actors, institutions and mechanisms of global governance. While we address the phenomenon of global governance in general, most of our research projects focus on global environmental change and governance for sustainable development. The Project is co-ordinated by the Department of Environmental Policy Analysis of the Institute for Environmental Studies at the Vrije Universiteit Amsterdam and includes associate faculty members and research fellows from eleven European institutions: Science Po Bordeaux, Bremen University, Freie Universität Berlin (Environmental Policy Research Centre), The Fridtjof Nansen Institute Oslo, London School of Economics and Political Science, Lund University, Oldenburg University, Potsdam Institute for Climate Impact Research, Vrije Universiteit Amsterdam, Vrije Universiteit Brussel (Institute for European Studies) and Wageningen University (Environmental Policy Group).

Analytically, we define global governance by three criteria, which also shape the research groups within the Project. First, we see global governance as characterised by the increasing participation of actors other than states, ranging from private actors such as multinational corporations and (networks of) scientists and environmentalists to public non-state actors such as intergovernmental organisations ('multiactor governance'). These new actors of global governance are the focus of our research group MANUS–Managers of Global Change.

Second, we see global governance as marked by new mechanisms of organisation such as public-private and private-private rule-making and implementation partnerships, alongside the traditional system of legal treaties negotiated by states. This is the focus of our research group MECGLO–New Mechanisms of Global Governance.

Third, we see global governance as characterised by different layers and clusters of rule-making and rule-implementation, both vertically between supranational, international, national and subnational layers of authority ('multilevel governance') and horizontally between different parallel rule-making systems. This stands at the centre of our research group MOSAIC–'Multiple Options, Solutions and Approaches: Institutional Interplay and Conflict'.

Comments on this working paper, as well as on the other activities of the Global Governance Project, are highly welcome. We believe that understanding global governance is only feasible through joint effort of colleagues from various backgrounds and from all regions of the world. We look forward to your response.

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Contents

1 Introduction

The need to mitigate climate change has dominated the debate on global environmental governance until very recently. Yet today it is evident that mitigation efforts have been too little and too late. Climate change is becoming a reality of world politics in the 21st century. This requires a new, additional focus in both academic research and policy planning: How can we build over the course of the next decades systems of global governance that will cope with the global impacts of climate change? What institutions are in need of redesign and strengthening? To what extent, and in what areas, do we need to create new institutions and governance mechanisms from scratch?

Not much policy research on these questions is available. In light of the most recent scientific findings, which indicate possibly accelerating climatic change, there is an urgent need for a new academic research programme on what we propose to call "*global adaptation governance.*" Global adaptation governance will affect most areas of world politics, including many core institutions and organizations of current global governance. The need to adapt to climate change will influence, for example, the structure of global food regimes and the work of the UN Food and Agriculture Organization; global health governance and the agenda of the World Health Organization; global trade in goods whose production will be harmed or helped by climate change; the world economic system and the ability of the International Monetary Fund to address climate-related shocks to national and regional economies; and many other sectors from tourism to transportation or even international security.

One of the most crucial governance needs, we argue, is to address the plight of "climate change refugees," or "climate refugees" in short. Climate change will fundamentally affect the lives of millions of people who will be forced over the next decades to leave their villages and cities to seek refuge in other areas. Although the exact numbers of climate refugees are unknown and vary from assessment to assessment depending on underlying methods, scenarios, timeframes and assumptions (*see section 3 below*), the available literature indicates that the climate refugee crisis will surpass all known refugee crises in terms of the number of people affected. Many climate refugees may seek refuge in their own countries; others will need to cross borders to find a new home. Some local refugee crises, in particular in the richer countries in the North, may be prevented through adaptation measures such as reinforced coastal protection or changes in agricultural production and water supply management. Many poorer countries, however, are unlikely to be able to initiate sufficient adaptation programmes, and climate-induced migration might be the only option for many communities in the South. In these situations, climate refugees will need to rely on effective protection and support from the international community, regardless of whether climate migration will be internal or transnational.

Such a system of global governance for the recognition, protection and resettlement of climate refugees stands at the centre of this paper, as a major building block of the emerging global governance architecture on adaptation towards climatic change. Climate refugees have become a staple of popular discourse in recent years, and the

image of the nation of Tuvalu requesting refuge in Australia or New Zealand a symbol of the looming crisis.[1] In 2007, the link of climate change to "large-scale migration" even became part of the rationale for the awarding of the Nobel Peace Prize.[2] Yet there is little systematic academic research on the appraisal of the threat of climate-related mass-migration. Almost no studies have analyzed such migration from the perspective of global governance reform. This lacuna is what this paper attempts to address.

We proceed in four steps. First, in section 2 we address the conceptual profusion that is not surprising for such a new area of research and political discourse, and propose a definition of climate refugees that locates the phenomenon in the larger literature on migration. In section 3 we sketch the scope of the problem based on the available estimates and scenarios. In section 4 of the paper, we analyze three global governance domains that will be at the centre of a future debate on political responses to the emerging problem of climate refugees, namely refugee protection institutions, security institutions, and funding institutions. In these three domains, we review, first, the status quo; second, options for reform within current governance structures; and third, options for the creation of new structures. Our evaluation draws on three criteria: effectiveness in terms of protection of refugees, political feasibility, and equity. In section 5, we draw our findings together and provide a blueprint for a global governance architecture for the recognition, protection, and voluntary resettlement of climate refugees.

2 Conceptualizing "Climate Refugees"

Lack of conceptual clarity and consensus is a key problem that hinders research on climate refugees, in particular comparative research programmes and data collection. Most assessments so far have addressed the larger phenomenon of "environmental refugees," a term that was popularized over twenty years ago by the UN Environment Programme (UNEP).[3] This UNEP report of 1985 defined environmental refugees broadly as "people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life."[4] The UNEP report distinguished between environmental refugees *tem-*

1. According to a news release by Reuters on the Pacific Islands Forum in Fiji on 24–25 October 2006, "Tuvalu is upset that regional heavyweight Australia, a major aid donor but also one of the biggest per capita emitters of the greenhouse gases responsible for global warming, has so far spurned advances to help resettle their people" (Reuters, 25 October 2006). Tuvalu has entered into negotiations with New Zealand for more open immigration policies. New Zealand now accepts 75 Tuvaluan people per year. However, this policy is not framed as a resettlement strategy for the Tuvalu nation but as part of a labor programme (Patel 2006, 736). The annual 75 Tuvaluan immigrants fall under the Pacific Access Category, which has other restrictions, such as an age limit (Immigration New Zealand 2005, last updated 2007).

2. The Norwegian Nobel Committee 2007: "Indications of changes in the earth's future climate must be treated with the utmost seriousness and with the precautionary principle uppermost in our minds. Extensive climate changes may alter and threaten the living conditions of much of mankind. They may induce large-scale migration and lead to greater competition for the earth's resources. Such changes will place particularly heavy burdens on the world's most vulnerable countries. There may be increased danger of violent conflicts and wars, within and between states."

3. El-Hinnawi 1985.

4. El-Hinnawi 1985, 4. Environmental disruption was defined as "any physical, chemical and/or biological changes in the ecosystem (or resource base) that render it, temporarily or permanently, unsuitable to support human life." See El-Hinnawi 1985, 4.

porarily relocated due to an environmental disaster; *permanently displaced* due to a changed environment caused by for example the construction of a dam; and those who leave their homes because of environmental degradation "in search for a better quality of life."[5] Similarly broad is the influential definition of environmental refugees used by Myers and Kent, who provided some early estimates of environmental refugees in 1995.[6]

The notion of environmental refugees includes climate refugees, although its broadness makes it impossible to specify or quantify climate-related migration. In fact, there does not seem to exist a clear definition of "climate refugees" so far. Many studies leave the term undefined or, while purporting to analyze "climate refugees," still implicitly rely on broader concepts. Bell, for instance, while focusing his work "on one cause of environmental disruptions, namely, global climate change" seems to draw on the much broader UNEP concept of environmental refugees without further differentiation.[7] Likewise, the relief and development agency Tearfund attempted to initiate a new debate about "climate change refugees" in a recent report *Fleeing The Heat,* yet without providing a definition and eventually also referring to Myers' estimates that were based on the broader definition of "environmental refugees."[8] Other studies offer overly complex definitions that are difficult to operationalize in practice. Not the least, the very term "refugee" is—implicitly or explicitly—disputed, and several authors and intergovernmental bodies instead suggest terms such as "migrants" or "displaced persons."

In sum, there is no consensus definition of "climate refugees." In this section, we thus develop a first approximation. Our definition is based on the practical needs (a) to assist in the development of quantified assessments and scenarios in order to gain insights in expected numbers and origins of climate-related refugees and (b) to assist in developing political responses and global governance mechanisms for the recognition, protection and resettlement of climate refugees, which would need to build on a precise characterization of persons covered by such a protection regime. Both needs are not necessarily compatible since definitional needs of scenario-builders and of political decision-makers might not overlap. However, we believe that the definition advanced in this section is able to fulfil the needs of both communities.

The definition of climate refugees needs to address (1) the *cause of migration*, namely the type of environmental harm or climate-change impact that would fall under the notion of climate refugees; (2) the *type of migration*, namely whether it is voluntarily or "forced"; temporarily or permanent; and transnational or internal; and, related to this, (3) the appropriate *terminology*, that is, whether the term "refugee" is justified in the first place.

(1) The Cause of Migration. While climate change is likely to have a large number of impacts, and most impacts to have multiple causes, for both analytical and political reasons it is imperative to specify climate refugees as a sub-category of environmentally induced migrations. Analytically this specification is crucial in order to

5. El-Hinnawi 1985, 4–5. For a critique of this study, see Suhrke 1993, 6; Bates 2002, 466.
6. Myers and Kent conceptualized "environmental refugees" as persons "who can no longer gain a secure livelihood in their traditional homelands because of environmental factors of unusual scope, notably drought, desertification, deforestation, soil erosion, water shortages and climate change, also natural disasters such as cyclones, storm surges and floods." Myers and Kent 1995, 18–19.
7. Bell 2004, 137–139.
8. Tearfund 2006, 15.

advance knowledge on the likely increase in transnational and internal migration due to climate change, and the coupling of migration predictions to climate scenarios requires a clear definition of climate refugees. Politically it is essential to specify climate refugees because of the link of this type of migrants with the overall climate regime and its emerging debates on liability, compensation, equity, and common but differentiated responsibilities.

To arrive at a conceptualization of "climate refugees" that is analytically valuable and politically acceptable and meaningful for a global governance regime, we propose a restrictive notion of climate change-induced alterations of the environment. (a) Our first restriction excludes climate change impacts that have no plausible, or only a marginal link with forced migration, such as heat waves and the spread of tropical diseases. (b) Our second restriction excludes forced migration that is caused by measures that are related to the mitigation of, and adaptation to, global warming, including the construction of dams to prevent water scarcity or flooding and mitigation programmes such as the large-scale plantation of biofuels crops that might negatively affect the livelihood of rural communities who could be forced to migrate. Including these causes of migration would overly compound the problem of climate refugees with other causes of migration, especially those that are related to poor local and national governance systems. (c) Our third restriction excludes migration related to other types of environmental degradation, for example industrial accidents or pollution, or disasters unrelated to human activities, such as volcano eruptions. These types of refugees require equal levels of care and protection through national governments and the international community, yet of a different kind that is more akin to traditional disaster relief programmes (*see section 4 below in more detail*). They should thus be dealt with by different institutions. (d) Our fourth restriction excludes secondary, or indirect, impacts of climate change, such as international or national conflicts over diminishing natural resources that might cause additional migration.[9] In other words, if people flee their homes because of more frequent and more severe storm floods, or because of drought, we would see them as protected by the regime on climate refugees that we develop in this paper. However, if this deterioration of the local environment results in regional violent conflicts that causes additional migration, we would see different institutions and different governance mechanisms as appropriate to deal with the specific problems of war and conflict refugees. The reason for the fourth restriction is similar to the second and third, that is, including victims of war and violent conflict, even if causally related to diminishing resources, will water down the core causes of climate-related migration in a way that would make the concept analytically (for purposes of scenario-development) and politically (for purposes of legal and political protection regimes) meaningless. We do not imply that these war and conflict refugees require less protection. Yet the causes of their plight are different from the direct impacts of climate change, and different institutions, agencies and programmes are required for their protection.

