Providing new homes for climate change exiles

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Abstract

Given a certain pre-existing commitment to sea-level rise due to the long thermal lags of the ocean system, several million people living in coastal areas and small islands will inevitably be displaced by the middle of the century. These climate exiles will have nowhere to go. Rather than deal with this in an *ad hoc* manner as the problem arises, the authors propose a mechanism by which these exiles would be given immigration benefits by countries through a formula that ties numbers of immigrants to a country's historical greenhouse gas emissions. Such a compensatory mechanism appears to be a fair way of addressing the problems faced by climate exiles.

Keywords: Climate-change; Sea-level rise; Immigration; Adaptation; Climate justice; Beyond Kyoto

In the past decade, severe weather conditions, culminating in the latest series of tropical cyclones over the Caribbean and the Bay of Bengal, have killed thousands and displaced millions more. While we cannot prove conclusively that these systems were the direct result of human-induced climate change, such events are in line with predictions for climate models and there is mounting concern that we will see many violent storms, some perhaps of even greater intensity than the worst we have yet experienced, in the decades to come. Even more dauntingly, should the Greenland and Antarctic ice sheets melt at rates faster than previously anticipated, global sea level would rise by several metres during this century (Overpeck et al., 2006; Rignot and Kanagaratnam, 2006) inundating coastal lowlands and forcing more than a billion inhabitants to retreat inland or face exile (Small and Nicholls, 2003). One of the big unanswered (and largely unasked) questions in climate policy relates to finding fair and just ways of addressing this looming crisis.

The worst possible impacts of climate change, if borne out, will obviously be tragic for most people hoping to build livelihoods and futures in coastal communities, but they will be especially devastating to those living in such parts of the developing world. The 2004 tsunami in Asia provided an indication of just how destructive tectonically induced sea-level rise could be for people living in poverty; there is sufficient reason to believe that eustatic changes related to climate change, while slower, would have longer term and more widespread impacts in developing countries. For instance, during the period 2000–2005, about 23 million people were injured, rendered homeless

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or otherwise affected by severe weather events in Central America, the Caribbean and South America, compared with about 1.6 million people in the USA, Canada and Bermuda, although the latter region is only about half as populated as the former (EM-DAT, 2006). Just as tellingly, the USA, Canada and Bermuda suffered more than ten times the financial damage of the other countries in the comparison, reflecting the greater levels of physical development, higher valuations and, by implication, more secure infrastructure for protecting human health and livelihoods, in the wealthier countries.

Indeed, one of the many ironies of climate change is that although wealthy countries are responsible for most of the accumulated greenhouse gases in the atmosphere, they will probably face far lower human damage from the associated climate effects than poor countries. This is the consequence of two factors, one natural and the other economic. Many developing countries encompass a large number of small islands and low-lying coastal areas and other regions especially prone to natural disasters such as drought, flooding and erosion, all of which will be exacerbated by climate change. But, perhaps more importantly, they typically do not have the resources to mitigate the impacts by protective measures such as sea walls and embankments or extensive insurance arrangements. This combination may lead to extreme outcomes, especially in atoll countries, which are in danger of being completely obliterated as inhabitable nation-states, although comparably severe consequences could be expected in other island states and coastal zones (Barnett and Adger, 2002).

The international community has, by and large, recognized that climate change mitigation activities (that is to say, reducing greenhouse gas emissions) may not be sufficient to prevent a significant degree of harm from occurring in the course of this century. Our climate system is a slow-moving beast with a great deal of 'thermal lag' built into it, so that the cumulative emissions of the past few hundred years may only now be starting to express themselves in terms of climate impacts (Hansen et al., 2005). Regardless of how quickly we start to reduce our emissions from now on, conservative computer simulations that do not take into account the possibility of significant glacier melt, suggest that we may experience up to a foot of sea-level rise by 2050 (Church et al., 2001; Nicholls and Lowe, 2004). This might explain why there is growing debate on 'adaptation' measures in the annual Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC). Adaptation generally refers to a process of modifying human activities to lessen the impact of the effects of climate change. Compensation and international support, important aspects of the adaptation process, provide for the several adverse impacts that are expected from climate change, including loss of water resources, lowered crop yields, increased incidence of water-borne disease, and damage to coastal zones and marine ecosystems (IPCC, 2001).