In sum, we propose to restrict the notion of climate refugees to the victims of a set of three direct, largely undisputed climate change impacts: sea-level rise, extreme weather events, and drought and water scarcity. Sea-level rise is directly related to

9. See also Christian Aid 2007, 5–6 and 14.

global warming. Extreme weather events and drought and water scarcity are only partially related to climate change, yet their severity, scale and/or occurrence is predicted to sharply increase because of climate change. Thus, it seems imperative not to restrict the notion of climate refugees to migration caused by sea-level rise alone, but to also include victims of more severe tropical storms, and increasing and more frequent water scarcity and drought. The problem of multi-causality in the case of victims of storms, drought and water scarcity should be resolved in a political process. It should not be resolved by the *a priori* exclusion of this large group of people from the definition of climate refugees.

(2) The Type of Migration. The literature on environmental refugees suggests further specifications that could be useful in conceptualizing climate refugees.

First, some authors propose to restrict the term "refugee" to people who are forced, with immediate effect, to leave their homes, and to use for other people terms such as "emigrants" or "migrants." For example, according to Bates' classification, environmental "refugees" are only those who migrate involuntary due to acute disasters or because of expropriation of their land, while "migrants" leave voluntary and "environmental emigrants" are compelled to leave but still have time to plan their move because environmental degradation is gradual and leaves control over the decision to resettle.[10] In Bates' classification, people who leave their habitats because of climate change are "emigrants" and not "refugees," since she sees climate change largely as form of gradual environmental degradation.[11] Suhrke has advanced a similar classification that draws on characteristics such as involuntariness and vulnerability.[12] According to Suhrke, environmental "refugees" have no option than to migrate due to extreme environmental degradation, while environmental migrants have "more control over the timing and direction of their movement."[13] Following these and similar writings, a study by the UN University Institute for Environment and Human Security distinguished between three categories of environmental refugees,[14] and a recent study, commissioned by Greenpeace, differentiates even between five categories of climate refugees depending on the degree to which the flight has been voluntary, compelled, forced or anticipatory.[15]

In practice, it remains doubtful to what extent these academic classifications can help predict and resolve climate refugee crises. First, the additional distinctions are considerably vague if they were to be operationalized for scenarios or for a legal and political protection regime. It is unclear, for example, when the point that turns emigrants into refugees has been reached. How can categories such as involuntariness and vulnerability be applied in practice? Who decides and how is it determined whether people flee voluntarily or involuntarily? In many cases, the distinction between voluntary "migrants" and forced "refugees" will simply correlate with adaptive capacity and the strength of financial and institutional resources, which makes the added analytical

10. Bates 2002, 468–473. Bates based the classification on Hugo's continuum of international migration with a voluntary and an involuntary end. Hugo 1996; Bates 2002, 468.
11 Bates 2002, 473-474.
12. Suhrke 1994, 482-485, 487.
13 Suhrke 1994, 482.
14. "Environmentally motivated migrants, environmentally forced migrants, and environmental refugees." See Renaud et al. 2007, 29.
15. Jakobeit and Methmann 2007, 11.

benefit of the distinction dubious. Its practical implications are minimal in any case: The construction of long-term scenarios of climate change impacts that model sea-level rise or water scarcity will not be affected by additional distinctions between migrants, emigrants and refugees.

The legal operationalization of such distinctions, however, could have severe ethical implications and political consequences. Distinguishing between climate refugees, migrants and emigrants according to the degree of "voluntariness" of their relocation would artificially minimize the scale of the problem and could create different levels of protection and support without much basis in political, legal, or ethical criteria. A large group of people who managed to relocate in time because of information from climate-based scenarios, experiences with repeated extreme weather events, or political intervention such as through international resettlement programmes would be denied the status of "refugees," but would rather be classified as people who voluntarily opted to leave their land. This could place these people outside any (future) global governance mechanism that regulates the recognition, protection, resettlement and compensation of people who have to make way to climate change. In sum, adopting voluntariliness as defining criteria would be analytically not useful and politically dubious.

For similar reasons, for the definition of climate refugees we do not see much value in the distinction often made in the refugee literature on whether environmentally related migration is temporarily or permanent. For one, this distinction helps little in the immediate aftermath of an environmental disaster. Secondly, the distinction between temporary or permanent refuge, while it may have some relevance in other refugee situations, is largely irrelevant regarding migration due to the main climate change impacts, notably sea-level rise and desertification.

Finally, there is little analytical value in an additional classification of climate refugees that distinguishes between transnational and internal refugees. Again, this distinction has little relevance for the construction of scenarios. Politically, the differentiation between transnational and internal climate refugees might result in a differentiation of global protection and support mechanisms that is difficult to justify on legal or ethical grounds. In particular, such differentiation might disadvantage larger developing countries that are more likely to have high numbers of internal climate refugees, compared with smaller nations.

(3) Refugees, Migrants or Displaced Persons. Apart from the academic literature on refugees reviewed above, the term climate "refugee" brings with it political connotations that must be taken into account. On the one hand, a number of intergovernmental agencies—such as the International Organization for Migration (IOM) and the United Nations High Commissioner for Refugees—appear to reject the term environmental (or climate) "refugee" because of the legal rights that the intergovernmental system currently bestows upon (political) "refugees." The term "refugee" is also often limited to transboundary flight, mainly because the 1951 Geneva Convention Relating to the Status of Refugees is restricted to persons who cannot avail of the protection of their home state for fear of persecution. As an alternative, several international agencies prefer the notion of environmentally displaced persons.[16] This would include climate refugees, many of whom can still avail themselves of the assistance, at

[16]. United Nations High Commissioner for Refugees 2002, 13; Keane 2004: 215.

least in principle, of their home-states.[17] The Office of the High Commissioner for Human Rights defines, in its Guiding Principles on Internal Displacement, internally displaced persons as "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border."[18] Similarly, the International Organization for Migration defined "environmentally displaced persons" as "Persons who are displaced within their country of habitual residence or who have crossed an international border and for whom environmental degradation, deterioration or destruction is a major cause of their displacement, although not necessarily the sole one."[19] The secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) appears to have taken the same approach. A recent press release of the UNFCCC Executive Secretary avoided the term "refugee" but used instead the term "environmentally displaced people."[20]

On the other hand, it has been the United Nations Environment Programme that has popularized the term environmental "refugee" in the first place.[21] Likewise, the Agenda 21—the highly influential intergovernmental programme of action agreed upon by almost all governments at the 1992 United Nations Conference on Environment and Development—uses the term "environmental refugees" in a number of places.[22] Also in some national political debates, the notion of "climate refugees" appears to find acceptance. For example, Australia's Labour Party has proposed an international coalition to accept climate refugees from the Pacific[23]—in response to the Australian government's position that rejects the notion of climate refugees[24]—and Australia's Greens party tabled in 2007 a Migration Amendment (Climate Refugees) Bill. This Bill defined climate refugees broadly as "displaced persons due to an environmental disaster that results from both incremental and rapid ecological and climatic change and disruption that includes sea level rise, coastal erosion, desertification, collapsing ecosystems, fresh water contamination, more frequent occurrence of extreme weather events such as cyclones, tornados, flooding and drought; that mean inhabitants are unable to lead safe or sustainable lives in their immediate environment."[25]

Taking together, no consensus exists in the intergovernmental arena about appropriateness of terminology. We see a number of problems with an overly restrictive definition of the term "refugees" that excludes the millions of victims of climate change. First, the distinction between transboundary and internal flight that is a core element of the "refugee" concept of the UNHCR does not help since there will also be transna-

17. Keane 2004, 215–216.
18. Office of the High Commissioner for Human Rights 1998; Keane 2004, 217.
19. International Organization for Migration 1996, 4; Keane 2004, 215.
20. "According to some estimates, there are already almost as many environmentally displaced people on the planet as traditional refugees. As the impacts of climate change strike home, the numbers are likely to rise considerably, possibly as high as 50 million by 2010," said the executive secretary of the climate convention, Yvo de Boer. UNFCCC Executive Secretary 2007.
21. El-Hinnawi 1985.
22. United Nations 1992a, Chapter 12, especially 12.4, 12.46 and 12.47.
23. Australian Labor Party 2006.
24. Renaud et al. 2007, 20–21.
25. Nettle 2007.

tional flight because of climate change. Some island nations will effectively cease to exist and some countries, especially those affected by drought, may be overburdened by the degree of the national predicament. These people will have to find refuge outside their home country. Some climate refugees might thus cross borders while most will stay within their country (and would then be labelled displaced persons)—it seems difficult to argue that a global governance mechanism for their protection should bestow a different status, and a different term, depending on whether the victims of climate change have crossed a border.

Second, and as a more general point, we see no *a priori* reason to reserve the stronger term "refugee" for a category of people that stood at the centre of 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?

This does not imply, however, that the type of protection needs to be the same. As we outline in more detail in section 4 below, we do not argue for an amendment and extension of the Geneva Convention to offer climate refugees exactly the same type of protection, but instead for a *sui generis* regime specifically tailored for climate refugees. Yet we propose to extend the notion of "refugee"—a term with strong moral connotations of societal protection in most world cultures and religions—to those who are forced to leave their villages and settlements because of climatic change. Denying them the moral status of a refugee, and instead labelling them by ingenious but misleading terms such as "environmentally displaced persons" or even "migrants," is disrespectful, denigrating and unjust. We outline in section 5 how some practical consequences of this solution can be addressed.

(4) Definition. In sum, we propose for both the emerging research programme and the political discourse on climate-related migration to define "climate refugees" *as people who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their natural environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity.*

This definition covers climate refugees in both industrialized and developing countries. However, in practical terms only climate refugees in poorer developing countries will be an issue of international concern, cooperation and assistance. Industrialized countries have higher capacities to adapt, which makes climate-induced migration either less likely or less problematic.[26] It is people in developing countries who are most likely to be compelled to leave their places, owing to low adaptive capacities, their often vulnerable location vis-à-vis climate change events, often high population densities, already existing hunger and health problems, low level of GDP per capita, often weak

[26]. Of course, also industrialized countries may be severely affected by climate change. Hurricane Katrina created in the United States the largest refugee crisis since the Civil War, which also illustrated serious gaps in the adaptive capacity of one of the world's richest nations. The Netherlands is the industrialized country probably most vulnerable to the impacts of climate change, with large parts lying below sea level. Yet we believe that climate-related migration in industrialized countries will be less in absolute numbers owing to higher adaptive capacities, and unlikely to be a concern for international, or interregional, cooperation.

governance structures, political instability and other factors.[27] The following analysis, including the development of global governance mechanisms, is thus restricted to climate refugees in Africa, Asia, Latin America and Oceania.

3 Predicting Numbers and Origins of "Climate Refugees"

Developing political responses to the future problem of climate change-induced migration requires assessments of the likely number and origin of climate refugees. This section thus provides a review of the available literature aimed at predicting the likely numbers of climate refugees and the main regions where they will come from.

At the outset, it is important to note that all current predictions are fraught with numerous methodological problems and caveats. Overall, these methodological problems create estimates that tend to be more pessimistic. First, as noted in the previous section, there is no agreement on the definition of climate, or environmental, refugees. All studies operate with different terminology and definitions, which makes it difficult to compare results. Second, many studies have used rather broad concepts of climate or environmental refugees, which naturally, as Suhrke correctly observes, "invite large numbers."[28] Third, many assessments build on generalized assumptions about human behaviour that are often plausible, but difficult to maintain in their general formulations. For one, many assessments directly link predictions about changes in environmental parameters with the migration of the current or predicted population living in the affected areas. However, it is merely assumed that these people will eventually decide to flee.[29] As noted by Castles, "the linkage appears simply as 'common sense'—if water levels rise, or forests disappear, it seems obvious that people will have to move."[30] Yet it remains unclear whether, and how many people at risk choose migration as the main strategy.[31] Fourth, and related to the previous point, some assessments do not account for changes in human behaviour, notably adaptation such as through dikes, changes to crops that require less irrigation, improvements in water supply management, local relocation to higher land, or insurance and rehabilitation schemes. Fifth, environmental degradation or climate change is one reason for people to migrate, but it is hardly the only and often not even the main cause. All this makes a prediction of numbers of "environmental refugees" or "climate refugees" difficult.[32]

Keeping these shortcomings in mind, this section provides a review of the current state of knowledge on potential numbers and origins of climate refugees. According to Myers, there have been in 1995 already 25 million "environmental refugees."[33] Most current estimates expect this number to rise considerably in the course of the century. According to Myers' own recent work, the total number of people at risk of sea-level rise by 2050 is likely to be 162 million. In addition, 50 million people could be-

27. Stern 2006, 92–97; German Advisory Council on Global Change 2007, 119-120.
28. Suhrke 1994, 478.
29. Black 2001, 7–8; Castles 2002, 3.
30. Castles 2002, 3.
31. Black 2001, 8.
32. Black 2001, 2–7; McGregor 1994, 121–122; Kibreab 1997, 21–23; Keane 2004, 221.
33. Myers 2002, 609.

come refugees due to droughts and other climate change impacts. In total, Myers expects 212 million climate refugees by 2050.[34] The Stern Review on the Economics of Climate Change maintains that Myers and Kent's earlier estimate of 150-200 million "has not been rigorously tested, but it remains in line with the evidence presented throughout this chapter that climate change will lead to hundreds of millions more people without sufficient water or food to survive or threatened by dangerous floods and increased disease."[35] More recently, Myers predicted a higher figure of 250 million climate refugees by 2050.[36] A study commissioned by Christian Aid suggests an even higher figure of about 1 billion refugees by 2050. However, this higher number includes estimates of displaced people due to development projects like dams (645 million), natural disasters apart from climate change-related events (50 million), and conflicts and extreme human rights abuses (50 million). This leaves a number of 250 million refugees by more narrowly defined climate change events.[37] While most studies currently focus on the year 2050, the secretariat of the United Nations Framework Convention on Climate Change offers a more immediate estimate for 2010, of possibly 50 million "environmentally displaced people."[38] This figure appears more or less in line with predictions that build on longer timeframes. In sum, most estimates currently appear to expect an additional number of climate refugees of about 200–250 million by 2050.

A large part of these refugee streams are likely to be caused by extreme weather events, such as tropical cyclones and storm surges. Climate change is less likely to increase the number of tropical cyclones but rather their destructive energy due to warmer sea temperatures.[39] Storm surges will be more frequent and often cause more damage than the gradual rise of the sea level.[40] Gradual increase of sea level is a likely distinct cause for climate-related migration, even though it is analytically difficult to separate from extreme weather events such as storms and floods. Many estimates of people affected by sea-level rise thus include impacts of storm surges and other storm-related events since they are linked to sea-level rise. For instance, the land area that is at risk of flooding due to storm surges will become larger once sea levels rise.[41] This possible double counting should be taken into account when interpreting estimates for affected people due to sea-level rise. According to a number of recent studies, a temperature increase of 3–4 degrees could lead in the worst-case scenario (high population level and low economic growth) to 302 million people flooded each year by storm surges by the 2080s, assuming evolving protection mechanisms. However, this number would be only 34 million assuming enhanced protection,[42] and even lower if lower temperature targets could be maintained (e.g., merely 18 million per year by 2080s if car-

34. Myers 2002, 609 and 611.
35. Stern 2006, 77.
36. In an interview with Christian Aid on 14 March 2007, Christian Aid 2007, 5–6 and 50.
37. Christian Aid 2007, 5–6.
38. UNFCCC Executive Secretary 2007 .
39. German Advisory Council on Global Change 2006, 38-39.
40. German Advisory Council on Global Change 2006, 41.
41. Nicholls, Hoozemans and Marchand 1999, 72.
42. Warren et al. 2006, 67.

bon dioxide concentrations peak at 550 ppm).[43] More than 90% of these affected people will be from Africa and Asia.[44]

Drought and water scarcity is the third main climate change impact that may significantly contribute to climate-related migration. Extreme drought currently affects 1–3% of the planet, which might increase to 30% by the 2090s.[45] Myers expects 50 million climate refugees by 2050 due to droughts and other climate change impacts, such as changes in the monsoon system.[46] According to other studies, a temperature increase of 1–2 degrees by 2085 would bring around 700–1500 million people at risk, and a temperature increase of 2–3 degrees could cause around 800–1800 million people to suffer from water shortage, assuming low population growth, and around 2000-5000 million people assuming high population growth.[47] In the worst-case scenario, the additional number of people experiencing hunger due to climate change could be around 200 million by the 2050s and 550 million by the 2080s.[48] Moreover, the supply of fresh water decreases due to glacier retreat. More than one-sixth of the world population currently depends on water supplied by glacier melt, which will further decline in the next decades.[49]

Which regions are most likely affected by these streams of refugees? The following sections present regional estimates on the likelihood of three climate-related impacts—sea-level rise, extreme weather events, and drought and water scarcity—in Africa, Asia, Latin America and small island developing states. The five caveats or shortcomings of such estimates identified above apply also here and may lead to a more pessimistic picture. (We do not review the literature on potential climate impacts on industrialized countries, since we assume that these countries have higher adaptive capacities that make climate-induced migration less likely or less problematic.)

Africa is especially vulnerable. Low adaptive capacity and high natural vulnerability result in generally high migration estimates. According to estimates based on a sea-level rise of 38cm[50], by the 2080s storm surges could affect each year in the Southern Mediterranean 13 million people assuming constant coastal protection (6 million with evolving protection mechanisms); in West Africa, 36 million assuming constant protection mechanisms (3 million with evolving protection); and in East Africa, 33 million under constant protection (5 million under evolving protection).[51] In Southern Africa, a temperature increase of 3–4 degrees could cause 2–24 million people to be flooded, assuming evolving protection mechanisms.[52] The number of estimated climate

43. Arnell et al. 2002, 431; Warren et al. 2006, 61, 67 and 69. The number of people flooded per year for 2050 with carbon dioxide concentrations of 550ppm is higher than for 2080, because GDP per capita is estimated to be higher in 2080, enhancing protection mechanisms. Without carbon dioxide stabilization, 2080 would have a higher number of people flooded, because sea levels would be considerably higher than in 2050. Arnell et al. 2002, 415, 422 and 429–431.
44. Nicholls, Hoozemans and Marchand 1999, 80; Arnell et al. 2002, 431.
45. Burke, Brown and Christidis 2006, 1122.
46. Myers 2002, 611; Myers and Kent 1995, 146–149.
47. Warren et al. 2006, 16 and 20.
48. Warren et al. 2006, 41.
49. Barnett, Adam, and Lettenmaier 2005, 303–304 and 307.
50. The sea level rise this analysis departs from is 37–38 cm from 1990 to 2080s. Nicholls, Hoozemans and Marchand 1999, 71.
51. Nicholls, Hoozemans and Marchand 1999, 80.
52. Warren et al. 2006, 68.

refugees by 2050 is for Egypt 12 million[53] and for Nigeria 6 to 11 million.[54] Other studies for Egypt and Nigeria estimate that a sea-level rise of 1 meter, assuming no adaptation measures, would put 4.7 million Egyptians and 3.2 million Nigerians at risk.[55] Africa is also extremely vulnerable to drought, especially North Africa, the Sahel, the horn of Africa and Southern Africa. A temperature increase of 2–3 degrees by 2085 would bring 155–599 million more people in North Africa at risk of water stress, in addition to 15–529 in South and East Africa and 27–517 in West Africa, depending on population level.[56] Fourteen African countries experience water scarcity at present, and this is expected to increase to 25 countries by 2030.[57] According to some climate studies, 23–200 million Africans could be at risk of hunger in the 2080s.[58]

Asia is also very vulnerable. Most vulnerable to storm surges are South and Southeast Asia, and many major urban centres, such as Shanghai or Calcutta, are at a moderate to high risk to tropical cyclones and storm surges.[59] South Asia alone is predicted to account for 40% of the people flooded each year on average, due to high population levels in river deltas.[60] The average number of people flooded each year in South Asia by storm surges by the 2080s with a sea-level rise of 38cm is predicted to be 98 million, assuming constant coastal protection, and still 55 million assuming evolving protection mechanisms. For Southeast Asia, this is 43 million with constant protection and 21 million with evolving protection.[61] Asia is also vulnerable to gradual sea-level rise, especially South and East Asia.[62] Nine river deltas with high population levels of altogether 250 million people[63] are at high risk. The Ganges-Brahmaputra plain is less than 2 meter above sea level[64], and a large part of Bangladesh only 3–5 meter above.[65] Myers for example expects the number of climate refugees by 2050 from Bangladesh at 26 million and from India at 20 million.[66] As for water scarcity and drought, by the 2080s 27–134 million people in West Asia could be at risk of hunger due to climate change.[67] People in the Chinese provinces Inner Mongolia, Gansu and Ningxia may have to relocate because of the growing Gobi desert.[68] A temperature increase of 2–3 degrees by 2085 could affect 33–529 million people in Southeast Asia and 39–879 million in East Asia with water stress.[69] Another climate-change impact in Asia is the melting of glaciers in the Himalayas. The Himalayan glaciers feed the rivers that supply drinking water for millions of people in Asia—50–60% of the world's population lives

53. Myers 2002, 611.
54. Myers and Kent 1995, 148.
55. Bijlsma et al. 1996 cited in: Nicholls 2003, 16.
56. Warren et al. 2006, 18.
57. Tearfund 2006, 12.
58. Warren et al. 2006: 41–42.
59. Munich Re 2004, 76.
60. Nicholls, Hoozemans and Marchand 1999, 80.
61. Nicholls, Hoozemans and Marchand 1999, 80.
62. Brooks, Nicholls and Hall 2006, 11.
63. Woodroffe et al. 2005 in: Brooks, Nicholls and Hall 2006, 6.
64. Brooks, Nicholls and Hall 2006, 12.
65. Myers and Kent 1995, 139.
66. Myers 2002, 611.
67. Warren et al. 2006, 41–42.
68. Tearfund 2006, 15.
69. Warren et al. 2006, 18.

in the larger Himalaya-Hindu Kush region and is potentially affected. Therefore, the water availability for many of these people is seriously threatened.[70]

In Latin America, Central America is most vulnerable to cyclones.[71] In addition, the deltas of the Parana (Argentina), Amazon (Brazil) and Orinoco (Venezuela) have a high flood risk and will be affected by gradual sea-level rise.[72] 56,000 people in Venezuela and 13,000 in Uruguay could be threatened assuming a sea-level rise of 1 meter and no adaptation measures.[73] Southern Mexico and Guatemala are especially prone to drought.[74] 5–85 million people are possibly at risk of hunger by the 2080s.[75] Water scarcity due to glacier melts in the South American Andes will affect 37 million people in 2010 and 50 million people in 2050, including larger cities such as Quito, La Paz and Lima.[76] The number of people experiencing increased water stress with a temperature rise of 2–3 degrees by 2085 may be between 72 and 272 million in the worst-case scenario.[77]

Small island nations are at particular high risk, with some of them lying less than 2 meter above sea level. If sea levels rise by 1 meter, storm surges could make island nations such as the Maldives, the Marshall Islands, Kiribati, Tuvalu or Tokelau largely uninhabitable; a sea-level rise of 2 meter would inundate many of them.[78] For these nations, the impact of climate change thus threatens national survival. However, the absolute number of potential climate refugees is likely to be rather small. Assuming a sea-level rise of 38cm, current estimates predict for the 2080s that in the Caribbean each year 1,350,000 people will be flooded with constant coastal protection (560,000 with evolving protection). In the Indian Ocean, the comparable estimate is 920,000 people with constant protection (460,000 under evolving protection), and for the Pacific islands 290,000 people under constant protection (160,000 under evolving protection).[79]. In addition to the impacts of sea-level rise and extreme events, drought is also likely to affect small islands, since water availability could be too low during low rainfall seasons.[80] For example, a 10% decrease in rainfall by 2050 and a 10% increase in yearly evapo-transpiration could reduce fresh water availability on the islands Tarawa and Kiribati by 20%.[81]

In sum, the total number of people at risk of becoming climate refugees could well be around or over 200 million, even though this number is a rough estimate with a large margin of error, depending on different conditions and factors considered in the estimate. Most refugees from extreme weather events and sea-level rise will come from Asia because of highly populated regions, many low-lying areas and high vulnerability to tropical cyclones. The climate refugees from Bangladesh alone are likely to outnumber all current refugees worldwide. Many small islands are extremely vulnerable due to

70. Barnett, Adam, and Lettenmaier 2005, 306.
71. UNEP/Grid-Arendal 2005.
72. Brooks, Nicholls and Hall 2006, 6.
73. Bijlsma et al. 1996 cited in: Nicholls 2003, 16.
74. Nagy et al. 2006, 10.
75. Warren et al. 2006.
76. Nagy et al. 2006, 20.
77. Warren et al. 2006, 20.
78. German Advisory Council on Global Change 2006, 46, 50.
79. Nicholls, Hoozemans and Marchand 1999, 81. see also Arnell et al. 2002, 414 and 429 and 431.
80. Intergovernmental Panel on Climate Change 2007, 695–697.
81. World Bank 2000, 24; Intergovernmental Panel on Climate Change 2007, 696.

their low position above sea level. Here, however, in absolute terms fewer people are at risk due to lower population levels. Many African regions will be very vulnerable to a moderate sea-level rise as well as to drought and water scarcity.