No doubt, loss and liability insurance policies taken out by individuals and large corporations, and adaptation measures, e.g. improving coastal defences, will probably provide adequate security for many against climate change (Allen, 2003). But there will almost certainly remain one class of vulnerable populations for whom such actions cannot possibly suffice, simply because they have no place to go. These are the people living on small islands and along coasts in low-lying countries whose habitats and means of livelihood have been destroyed through climate impacts (see Table 1). As a result, no matter how aggressive future climate change mitigation strategies may be, we can be sure that by the end of the century there will be millions of 'boat people' from developing countries looking for safer ground. At present, the international community has no strategy to address the needs of these people and is probably inclined to treat the problem in the *ad hoc*

Table 1. Vulnerable population and land loss associated with a 1 metre rise in sea-level for selected countries (adapted from Nicholls, 1995)

Country	Population exposed (millions)	% of total population	Land loss (km^2)
Antigua	0.04	50	5
Bangladesh	71	60	25,000
Belize	0.07	35	1,900
China	72	7	125,000
Egypt	4.7	9	5,800
Guyana	0.6	80	1,900
India	7.1	0.8	1,700
Japan	15.4	15	2,300
Marshall Islands	0.04	100	9
Netherlands	10	67	2,165
Nigeria	3.2	4	18,600
Senegal	4	50	6,000
Vietnam	17.1	23.1	20,000

manner in which refugee problems are otherwise managed. As climate negotiations 'beyond Kyoto' begin to take shape, therefore, it is timely to consider an ethical alternative; namely, to provide phased immigration benefits, *in advance* of disastrous impacts, to people in vulnerable communities on the basis of the host countries' historical greenhouse gas emissions.

As provocative as the programme may seem for the domestic politics of many host countries, it remains an obvious and just solution to the problem of human exiles driven from their homes because of climate change. It is also likely to generate net economic benefits for host countries and provide a prudent long-term answer to tensions relating to international migration and refugees. Legally, it can be argued to follow from Article 1 and Article 4.8 of the UNFCCC, which respectively call on Parties to use the principle of equity in accordance with 'common but differentiated responsibilities' and to 'meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change'.

From a moral perspective, our proposal is not arguing for wealthier countries to be charitable towards climate exiles. Rather, it is merely an obvious solution for fulfilling the historically generated obligations of these countries to provide downstream victims of environmental pollution a fair option, while adhering to widely shared principles of global justice (Pogge, 2001). Indeed, even the question of how potential climate exiles choose to exercise their immigration rights is quite irrelevant; what matters is simply that they be provided such rights by the international community.

There is also a practical reason to take this approach seriously. While relatively little discussion has taken place on compensation mechanisms for developing countries relating to climate change impacts, there is good cause to believe that many pending 'climate justice' cases will start to gain salience as and when adverse effects are attributed with greater cause to human-induced climate change. Perhaps the clearest indication of the nature of liability suits to come is the assessment by Swiss Re, the world's second-largest insurer, that the annual economic cost of global warming is threatened to double to $150 billion per year in just 10 years (Atkins, 2004).

Under our proposed framework, people living in areas that are likely to be obliterated or rendered uninhabitable would be provided the early option of migrating legally in numbers that are in some rough proportion to the host countries' cumulative greenhouse gas emissions. Once the basic principle is accepted, there could be several ways to determine *who* should be considered for

immigration benefits, *which countries* should bear the costs of immigration, and *what* institutional and political mechanisms should be established to minimize the risk of a massive refugee crisis as climate impacts become more severe.

For the purposes of illustration, we consider sea-level rise projections that have been modelled recently by Nicholls (2004). Based on a range of emissions scenarios derived from the Intergovernmental Panel on Climate Change Special Report on Emissions Scenarios (Nakicenovic and Swart, 2000), the number of people at risk from flooding directly associated with global warming in the 2080s could vary from about 30 to 300 million (Nicholls, 2004). The most vulnerable regions turn out to be deltaic areas (mainly Bangladesh, southern China and Vietnam), small islands in the Caribbean, and in the Indian and Pacific Oceans, which will be likely to experience heavy increases in people flooded even with high standards of coastal defences. Already, the South Mediterranean, West Africa, East Africa, South Asia, and Southeast Asia contain some 90% of the average annual number of people flooded. Needless to say, the actual human impact of climate change induced by sea-level rises is extremely uncertain and will depend on a variety of conditions, including the degree of climate forcing, hydrological impacts, level of flood protection, types of human activities around coastal regions, and the time of measurement. Risk mitigation efforts should therefore proceed as though a wide portfolio of scenarios will have a nearly equal likelihood of occurring over the medium term.