The direction of these expected global streams of climate refugees is uncertain. Most refugees may stay in their countries and regions, especially in the case of coastal erosion and sea-level rise. For example, Christian Aid expects that only 5 million climate refugees will cross international borders.[82] However, also international migration is not excluded. The German Advisory Council on Global Change believes that increasing climate change could incite a mass migration from Central America and the Caribbean islands to the United States, combined with more migration within Central America.[83] In the same direction argues a recent study by the Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trend Programme of the United Kingdom's Ministry of Defence, which draws on a scenario for 2007–2036. This report projects large-scale population movements across international borders, including that "in particular, Sub-Saharan populations *will* be drawn towards the Mediterranean, Europe and the Middle East, while in Southern Asia coastal inundation, environmental pressure on land and acute economic competition *will* affect large populations in Bangladesh and on the East coast of India" (emphasis original).[84]

Taken together, even though the exact number of climate refugees is hardly certain given the diverse methodological problems, and even though these methodological problems are likely to sketch an overly pessimistic picture, large migration flows over the course of this century are plausible. The current regime of the UN High Commissioner for Refugees has covered 9.9 million refugees in 2006.[85] It is doubtful that the present system of global governance is able to protect and support a stream of refugees that is possibly twenty-times larger than the current group of refugees recognized by UN agencies. This governance challenge we thus discuss in the next sections of this paper.

4 The Current Global Governance of Climate Refugees

Introduction

This section presents an analysis of possible political responses to the emerging phenomenon of climate refugees. Of course, the most urgent political response to climate change is, first, to drastically reduce greenhouse gas emissions and second, to embark on comprehensive local and global adaptation programmes so that a climate refugee crisis will not arise. However, climate change has become reality, and global adaptation programmes will not suffice for technical, financial or political reasons to

82. Christian Aid 2007, 6.
83. German Advisory Council on Global Change 2007, 151 and 163.
84. Development, Concepts and Doctrine Centre 2007, 29. Emphasis original.
85. United Nations High Commissioner for Refugees 2007a, 4–5. This is a rather restrictive number. As the High Commissioner writes, "For example, some 4.3 million Palestinian refugees who fall under the mandate of the United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA) are not included in the report." UNHCR 2007a, 2.

protect *all* population centres in the developing world. Realistic planning requires preparing also for regional and possibly transregional streams of climate refugees. Various strategies and mechanisms of global governance in this realm we discuss in this section.

Our assessment faces inevitable methodological problems. First, as shown in section 3 above, the future approximate number of climate refugees, and hence the eventual scope of the problem, remains unknown and depends on a variety of parameters, ranging from the eventual atmospheric greenhouse gas concentration and its impacts on geobiophysical systems to the adaptive capacity and behavioural response of local communities. Second, policy research on the most effective governance mechanisms for a future refugee crisis suffers from the lack of directly relevant empirical evidence to draw on. There are no large numbers of climate refugees as of now. The assessment thus comes down to the analysis of *potential* political responses and governance mechanisms to deal with a *potential* problem. This situation must not stop analytical efforts, not the least because of the magnitude of political crisis and human suffering that climate change could cause and to which governance mechanisms have to respond. Yet the problem requires special methodological care. Quite similar to the established methodological toolbox of counterfactual analysis, students of global adaptation governance need to develop tools of what we call *futurefactuals*—methods to understand the effectiveness of institutions and governance mechanisms, including *potential* institutions, on political events that are merely predicted and for which no empirical experience exist.

Proxy data are of course the effectiveness of governance mechanisms to deal with current refugee problems. Yet these, too, meet limitations because climate refugees are likely to differ from traditional notions of political, economic or war refugees in several respects.

(1) First, unlike political or war refugees, climate refugees are *unable to return to their homes*. Even though the option of return has been unrealistic for many victims of political persecution or civil war, the assumption of eventual return has been one foundation of refugee governance. Climate refugees, on their part, do not require temporary asylum, but a new home.

(2) Second, climate refugees are likely to migrate in large numbers and *collectively*. While current refugee governance builds on the individual person persecuted by a public authority in his or her country,[86] climate migration is in principle a collective phenomenon that entails entire villages, cities, provinces and at times entire nations, and that hence calls for collective responses.

(3) Third, climate refugees are *predictable* within limits. Even though extreme weather events and droughts are not foreseeable as such, the need of migration for many affected regions is evident, especially in some island nations, poorer low-lying areas, and arid regions affected by increasing water scarcity. Unlike political refugees, climate-related migration could therefore be a planned, organized process of resettlement, assuming appropriate national and global governance structures. Again, this distinguishes climate refugees from political or war refugees.

[86]. Note that regional conventions for Africa and Central America accept collective causes for refuge. See below section 4.2.

(4) Fourth, climate refugees differ from political and war refugees through the *moral and legal embedding of their situation*. Political and war refugees are victims of their home state or of a regionalized conflict, with no direct responsibility for their plight with the countries that eventually offer refuge. The moral responsibility for climate change is different. The historic causation of climate change is in particular the responsibility of a few rich countries in North America and Europe, especially when emissions per capita and past emissions are considered. Conversely, almost all climate refugees are likely to come from countries that are least responsible for climate change and least able to finance and implement adaptation programmes. This situation creates a moral link between impoverished climate refugees and the richer countries that have the means to provide funds and refuge for the victims of climate change. Climate refugees thus have a status different from political refugees and a special moral claim vis-à-vis industrialized countries. As argued by Barnett, refusing climate refugees to enter would be "particularly for developed countries, morally difficult to sustain since it is their emissions that will have caused the problem."[87] The legal significance of this moral link is open to debate. It is a general principle of law, also of the law of nations, that a wrongful act creates duties of liability including the compensation of victims. Applied to climate change impacts, climate refugees may be entitled to demand compensation payments or other assistance from industrialized countries.[88] At present, however, governments of industrialized countries reject any claims of legal liability towards possible victims of climate change. A common legal argument is that it is difficult to relate past emissions of developed states to current or future impacts of climate change.[89] However, global climate change has barely begun, and increasing pressure from climate victims, and their governments, might result in innovative compromises that grant special status to populations that need to be relocated due to sea-level rise or increased severity of extreme weather events.

Any global adaptation governance architecture to recognize, protect and support the resettlement of climate refugees must account for these four characteristics of climate refugees: the *impossibility of their return*, the *collectivity of their flight*, the *predictability of their plight*, and the *special moral and possibly legal responsibility* of the rich countries in the North.

In the following three sections, we review three domains of global governance in view of how they are able to respond to potentially high numbers of climate refugees in the decades to come: global governance of refugees, global security governance, and funding institutions. We assess, subsequently, (a) the current governance structure, (b) possible reforms of or within the current structure and institutions, as well as (c) the creation of new structures and additional institutions specifically to deal with climate refugees. Our criteria for this analysis are three-fold: for each governance mechanism we attempt to estimate the (a) *political effectiveness* in relation to the protection of life, health and livelihood of climate refugees; (b) the *equity effects*, taking into account both the distribution of costs and benefits and the procedural equity in decision-making; and (c) the *political feasibility*, which we assume to be higher the lesser legal

87. Barnett 2001, 9.
88. See in general (though not related to climate refugees per se) the discussion in Biermann 1995; German Advisory Council on Global Change 2007, 174; Müller 2002, 71 and 73.
89. Discussed in Paavola and Adger 2002, 13; Grubb 1995, 474.

change in the form of amendments or new agreements is needed and the lesser the likelihood of resistance from major powers.

Refugee Institutions

The main global institution dealing with refugees is the regime provided for by the 1951 Geneva Convention Relating to the Status of Refugees and its amendments in the 1967 Protocol Relating to the Status of Refugees. These institutions are restricted to individual political refugees who flee their countries because of state-led persecution, and thus do not cover climate refugees.[90] A broader definition of refugees has been adopted in two regional conventions, the 1969 Organization of African Unity Convention Governing the Specific Aspects of Refugee Problems in Africa and the 1984 Cartagena Declaration on Refugees (concerning refugees from Central America, Mexico and Panama).[91] Both regional conventions cover also people fleeing from events seriously disturbing public order,[92] and the African convention applies to groups too.[93] Even though the extension of protection to people affected by a seriously disturbed public order and to groups may open the two regional conventions—which happen to cover regions most severely affected by future climate change—to include climate refugees, both conventions were originally not intended to protect environmental or climate refugees.[94]

The main agency in the United Nations system for the protection of refugees is the United Nations High Commissioner for Refugees. Its primary focus is (political) refugees protected under the Geneva Convention and the Protocol of 1967[95] and thus not environmental or climate refugees. 9.9 million refugees fell by the end of 2006 under the formal mandate of the UNHCR.[96] Given the restrictive definition of political refugee under the Geneva convention, the executive committee of UNHCR and the UN General Assembly permitted the agency to extend its activities towards other groups, such as former refugees who have returned to their homeland, internally displaced people, and people who are stateless or whose nationality is disputed, even though these people have a different legal status and are formally not referred to as "refugees."[97] In total, the UNHCR dealt by the end of 2005 with 21 million people[98] and by the end of 2006 with 32.9 million[99], including "refugees, asylum seekers, returnees, stateless people and a portion of the world's internally displaced persons (IDPs)."[100] In the current regime, most climate refugees could be conceptualized as internally dis-

90. McGregor 1994, 126.
91 Keane 2004, 216; OAU 1969, article I.2.; Cartagena Declaration on Refugees 1984, art. III.3.
92. OAU 1969, article I.2; Cartagena Declaration on Refugees 1984, art. III.3.
93. Rwelamira 1983 in: McGregor 1994, 127.
94. Renaud et al. 2007, 12; McGregor 1994, 127; Keane 2004, 216.
95. United Nations High Commissioner for Refugees 2007b. "Refugees include persons recognized under the 1951 Convention relating to the Status of Refugees; its 1967 Protocol; the 1969 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa; those recognized in accordance with the UNHCR Statute; persons granted complementary forms of protection3; or, those enjoying "temporary protection."
96. United Nations High Commissioner for Refugees 2007a, 4–5.
97. United Nations High Commissioner for Refugees 2007b.
98. United Nations High Commissioner for Refugees 2006a, 1.
99. United Nations High Commissioner for Refugees 2007a, 4.
100. United Nations High Commissioner for Refugees 2006a, 1.

placed persons. The UN High Commissioner for Refugees has a variety of programmes for such people, even though the High Commissioner maintains not to have a specific mandate over them.[101] Environmentally internally displaced persons fall under the Guiding Principles on Internal Displacement of the Office of the High Commissioner for Human Rights.[102] However, the concept of "environmentally internally displaced person" serves, according to Keane, only "as a descriptive term, not as a status that confers obligations on states."[103] The Guiding Principles state for example that the primary duty to provide protection and humanitarian assistance lays with national authorities,[104] and the 2006 Operational Guidelines on Human Rights and Natural Disasters "Protecting Persons Affected By Natural Disasters" from the Inter-Agency Standing Committee directed to internally displaced people, places primary responsibility on national authorities of affected countries with assistance of humanitarian agencies.[105] No duties or obligations of other states are mentioned.

In sum, the current legal regime on refugees provides only marginal protection, with no specific mandate, to climate refugees. The main responsibility is placed with their home countries, which contradicts the global responsibility for the victims of climate change. In addition, the maximum number of persons the UN High Commissioner for Refugees is currently dealing with is less than one tenth of the total additional number of climate refugees that many studies predict for 2050. It is doubtful whether these governance arrangements can cope with the looming climate refugee crisis.

One reform option within the present institutional setting could be to extend the mandate of the 1951 Geneva Convention and of the UN High Commissioner for Refugees to cover also "climate refugees." A line of reasoning in support of this extension is that the traditional notion of persecution through the home state is replaced by a global responsibility of all states, especially the industrialized countries, which establishes a form of state-led causation of the plight of climate refugees.[106] A second argument is humanitarian and human rights-based, to the effect that climate refugees require international protection based on a "right to a ... safe environment" when "suffering amounted to a first order violation of human rights."[107]

A meeting organized by the government of the Maldives in August 2006, at which representatives of a few governments, nongovernmental organizations and intergovernmental agencies participated, produced text elements of a draft "Protocol on environmental refugees: Recognition of environmental refugees in the 1951 Convention and 1967 protocol relating to the status of refugees."[108] However, the legal character of the text produced at this meeting is unclear. It appears that proponents envisage a protocol to the Geneva Convention that would be similar in many respects to the tradi-

101. United Nations High Commissioner for Refugees 2006b, 5 and 12.
102. Office of the High Commissioner for Human Rights 1998, Introduction article 2; Keane 2004, 217.
103. Keane 2004, 217.
104. Office of the High Commissioner for Human Rights 1998, principle 3.
105. Inter-Agency Standing Committee Working Group 2006, 9–10.
106. See the discussion in German Advisory Council on Global Change 2007, 174 and 204-207; the Council eventually argues against extension of the UN regime.
107. See the discussion in McGregor 1994, 126–127. McGregor argues also against the extension of the definition in the Geneva Convention.
108. Maldives 2006.

tional regime in terms of level of protection, but expand its scope to cover people who have to leave their places or countries because of environmental change, or who have a reasonable fear of having to leave their place or country.[109] The legal implications of this extension are not further discussed, and the support from industrialized countries, or even from major developing countries, appears minimal or non-existent—the European Commission appears to have merely e-mailed some recommended literature references. Elements of the texts distributed at the Maldives meeting seem to also include legal claims to resettlement in industrialized countries,[110] as well as some form of protection or "resettlement" regime for threatened wild fauna and flora.[111] It is obviously imperative for the government of the Maldives to take the lead in developing an international refugee regime on behalf of their nation. However, we believe that the course taken by the Maldives and their advisors leads into the wrong direction, and that a solution as outlined in section 5 to this paper is more promising to help the Maldives nation and other threatened countries.

In particular, we see little use in extending the definition of "refugees" in the current regime under the Geneva Convention, be it through an amendment of the convention or an additional protocol.[112]

(1) First, its political feasibility is uncertain, and both the relevant UN agencies and donor countries seem resistant or careful at least. The current refugee regime is under constant pressure from industrialized countries who seek restrictive interpretations of its provisions, and extending the same level of protection to a twenty-time larger population of climate change refugees—that might equal in numbers half the population of the European Union—is simply unrealistic. Many governments are thus resistant to accept even the term "environmental refugee," out of fear for an increased burden in terms of financial support or a flow of extra immigrants.[113]

(2) Second, its effectiveness is doubtful, that is, whether the current set-up of the UN High Commissioner for Refugees, and the personalized refugee regime under the Geneva Convention, would be in a position to effectively protect and support a new population of climate refugees that is predicted to be ten-times larger than the current population of refugees, asylum seekers and internally displaced persons together. Important characteristics of the climate refugee crisis, especially its particular link to the climate regime, could be difficult to maintain.

109. Maldives 2006, 16–18.

110. See Maldives 2006, 18. The reports defines a group of "Category A countries" as "island states that do not have 'higher ground'; i.e. non-mainland connected countries that meet the vulnerability criteria of the international community." For these states, the report argues, "Industrialized countries could 'absorb' persons displaced by environmental impacts and partially finance the socio-economic integration of these persons into their societies. The identification and marketing of skills of these persons shall greatly assist their employment or work prospects."

111. See Maldives 2006, 3. The report suggests on p. 3 that the protocol proposed at the meeting in Male should include "relocation of unique flora and fauna to a safe habitat, and ecological restoration of damaged terrain by those entities responsible for displaced persons or conditions rendered upon the land." No further specifics are given. Since climate change impacts will threaten not only human communities, but also a number of endangered species of wild fauna and flora, the idea of a "relocation" of threatened species appears defensible. However, different institutional mechanisms than for the protection of human refugees will be needed, for instance special programmes under the 1992 Convention on Biological Diversity.

112. This is supported, e.g., by Renaud et al. 2007, 34, with further references.

113. Myers and Kent 1995, 151–153; McGregor 1994: 128.

(3) Third, extending the current UN refugee regime to include climate refugees will create an unnecessary tension, if not trade-off, between the persons protected under the Geneva Convention and their specific rights, and the new additional streams of climate refugees. According to McGregor, the use of the term environmental refugees "brings with it the danger that key features of refugee protection could be undermined and the lowest common denominator adopted."[114] Kibreab even argued that the term environmental refugee was "invented at least in part to depoliticize the causes of displacement, so enabling states to derogate their obligation to provide asylum."[115] In this perspective, those who popularized the term "environmental refugee" unintentionally helped states to justify restrictive immigration policies.[116] Following the UN High Commissioner for Refugees, "Lumping both groups together under the same heading would further cloud the issue and could undermine efforts to help and protect either group and to address the root causes of either type of displacement."[117] Following this reasoning, one should not use the term and rather investigate the multiple factors that cause migration, instead of placing all people under the label environmental (or climate) "refugee."[118] The solution to this is not, however, to deny climate refugees the protection that they need and the designation as refugees with its strong moral connotations. Climate refugees need protection and support, but of a kind that is different from the protection of political refugees who have to flee their home country for fear of state-led persecution. Thus, the legal and political protection mechanisms for both types of refugees will also need to differ, and the extension of the Geneva Convention would unnecessarily intermingle two different types of affected persons.

(4) Fourth, the protection of climate refugees is in essence a development issue. It requires large-scale, long-term planned resettlement programmes for groups of affected populations, often within their own country, and often in concert with adaptation programmes for other populations that are not evacuated but can still be protected for instance through strengthened coastal defences. Therefore, it will not be the UN High Commissioner for Refugees but rather other international agencies, notably the UN Development Programme and the World Bank, that will have to bear the brunt of dealing with the emerging problem of climate refugees. The role of the UN High Commissioner for Refugees, on its part, will likely be more limited and mainly in the assistance of states in the administrative governance and legal protection of internal refugees; in the assistance in the international migration of those climate refugees whose countries cannot sustain climate change impacts sufficiently to allow for internal migration (generally small island states); and the coordination of emergency responses together with other UN agencies in cases of sudden streams of climate refugees due to extreme weather events.

Thus, we conclude that the extension of the concept of refugees in the Geneva Convention to cover climate refugees is politically not feasible; has problematic ethical consequences by threatening the protection of current political refugees with their different needs; is unlikely to provide an effective regime of protection that can cater for a

114. McGregor 1994, 128.
115. Kibreab 1997, 21.
116. Kibreab 1997, 21.
117. United Nations High Commissioner for Refugees 2002, 13.
118. McGregor 1994, 121–122 and 128; Kibreab 1997, 21–23.

ten or twenty-times larger number of refugees than is currently covered by the convention and the programmes of the UN High Commissioner for Refugees; and does not sufficiently account for the specific character and needs of climate refugees. We thus argue in section 5 below for a *sui generis* regime for the recognition, protection, and resettlement of climate refugees that we expect to be most effective in the form of a protocol to the climate convention.

Security Institutions

Large numbers of climate refugees have conjured up the risk of violent conflict. Since most climate refugees are likely to remain in their home countries,[119] such conflicts are more likely to be internal than international. However, also international conflicts as a consequence of climate-related migration have been ascertained as a potential risk. The debate on environment and security is now more than twenty years old, with no conclusive results. It is likely that the discourse on the impacts of climate change and millions of climate refugees will add new life to this debate. The German Advisory Council on Global Change maintained in a recent study, "If global temperatures continue to rise unabated, migration could become one of the major fields of conflict in international politics in future."[120] Likewise, the British Government's Ministry of Defence Development, Concepts and Doctrine Centre suggests that "abrupt climate change" could lead to "societal collapse, mega migration and intensifying competition for much diminished resources and widespread conflict."[121]

Given these doom scenarios, the prospect of large-scale migration is increasingly framed in terms of international security politics. In 1992, the United Nations Security Council had asserted that environmental degradation could turn into threats of world peace and security.[122] In April 2007, the Council addressed the impacts of climate change on international peace and security in more detail and with much higher public attention. British Foreign Secretary Margaret Beckett, who chaired the Council's session, as well as Robert G. Aisi for the Pacific Islands Forum and UN Secretary-General Ban Ki-Moon identified climate-change induced mass migration as one of the possible factors leading to conflicts and instability.[123] Representatives from most developing countries, however, forcefully maintained that the UN Security Council is the wrong institution to deal with climate policy, which is better addressed through institutions such as the UN General Assembly, the UN Economic and Social Council, or the UN Environment Programme.[124] Indeed, it is debatable whether climate refugees are best dealt with through the UN Security Council.

In principle, the Council is the most powerful international institution: a decision by the Council that a refugee situation threatens world peace and security would trigger a range of options under Chapter VII of the UN Charter, including military in-

119. Clark 2006; German Advisory Council on Global Change 2007, 118 and 128.
120. German Advisory Council on Global Change 2007, 174.
121. Development, Concepts and Doctrine Centre 2007, 78–79.
122. UN Security Council 1992. See in more detail Biermann 2002.
123. United Nations Security Council 2007. The debate is reviewed in Sindico 2007.
124. See the various statements from developing country representatives reported in: United Nations Security Council 2007.

tervention. Some observers, such as the German Advisory Council on Global Change, have thus welcomed the increasing focus of the UN Security Council on the climate problem.[125] Yet an extended mandate of the UN Security Council brings grave ethical and legal problems. Most climate-related migration will be within a developing country with no or little international repercussions, and allowing the Council here to exert a stronger mandate will extend its sway over the internal affairs of developing nations. The Council lacks legitimacy in many developing countries because of the special voting power of its five permanent members. The fact that some of the largest greenhouse-gas emitting countries are permanent members of the Security Council might further decrease its legitimacy in climate governance. Moreover, it is uncertain what the Security Council could initiate that cannot be covered by existing institutions: the UN Framework Convention on Climate Change, a possible protocol on climate refugees, or intergovernmental agencies such as the UN Development Programme, the UN Environment Programme, and the Global Environment Facility. In sum, it appears unclear whether a stronger role of the Council is needed and what its added benefits would be. Given that developing countries—including India and China—uphold clear objections towards any role of the Security Council in climate policy,[126] a stronger involvement of the Council seems rather unlikely in any case.

Funding Institutions

The protection and resettlement of possibly over 200 million climate refugees over the course of this century will require substantial funds. Since climate refugees will often (though not exclusively) live in poorer developing countries and generally seek refuge in their own or neighbouring countries, the funds will largely have to come from the international community. From a global governance perspective, there are three types of financial mechanisms for climate refugees: general development funding agencies, environment-related funds, or a new funding agency to be created especially for climate refugees.

Regarding development agencies, the World Bank group and the UN Development Programme are probably most relevant at present, though others will have to play a role too (for example the World Health Organization or the UN Food and Agriculture Organization). These agencies will need to integrate climate change impacts into their work programmes, and most are in the process of doing so. For example, the World Bank is developing a Global Facility for Disaster Reduction and Recovery that could provide quick relief funding after a natural disaster, and has called for the creation of insurance mechanisms and disaster relief instruments.[127] The UN Office for the Coordination of Humanitarian Affairs (OCHA)'s Central Emergency Revolving Fund has been transformed into a Central Emergency Response Fund, to provide a more predictable and timely response to humanitarian crises.[128] The International Monetary Fund has developed an Exogenous Shocks Facility to assist developing countries that experienced

125. German Advisory Council on Global Change 2007, 195-196.
126. United Nations Security Council 2007.
127. Müller 2006, 4–5; Linnerooth-Bayer and Mechler 2006, 632.
128. Müller 2006, 5; Müller 2006, 4–5.

exogenous shocks, which could include climate change impacts.[129] All these facilities could provide relief also for climate refugees.