As an example, if we consider the top ten global emitters (which are responsible for over 80% of emissions in the 20th century) as prospective host countries for absorbing 50 and 200 million displaced people (taking two representative cases within the extremes considered in the study cited above), we can provide some simple estimates of the numbers of people who will be looking for homes on a yearly average. This is represented in Figure 1: a minimum of about 8,600 (for Italy) and a maximum of about 866,000 (for the USA). As a first approximation, these turn out to be

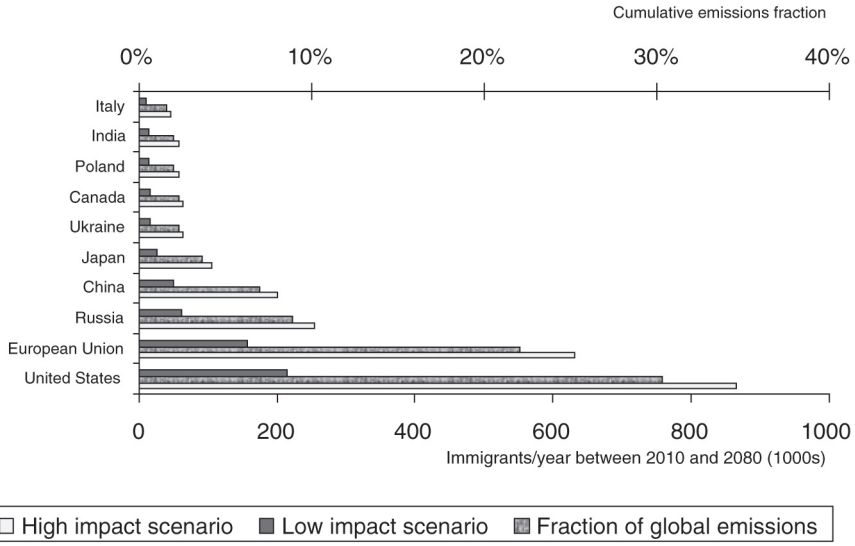

Figure 1. Annual numbers of immigrants to top ten cumulative emitters in two extreme scenarios. Cumulative emissions from 1900–1999 taken from CAIT: Climate Analysis Indicators Tool [available at http://cait.wri.org/].

comparable to the actual numbers of legal immigrants absorbed by those countries today. Whether, and to what extent, the new climate change exiles will replace or supplement prevailing numbers of immigrants in these countries is obviously a matter of domestic policy. In fact, one might imagine a whole range of institutional mechanisms for providing new homes for the displaced people within the overall principle proposed here: the responsibility for absorbing them ought to correspond to the historic emissions of the host countries.

Table 1 presents the consequences for a 1 metre rise in sea level, but it should be borne in mind there are growing concerns that the sea-level rise will be much greater beyond 2100, even if emissions are curtailed. Further, if they are not curtailed in time, ice-melt in Greenland could be irreversible (Hansen, 2005). Therefore much greater sea-level rise is likely, and the magnitude of both the problem and resulting displacements would then be much larger than Table 1 indicates. Secondly, some countries, such as China for instance, as is clear from Table 1 and Figure 1, could be both the source of large emissions and have vulnerable populations. Relocations within countries would have to take place in addition to the absorption of displaced climate exiles.

The long-term implications of adopting such a framework will be manifold. First, the mere acknowledgement of historical obligations in this manner will positively provide many developing countries the confidence to participate wholeheartedly in the mitigation aspects of climate negotiations. Second, rather than be unprepared for, or act in hostile ways towards, the masses of refugees who will inevitably try to find their way to other countries at great hardship and danger to themselves, the hosts will have organized themselves well in advance to manage the influx. There is no guarantee that prevailing patterns of transnational migration based on economic and political disparity will somehow disappear through this arrangement, but their extent will probably be lessened. Domestically, the host countries largely stand to benefit from the absorption of immigrants, notwithstanding any initial knee-jerk reactions to the idea. Many of these countries already face a demographic crisis, with a shrinking labour force and growing numbers of retirees. A steady annual input into the labour force from a large group of developing countries will no doubt provide net economic benefits and also enhance cultural diversity.

At the dawn of the 21st century, we have already ‘committed’ ourselves to a certain degree of irreversible climate change. The least we can do is to attend to our obligations by planning ahead to meet the needs of those who will be the worst affected.

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