In addition, there are a number of specialized environmental funds. Some climate change mitigation programmes of developing countries are reimbursed through the Global Environment Facility, which is funded by industrialized countries and implemented through the World Bank, the UN Development Programme and UN Environment Programme. The climate regime provides for three special funds to assist developing countries: an Adaptation Fund under the 1997 Kyoto Protocol financed through a 2% levy on transactions under the protocol's Clean Development Mechanism, to fund adaptation projects in developing countries; a Special Climate Change Fund to finance adaptation projects to strengthen the developing county's adaptive capacity; and a Least Developed Countries Fund to assist the least developed countries in preparing their National Adaptation Programmes of Actions. The latter two funds fall under the climate convention and are financed by the governments of industrialized countries.[130]

Yet while the protection of climate refugees will in principle fall under the terms of these funds, it is questionable whether they are the most appropriate mechanisms for the specific funding problem of climate refugees. For one, the level of funding is not enough even for the current purposes of the funds, and most funds are based on the principle of voluntary contributions by governments. At present, merely 85 million US dollar have been collected for the Least Developed Countries Fund, the Special Climate Change Fund, separate Adaptation Fund donations and the GEF Special Priority on Adaptation, with additional 95.8 million US dollar having been pledged.[131] As observed by the executive secretary of the climate convention, "current sources of funding are insufficient to cover these adaptation needs. So the international community needs to investigate and innovate sources of finance … in order to ensure that the most vulnerable communities are able to cope."[132] The current funds are neither sufficiently capitalized nor institutionally strong enough to deal with the future impacts of climate change, and therefore require further development.[133] Hence, the existing funds will not be able to finance the protection and resettlement of climate refugees in the numbers as they are currently predicted. As for the relief funds, critics also claim that they are not functioning well, and that current relief funding is essentially an "ex-post system" that depends on the level of media attention, on strategic considerations of donor countries, and on the number of donations already given to other natural disasters.[134] The German Advisory Council on Global Change thus advocates more structural financial support for the Central Emergency Response Fund of the UN Office for the Coordination of Humanitarian Affairs.[135]

However, as pointed out by Müller and Hepburn,[136] an increase in public funding from the governments of industrialized countries is unlikely or at least uncertain

129. Müller 2006, 4.
130. Paavola and Adger 2002, 12; Richards 2003, 6–7.
131. Müller and Hepburn 2006, 7.
132. UNFCCC Executive Secretary 2007.
133. German Advisory Council on Global Change 2007, 210.
134. Bals, Warner and Butzengeiger 2006, 639–640; Müller 2002, 89–91.
135. German Advisory Council on Global Change 2007, 212.
136. Müller and Hepburn 2006.

given other national priorities (including climate-related other priorities). The only fund that is independent from governments—the Adaptation Fund that is replenished by a 2% levy on transactions under the Clean Development Mechanism—is projected to generate 160–950 million US dollars in total until 2012.[137] A further raise in the levy on projects under the Clean Development Mechanism to fill up the Adaptation Fund is technically possible, yet would create quasi-fiscal incentives *against* environmentally beneficial projects. Several proposals seek to address this issue, including novel funding mechanisms such as the Climate Impact Relief Fund proposed by Müller[138] or the International Air Travel Adaptation Levy developed by Müller and Hepburn (projected to raise 4-10,000 million US dollars each year).[139] Alternative mechanisms are climate change insurance schemes. For example, in 1991 the Alliance of the Small Island States proposed an International Insurance Pool to assist small islands and low-lying coastal developing countries affected by sea-level rise.[140] The Munich Climate Insurance Initiative has recently been established as a network of nongovernmental organizations and policy analysts to develop and evaluate insurance options for climate change.[141] With reference to decisions from the seventh conference of the parties to the climate convention, two workshops have been organized on insurance mechanisms,[142] which have also been an issue at the expert meeting for small island developing states on adaptation.[143]

Independent from the question of whether governments in the North will directly increase their contributions for adaptation funding or whether alternative, novel mechanisms such as adaptation levies or insurances will be created, it is dubious whether climate refugees can be best protected through inclusion in these general funding mechanisms. This would put climate refugees inherently in competition with other concerns, be it mitigation as in the case of GEF funding, be it overall adaptation as in the case of the adaptation funds, where adaptation measures might be motivated through additional concerns such as the protection of powerful economic interests. Integrating climate refugees in general environmental funding schemes might blur the specific moral link between climate refugees and the populations in potential donor countries and hinder claims for compensation, liability and responsibility from industrialized countries. Thus, as in our previous discussion of the institutional setting that would govern the recognition, protection, support and resettlement of climate refugees, the best option appears also here the creation of an at least partially *sui generis* regime for the financing of the protection of climate refugees, such as a Climate Refugee Protection and Resettlement Fund. This fund could be coupled with novel income-raising mechanisms that also address other, related concerns, for example Müller and Hepburn's proposed International Air Travel Adaptation Levy.[144]

137. Müller and Hepburn 2006, 7.
138. Müller 2002, 89–91.
139. Müller and Hepburn 2006.
140. Müller 2006, 5.
141. Bals et al. 2005, 1.
142. UNFCCC COP7 2002, paragraph 34 and 35; UNFCCC 2003a; UNFCCC 2003b.
143. UNFCCC 2007.
144. Müller and Hepburn 2006.

5 A Blueprint for Governing the Future Climate Refugee Crisis

As outlined in the preceding sections, climate refugees will require legal recognition and protection, political support, and financial assistance. However, existing institutions, organizations and funding mechanisms are insufficiently equipped to deal with the particular problems of climate refugees. They thus need to be strengthened or replaced by a more appropriate governance system that can cope with the challenge. The solution will be neither an extension of the legal definition of refugees under the Geneva Convention and the UN High Commissioner for Refugees, nor an extended mandate of the UN Security Council. Instead, we argue in this paper for a *sui generis* regime for the recognition, protection, and resettlement of climate refugees. This *sui generis* regime must be tailored to the needs of the climate refugees, and it must be appropriately financed and supported by the international community. This section lays out the central elements of such a regime. We address (1) its core governing principles, (2) its legal-institutional character, (3) its organizational setting, and (4) its funding.

Principles

A *sui generis* regime for the recognition, protection and resettlement of climate refugees must build on a set of core principles tailored to the specific problem, including its political, legal, and ethical dimensions. We suggest five principles to serve as a basis for the institutional development of the regime:

(1) The Principle of Planned Re-location and Resettlement. Even though climate change impacts will eventually manifest themselves in unpredictable singular events—such as storms, floods or droughts—the increase in magnitude and frequency of such events can be predicted, and the consequential need for local populations to leave regions that suffer from increased risk can be foreseen. The governance of climate refugees can thus be better organized and planned than in the case of victims of political turmoil or war, and can be carried out in planned, voluntary relocation and resettlement programmes—sometimes over many years and decades—for certain populations as opposed to spontaneous flights. At the core of a regime on climate refugees are thus not programmes on emergency response and disaster relief, but planned and voluntary resettlement over longer periods of time.

(2) The Principle of Resettlement Instead of Temporary Asylum. Climate refugees cannot return to their homes. Thus, the underlying assumption in current refugee governance that refugees may return once state-led persecution in their home countries has ended, needs to be replaced by an institutional design that conceives of climate refugees as permanent immigrants to the regions or countries that accept them.

(3) The Principle of Collective Rights for Local Populations. The Geneva Convention is based on individual persecution. This has included quasi-collective titles—for example when entire ethnic or religious groups in a country are judged as being persecuted—but essentially the regime is designed for individual state-

based persecution.[145] A climate refugee regime, however, would need to be tailored for collectives of people, such as populations of certain villages, cities, regions, provinces or—as in the case of small island states—of entire nations.

(4) The Principle of International Assistance for Domestic Measures. Climate refugees enjoy in principle the protection of their own countries, and in many cases, serious climate change impacts will affect only parts of a country. Thus, an international regime for climate refugees will be less on the protection of persons outside their states but rather on the support of governments, local communities and support agencies to protect people within their own territory. The governance challenge of protecting and resettling climate refugees is thus essentially about international assistance and funding for the domestic support and resettlement programmes of affected countries that have requested such support.

(5) The Principle of International Burden-sharing. Climate change is a global problem in causation and consequences, and the industrialized countries bear most of the moral responsibility for its victims. This suggests also for the protection of climate refugees the adoption of institutional elements from existing agreements on climate or from similar areas. These could include: the principle of common but differentiated responsibilities and respective capabilities (which suggests that richer countries have to bear higher costs for the protection of climate refugees); the principle of reimbursement of full incremental costs of affected countries occurred through resettlement of climate refugees; and the principle of double-weighted decision-making procedures, which would give developing countries a structurally larger clout in a new institution on climate refugees.

Institutional Setting

These five principles are not linked to a specific institutional form or embedding. Theoretically, governments could agree on a new treaty on climate refugees, such as the "cross-sectoral multilateral convention" on climate refugees that was recently proposed by the German Advisory Council on Global Change.[146] Such an independent convention, however, could require a lengthy negotiation process on core principles and would weaken the link with the climate policy process and its particular agreements on equity, responsibility, and international cooperation.

Therefore, the five principles of a climate refugee regime rather suggest a Protocol on Recognition, Protection and Resettlement of Climate Refugees ("Climate Refugee Protocol") 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 support the protection of climate refugees by interlinking their protection with the

145. The regional conventions include titles based on collective persecution, including—as in the case of the Organization of African Unity convention—"every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality."

146. German Advisory Council on Global Change 2007, 129, see also 205, 206-207.

overall climate regime, including progress in climate science that defines risks for people in certain regions. For developing countries, a protocol on climate refugees based on the principle of common but differentiated responsibilities and full incremental costs could become a major bargaining chip given the increasing pressure from the North to integrate advanced developing countries in a global mitigation regime of quantified reduction and limitation objectives.

Concerning procedural operationalization, the protocol could provide for an executive committee on the recognition, protection and resettlement of climate refugees that would function under the authority of the conference of the parties to the climate convention serving as the meeting of the parties to the climate refugee protocol. This executive committee would maintain a list of specified administrative areas (such as villages, islands, districts) under the jurisdiction of member states whose population is determined to be "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 its jurisdiction for inclusion into the list of affected areas. In line with the sovereignty principle of the United Nations, inclusion of affected areas, as well as the type of support measures to be chosen, would be determined only upon formal proposal from, and with the consent of, the government of the affected country.

While the composition and procedures of this executive committee will likely be contentious in negotiations, it would appear reasonable to follow examples such as of the Montreal Protocol on Substances that Deplete the Ozone Layer; that is, the executive committee could consist of an equal number of affected countries and donor countries and be governed by double-weighted majority rule. This 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. In addition, both affected countries and the executive committee and meeting of the parties to the refugee protocol will need to rely on regular and specific scientific advice, especially regarding estimates about regional climate change impacts. It will thus be vital that governments and the executive committee and meeting of the parties are supported by a specialized scientific body. This could be either a sub-group of the existing advisory committee under the climate convention, or a newly created body serving just the climate refugee protocol. Likewise, the Intergovernmental Panel on Climate Change could support the process through timely, focussed assessments.

Inclusion in the list of populations "in need of relocation due to climate change" or "threatened by having to relocate due to climate change" would trigger specific rights and support mechanisms, including financial support, voluntary resettlement programmes over several years, together with the purchase of new land, and, especially in the case of small island states, organized international migration. It is likely that these rights will be restricted to inhabitants of countries that are not listed in Annex I to the climate convention, that is, developing countries as defined in the climate regime.

Creating a legal framework for "climate refugees" will cause some friction with the existing legal framework for political refugees under the Geneva Convention and related agreements and national legislation. It has thus been proposed by some observers, as discussed earlier, that the term "refugee" must be limited to political refugees as defined in the 1951 Geneva Convention. However, as we outlined in section 2 above, there is no *a priori* reason to reserve the term "refugee" for people who flee because of

political persecution, and to use less appropriate terms for people who are similarly forced to leave their homes, yet not for reasons of persecution but for reasons of global climate change. A differentiation between the legal status of political refugees protected by the Geneva Convention and the legal status of climate refugees protected by an UNFCCC Protocol on Recognition, Protection and Resettlement of Climate Refugees requires some terminological adjustment within the UNHCR regime, but is legally and practically unproblematic. In particular, a legal instrument on climate refugees does not require an amendment of the 1951 Geneva Convention Relating to the Status of Refugees and its Protocol, since these instruments define the term "refugee" only for the purposes of their own regime, which will remain unchanged.[147] Already now, the regional refugee conventions in Africa and Central America operate with refugee definitions that differ from the definition in the Geneva Convention, and thus offer different types of protection to different types of refugees. A *sui generis* regime on climate refugees will merely add, in a separate legal instrument, a new type of protection for a new, differently defined type of refugees.

Within climate negotiations, some governments and think tanks have proposed an "adaptation protocol" to the climate convention.[148] Here is not the place to discuss the disadvantages and advantages of such a broader legal instrument. However, it is important to note that the core elements that we propose for an UNFCCC Protocol on Recognition, Protection and Resettlement of Climate Refugees could theoretically also be incorporated into a broader adaptation protocol as long as key elements of our proposal—such as the financial support mechanism and its principles—are preserved. Integration of the protection of climate refugees in a broader adaptation protocol could allow for a more holistic adaptation planning in regions at risk, which will include in many cases a combination of adaptation and voluntary resettlement programmes. However, such an integration of the climate refugee problem in a larger context also puts refugees into competition with other interests in affected areas, including economic and particular political interests. This might endanger the effective protection and financial support of the people—often the poorest—for whom adaptation is no option and who have to leave their homes and to resettle somewhere else. These potential conflicts thus need to be prevented if a larger legal instrument is being negotiated.

Organizational Setting

Dealing with the resettlement of millions of climate refugees over the course of the century will require not only a new legal regime, but also one or several international agencies dealing with this task. Given different causes of climate-related flight that range from extreme weather events to water scarcity and drought, it is unlikely that one single agency could be assigned the exclusive, or main, task of dealing with

147. See art 1, a (2) of the 1951 Geneva Convention (UNHCR 2007c): "For the purposes of the present Convention, the term 'refugee' shall apply to any person who: ... owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his [sic] nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his [sic] former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."

148. See the report in Okereke and Mann et al. 2007, 36-37.

climate refugees. Instead, a more appropriate and likely model will be the designation of a network of agencies that serve as "implementing agencies," under the authority of the meeting of the parties to the UNFCCC Protocol on Recognition, Protection and Resettlement of Climate Refugees, in their respective area of expertise and depending on type and circumstances of populations in need of assistance and relocation.

A crucial role might lie with the UN Development Programme and the World Bank, both of which could serve as implementing agencies for the climate refugee protocol in the planned voluntary resettlement of populations designed by the meeting of the parties to the protocol as being in need of relocation because of climatic change. The UN Environment Programme, even though it lacks a strong operational mandate, may provide invaluable further assistance in terms of scientific research and synthesis, information dissemination, strategic legal and political advice, and other core functions of this programme. A small coordinating secretariat to the protocol on climate refugees would be needed, possibly as a subdivision of the UNFCCC secretariat in Bonn. In addition, the UN High Commissioner for Refugees will play a role, even though it would be unlikely to be the main agency given the special characteristics of the climate refugee crisis. Yet the expertise of the High Commissioner in view of emergencies, as well as its legal and technical expertise in dealing with refugee crises, will be indispensable also for the protection of climate refugees.[149]

Funding

The most appropriate funding mechanism for the protection of climate refugees would be a separate fund, such as a Climate Refugee Protection and Resettlement Fund.[150] While the operational aspects of this fund could be linked with other 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 UNFCCC Protocol on Recognition, Protection and Resettlement of Climate Refugees. The Climate Refugee Protection and Resettlement Fund could be coupled with novel income-raising mechanisms such as an international air travel levy or similar mechanisms.

A key question for this new facility specifically for climate refugees will be the amount of funding required by the international community and the funding principle underlying their protection. For mitigation programmes 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 of the ozone regime.[151] Similar provisions apply to adaptation.[152] In addition, the cli-

149. According to article 9 of the Statute of the High Commissioner, the UN General Assembly may request the High Commissioner "to engage in such additional activities, including repatriation and resettlement ... within the limits of the resources at his [sic] disposal." This proviso could form the basis for a formal mandate, through the UN General Assembly, to assist in implementing a protocol on climate refugees to the climate convention.

150. See also the German Advisory Council on Global Change, which proposed an Environmental Migration Fund. German Advisory Council on Global Change 2007, 211.

151. See Biermann 1997 in more detail on the operationalization of the principle.

152. 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

mate 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 also to the protection and resettlement of climate refugees at least to those situations where a causal link with climate change is undisputed, namely sea-level rise. For other situations in which climate change is only one causal factor to account for environmental degradation—for example in the case of water scarcity—the principle of additional funding instead of full reimbursement is probably more appropriate. In any case, the costs of the voluntary resettlement and re-integration of millions of people who have to leave their islands, coastal plains or arid areas will be substantial and probably in the order of billions of Euros over the coming decades. Even if novel taxation-like mechanisms will be introduced, such as an international air travel levy, the final responsibility for the amount of funding to be generated through such mechanisms will thus rest with the governments of the industrialized countries.

We thus suggest four principles that would govern the Climate Refugee Protection and Resettlement Fund. First, all funds provided are on a grant basis. To the extent that larger development projects financed through loans include the resettlement of climate refugees, the particular costs of the resettlement elements will be fully reimbursed as a grant. Second, all funds provided for the Climate Refugee Protection and Resettlement Fund are new and additional to prevent competition with other sustainable development needs. Third, in the case of sea-level rise refugees, the Climate Refugee Protection and Resettlement Fund reimburses the full agreed incremental costs of developing countries occurred in protecting and relocating these refugees (no matter from which country they come), taking into account that a large part of the financial transfer will be channelled through international relief agencies and that these agencies will then be entitled to reclaim their costs. In cases where climate change is only one cause of environmental degradation, the fund will pay for parts of the protection and relocation costs, the exact amount of which will be determined in intergovernmental negotiation. Fourth, the meeting of the parties to the UNFCCC Protocol on Recognition, Protection and Resettlement of Climate Refugees, or committees under its authority, maintain the right to define a list of designated populations as "climate refugees in need of relocation," to determine the amount of reimbursement and type of assistance, and to take all other measures related to the governance of the fund.

6 Conclusion

Climate change threatens to cause the largest refugee crisis in human history. As we describe in section 3, more than 200 million people, largely in Africa and Asia, might be forced to leave their homes to seek refuge in other places or countries over the course of the century. However, the existing institutions, organizations and funding

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 letter (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." Emphasis added.

mechanisms, as we analyze in section 4, are not sufficiently equipped to deal with this looming crisis. The situation calls for new governance. In section 5, we have outlined a global governance architecture for the protection and resettlement of climate refugees. We argue against the extension of the definition of refugees under the 1951 Geneva Convention Relating to the Status of Refugees and against any role of the UN Security Council. Instead, key elements of our proposal are a new legal instrument specifically tailored to the needs of climate refugees—a Protocol on Recognition, Protection and Resettlement of Climate Refugees to the United Nations Framework Convention on Climate Change—as well as a separate funding mechanism, the Climate Refugee Protection and Resettlement Fund.

The serious impacts of climate change that will compel millions of people to leave their homes are largely predicted only for the second half of this century, based on the current state of climate science. However, the broad predictability of climate change impacts requires, and allows for, preparation and planning. We have thus framed our proposal deliberatively not in terms of emergency response and disaster relief, but of planned and organized voluntary resettlement programmes. In particular when it comes to sea-level rise, there is no need to wait for extreme weather events to strike and islands and coastal regions to be flooded. All areas that cannot be protected through increased coastal defences for practical or economic reasons need to be included early in long-term resettlement and reintegration programmes that make the process acceptable and endurable 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.

References

Arnell, N. W., M. G. R. Cannell, M. Hulme, R. S. Kovats, J. F. B. Mitchell, R. J. Nicholls, M. L. Parry, M. T. J. Livermore, and A. White. 2002. The consequences of CO2 stabilization for the impacts of climate change. *Climate Change* 53: 413–446.

Australian Labor Party. 2006. Labor Calls for International Coalition to Accept Climate Change Refugees. Press Release (9 October 2006). Available at http://www.alp.org.au/media/1006/msenhwat090.php (last visit 26 August 2007).

Bals, Christoph, Ian Burton, Sonja Butzengeiger, Andrew Dlugolecki, Eugene Gurenko, Erik Hoekstra, Peter Höppe, Ritu Kumar, Joanne Linnerooth-Bayer, Reinhard Mechler, Koko Warner. 2005. *Insurance-Related Options for Adaptation to Climate Change: Executive Summary*. Available at http://www.germanwatch.org/ (last visit 6 October 2007).

Bals, Christoph, Koko Warner, and Sonja Butzengeiger. 2006. Insuring the uninsurable: Design options for a climate change funding mechanism. *Climate Policy* 6 (6): 637–647.

Barnett, Jon. 2001. *Security and Climate Change*. Tyndall Centre Working Paper 7. Norwich: Tyndall Centre for Climate Change Research.

Barnett, T. P., J. C. Adam, and D. P. Lettenmaier. 2005. Potential impacts of a warming climate on water availability in snow-dominated regions. *Nature* 438: 303–309.

Bates, Diana C. 2002. Environmental refugees? Classifying human migrations caused by environmental change. *Population and Environment* 23 (5): 465–477.

Bell, Derek R. 2004. Environmental refugees: What rights? Which duties? *Res Publica* 10: 135–152.

Biermann, Frank. 1995. *Saving the Atmosphere. International Law, Developing Countries, and Air Pollution*. Frankfurt am Main etc.: Lang.

Biermann, Frank. 1997. Financing environmental policies in the South. Experiences from the Multilateral Ozone Fund. *International Environmental Affairs* 9 (3): 179–218

Biermann, Frank. 2002. Common concerns of humankind and national sovereignty. In *Globalism: People, Profits and Progress. Proceedings of the 30th Annual Conference of the Canadian Council on International Law, Ottawa, 18-20 October 2001*. Dordrecht: Kluwer, 158–212.

Biermann, Frank. 2005. Between the United States and the South. Strategic choices for European climate policy. *Climate Policy* 5, 273–290.

Black, Richard. 2001. *Environmental Refugees: Myth or Reality?* New Issues in Refugee Research Working Paper 34. Geneva: United Nations High Commissioner for Refugees.

Brooks, Nick, Robert J. Nicholls, and Jim Hall. 2006. *Sea Level Rise: Coastal Impacts and Responses*. External Expertise for the WBGU report *The Future Oceans: Warming Up, Rising High, Turning Sour*. Berlin: German Advisory Council on Global Change.

Burke, Eleanor J., Simon J. Brown, and Nikolaos Christidis. 2006. Modeling the recent evolving of global drought and projections for the twenty-first century with the Hadley Centre Climate Model. *Journal of Hydrometeorology* 7: 1113–1125.

Castles, Stephen. 2002. *Environmental Change and Forced Migration: Making Sense of the Debate*. New Issues in Refugee Research Working Paper 70. Geneva: United Nations High Commissioner for Refugees.

Christian Aid. 2007. *Human Tide: The Real Migration Crisis*. London: Christian Aid.

Clark, William A.V. 2006. *Environmentally Induced Migration and Conflict*. External Expertise for the WBGU Report *World in Transition: Climate Change as a Security Risk*. Berlin: German Advisory Council on Global Change.

Cartagena Declaration on Refugees. 1984. Cartagena Declaration on Refugees Adopted by the Colloquium on the International Protection of Refugees in Central America, Mexico and Panama. 19–22 November. URL: http://www.unhcr.org/cgi-bin/texis/vtx/research/opendoc.htm?-tbl=RSDLEGAL&id=3ae6b36ec.

Development, Concepts and Doctrine Centre (DCDC). 2007 (3d Edition). *The DCDC Global Strategic Trends Programme 2007–2036*. UK: Crown Copyright/MOD 2007. Available at http://www.mod.uk/NR/rdonlyres/94A1F45E-A830-49DB-B319-DF68C28D561D/0/strat_trends_17mar07.pdf.

El-Hinnawi, Essam. 1985. *Environmental Refugees*. Nairobi: United Nations Environment Programme.

German Advisory Council on Global Change. 2006. *The Future Oceans: Warming Up, Rising High, Turning Sour*. Berlin: German Advisory Council on Global Change.

German Advisory Council on Global Change. 2007. *World in Transition: Climate Change as a Security Risk*. Berlin: German Advisory Council on Global Change.

Grubb, Michael. 1995. Seeking fair weather: Ethics and the international debate on climate change. *International Affairs* 71 (3): 463–469.

Hugo, Graeme. 1996. Environmental concerns and international migration. *International Migration Review* 30 (1): 105–131.

Immigration New Zealand. 2005. *Pacific Access Category*. Available at http://www.immigration.govt.nz/-migrant/stream/live/pacificaccess/ (last visit 25 August 2007).

Inter-Agency Standing Committee Working Group (IASC). 2006. *Protecting Persons Affected By Natural Disasters. IASC Operational Guidelines on Human Rights and Natural Disasters*. Washington: Brookings-Bern Project on Internal Displacement.

International Organization for Migration. 1996. Environmentally-Induced Population Displacements and Environmental Impacts Resulting from Mass Migration. International Symposium, Geneva, 21–24 April.

Intergovernmental Panel on Climate Change. 2007. Climate Change Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, edited by M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C. E. Hanson. Cambridge, UK: Cambridge University Press.

Jakobeit, Cord, and Chris Methmann. 2007. *Klimaflüchtlinge*. Hamburg, Germany: Greenpeace.

Keane, David. 2004. The environmental causes and consequences of migration: A search for the meaning of "environmental refugees". *Georgetown International Environmental Law Review* 16 (2): 209-223.

Kibreab, Gaim. 1997. Environmental causes and impact of refugee movements: A critique of the current debate. *Disasters* 21 (1): 20–38.

Linnerooth-Bayer, Joanne, and Reinhard Mechler. 2006. Insurance for assisting adaptation to climate change in developing countries: A proposed strategy. *Climate Policy* 6 (6): 621–636.

Maldives, Republic of (Ministry of Environment, Energy and Water). 2006. 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. On file with authors.

McGregor, JoAnn. 1994. Climate change and involuntary migration: implications for food security. *Food Policy* 19 (2): 120–132.

Müller, Benito. 2002. *Equity in Climate Change: The Great Divide*. Oxford: Oxford Institute for Energy Studies.

Müller, Benito. 2006. *Adaptation Funding and the World Bank Investment Framework Initiative*. Background Report prepared for the Gleneagles Dialogue Government Working Groups, Mexico, 7–9 June. Oxford: Oxford Institute for Energy Studies. Available at http://www.oxfordenergy.org/pdfs/-Gleneagles.pdf.

Müller, Benito, and Cameron Hepburn. 2006. *IATAL—an Outline Proposal for an International Air Travel Adaptation Levy*. Oxford: Oxford Institute for Energy Studies.

Munich Re Group. 2004. Megacities – Megarisks: Trends and Challenges for Insurance and Risk Management. München: Münchner Rückversicherungs-Gesellschaft.

Myers, Norman, and Jennifer Kent. 1995. *Environmental Exodus. An Emergent Crisis in the Global Arena*. Washington DC: Climate Institute.

Myers, Norman. 2002. Environmental refugees: A growing phenomenon of the 21st century. *Philosophical Transactions: Biological Sciences* 357 (1420): 609–613.

Nagy, G. J., R. M. Caffera, M. Aparicio, P. Barrenechea, M. Bidegain, J. C. Giménez, E. Lentini, G. Magrin, and coauthors. 2006. *Understanding the Potential Impact of Climate Change and Variability in Latin America and the Caribbean*. Report prepared for the Stern Review on the Economics of Climate Change. Available at http://www.hm-treasury.gov.uk/independent_reviews/-stern_review_economics_climate_change/stern_review_supporting_documents.cfm.

Nettle, Kelly. 2007. Climate Change Refugees. Press release of Australian Greens Senator Kelly Nettle. Available at http://www.kerrynettle.org.au/300_campaigns_sub.php?&deptItemID=51 (last visit 23 August 2007).

Nicholls, Robert J., and Nobuo Mimura. 1998. Regional issues raised by sea-level rise and their policy implications. *Climate Research* 11: 5–18.

Nicholls, Robert, J., Frank M.J. Hoozemans and Marcel Marchand. 1999. Increasing flood risk and wetland losses due to global sea-level rise: regional and global analyses. *Global Environmental Change* 9: 69–87.

Nicholls, Robert J. 2003. *Case Study on Sea-level Rise Impacts*. OECD Workshop on the Benefits of Climate Policy: Improving Information for Policy Makers. Paris: Organization for Economic Co-operation and Development.

Norwegian Nobel Committee. 2007. The Nobel Peace Prize 2007. Press Release (12 October 2007). Available at http://nobelprize.org/nobel_prizes/peace/laureates/2007/press.html (last visit 18 November 2007).

Patel, Samir S. 2006. A sinking feeling. *Nature* 440: 734–736.

Paavola, Jouni, and W. Neil Adger. 2002. *Justice and Adaptation to Climate Change*. Tyndall Centre Working Paper 23. Norwich: Tyndall Centre for Climate Change Research.

Office of the High Commissioner for Human Rights. 1998. *Guiding Principles on Internal Displacement*. Document E/CN.4/1998/53/Add.2, Geneva, 11 February.

Okereke, Chukwumerije and Philip Mann with contributions by Henny Osbahr, Benito Müller and Johannes Ebeling. 2007. *Assessment of key negotiating issues at Nairobi Climate COP/MOP and what it means for the future of the climate regime*. Tyndall Centre Working Paper 106. Norwich: Tyndall Centre for Climate Change Research.

Organization of African Unity (OAU). 1969. *Convention Governing the Specific Aspects of Refugee Problems in Africa*. The Heads of African State and Government, 6–10 September.

Sindico, Francesco. 2007. Climate change. A security (council) issue? *Climate Change Law Review* 1: 29–34.

Stern, Nicholas. 2006: *The Stern Review on the Economics of Climate Change*. Available at http://www.hm-treasury.gov.uk./independent_reviews/stern_review_economics_climate_change/-stern_review_report.cfm (last visit 30 August 2007). Published in 2007 in Cambridge, UK, with Cambridge University Press.

Suhrke, Astri. 1994. Environmental Degradation and Population Flows. *Journal of International Affairs* 47 (2): 473-496.

Renaud, Fabrice, Janos J. Bogardi, Olivia Dun, and Koko Warner. 2007. *Control, Adapt or Flee: How to Face Environmental Migration?* Interdisciplinary Security Connections 5. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS).

Reuters. 2006. Tiny Island States Seek Help from Rising Pacific. Press report (25 October 2006). Downloadable at http://www.reuters.com/article/scienceNews/-idUSSYD11111220061025?pageNumber=2&sp=true (last visit 23 August 2007).

Richards, M. 2003. *Poverty Reduction, Equity and Climate Change: Global Governance Synergies or Contradictions?* London: Overseas Development Institute. Available at http://www.odi.org.uk/iedg/publications/climate_change_web.pdf.

Tearfund. 2006. *Fleeing the Heat*. Teddington: Tearfund.

UNEP/GRID-Arendal. 2005. *Tropical cyclone frequency*. UNEP/GRID-Arendal Maps and Graphics Library. Available at http://maps.grida.no/go/graphic/tropical_cyclone_frequency (last visit 6 October 2007).

United Nations. 1992a. Agenda 21: The United Nations Programme of Action from Rio. Available at http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm (last visit 6 October 2007).

United Nations. 1992b. United Nations Framework Convention on Climate Change. New York: United Nations.

United Nations High Commissioner for Refugees. 2002. Environmental migrants and refugees. *Refugees* no 127, 12–13 (edited by Ray Wilkinson).

United Nations High Commissioner for Refugees. 2006a. *Measuring Protection by Numbers*. Geneva: UNHCR. Available at http://www.unhcr.org/publ/PUBL/4579701b2.pdf.

United Nations High Commissioner for Refugees. 2006b. Internally Displaced People. Questions & Answers. Available at http://www.unhcr.org/basics/BASICS/405ef8c64.pdf (last visit 6 October 2007).

United Nations High Commissioner for Refugees. 2007a. *2006 Global Trends: Refugees, Asylum-seekers, Returnees, Internally Displaced and Stateless Persons*. Geneva: UNHCR. Available at http://www.unhcr.org/statistics/STATISTICS/4676a71d4.pdf.

United Nations High Commissioner for Refugees. 2007b. *Mission Statement*. Geneva: UNHCR. Available at http://www.unhcr.org/publ/PUBL/4565a5742.pdf.

United Nations High Commissioner for Refugees. 2007c. Convention and Protocol Relating to the Status of Refugees. Geneva: United Nations High Commissioner for Refugees. Available at http://www.unhcr.org/protect/PROTECTION/3b66c2aa10.pdf (last visit 6 October 2007).

UNFCCC—United Nations Framework Convention on Climate Change. 2003a. UNFCCC Workshop on insurance and risk assessment in the context of climate change and extreme weather events (12-13 May 2003). Available at http://unfccc.int/meetings/workshops/other_meetings/items/1070.php (last visit 30 August 2007).

UNFCCC. 2003b. UNFCCC Workshop on insurance-related actions to address the specific needs and concerns of developing countries arising from the adverse effects of climate change and from of the impact of the implementation of response measures (14–15 May 2003). Available at http://unfccc.int/meetings/workshops/other_meetings/items/1036.php (last visit 30 August 2007).

UNFCCC. 2007. Subsidiary body for implementation. Synthesis of outcomes of the regional workshops and expert meeting on adaptation under decision 1/CP.10. FCCC/SBI/2007/14, 26th session, Bonn, 7–18 May 2007.

UNFCCC Conference of the Parties 7 (COP7). 2002. Report of the Conference of the Parties. FCCC/CP/2001/13/Add.1, 17th session. Decision 5/CP7.IV. Marrakech, 29 October – 9 November 2001.

UNFCCC Executive Secretary. 2007. UNFCCC Executive Secretary says significant funds needed to adapt to climate change impacts. Press Release of the Secretariat of the United Nations Framework Convention on Climate Change (6 April 2007). Available at http://unfccc.int/files/press/news_room/-press_releases_and_advisories/application/pdf/070406_pressrel_english.pdf (last visit 5 July 2007).

United Nations Security Council. 1992. Statement by the Council President on Behalf of the Members. UN Doc. A/47/253 of 31 January 1992.

United Nations Security Council. 2007. Security Council holds first-ever debate on impact of climate change on peace, security, hearing over 50 speakers. 5663rd Meeting, 17 April. United Nations Department of Public Information News and Media Division, 17 April 2007.

Warren, Rachel, Nigel Arnell, Robert Nicholls, Peter Levy, and Jeff Price. 2006. *Understanding the Regional Impacts of Climate Change*. Research Report prepared for the Stern Review on the Economics of Climate Change. Tyndall Centre Working Paper 90. Norwich: Tyndall Centre for Climate Change Research. Available at http://www.hm-treasury.gov.uk/independent_reviews/-stern_review_economics_climate_change/stern_review_supporting_documents.cfm.

World Bank. 2000. *Cities, Seas and Storms: Managing Change in Pacific Island Economies. Vol. IV: Adapting to Climate Change*. Washington D.C.: World Bank.

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Appears revised in *International Organizations in Global Environmental Governance*, edited by Frank Biermann, Bernd Siebenhüner and Anna Schreyögg. Abingdon: Routledge.

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Reprinted excerpts from Frank Biermann and Steffen Bauer, editors. 2005. *A World Environment Organization: Solution or Threat for Effective International Environmental Governance?* Aldershot (UK): Ashgate.

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Appeared revised in *International Environmental Politics*, edited by M. M. Betsill, K. Hochstetler and D. Stevis. Basingstoke: Palgrave Macmillan, 2006, 237–261.

11 *Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change: 'Knowledge for the Sustainability Transition. The Challenge for Social Science'*. Edited by Frank Biermann, Sabine Campe and Klaus Jacob. 2004. ISBN 3-00-014956-2.

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4 *Global Environmental Change and the Nation State: Proceedings of the 2001 Berlin Conference on the Human Dimensions of Global Environmental Change*. Edited by Frank

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