

## Environmental Degradation and Migration

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### Impacts

The concept of environmental refugees was introduced by Lester Brown of the Worldwatch Institute in the 1970s. It entered into common usage after a 1985 United Nations Environment Programme policy paper entitled 'Environmental Refugees'. The International Association for the Study of Forced Migration (IASFM) describes forced migration as "a general term that refers to the movements of refugees and internally displaced people (those displaced by conflicts) as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine, or development projects" (FMO, 2007). We define here a forced environmental migrant as a person who "has" to leave his/her place of normal residence because of an environmental stressor as opposed to an environmentally motivated migrant who is a person who "may" decide to move because of an environmental stressor.

The definition for the term refugee is provided under Article 1A of the 1951 Convention relating to the Status of Refugees amended by the 1967 Protocol relating to the Status of Refugees (hereafter referred to as the Refugee Convention) which states that a refugee is any person who: owing to a 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 nationality and is unable or, owing to such fear, unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it (UNHCR, 2006b:16).

Definitions with respect to "environmental refugees" generally have in common the fact that they do not distinguish whether the persons migrating or fleeing have crossed an international border. However other than this commonality, definitions vary greatly, including whether displacement of environmental refugees is temporary or permanent in nature. For example, El-Hinnawi (1985:4 in Bates 2002:466) defined environmental refugees as: "those 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 [sic]. By 'environmental disruption' in this definition is meant any physical, chemical, and/or biological changes in the ecosystem

(or resource base) that render it, temporarily or permanently unsuitable to support human life.”

Jacobson (1988:37-38) identified different types of environmental refugees:

- those displaced temporarily due to local disruption such as an avalanche or earthquake;
- those who migrate because environmental degradation has undermined their livelihood or poses unacceptable risks to health; and
- those who resettle because land degradation has resulted in desertification or because of other permanent and untenable changes in their habitat.

It is evident from the above-mentioned definitions that even though the term “environmental refugee” is used, the authors encapsulate population movements that are not of the refugee type, at least not as per the definition of 1951 Refugee Convention. In addition, of the four aspects of the 1951 Refugee Convention mentioned above, the one that would be most difficult to define in the context of “environmental refugees” is the fear of persecution. Indeed, who would be the persecutor and in what sense are the group being “persecuted” as opposed to facing a threat, noting that the term persecution implies an element of intent to harm or failure to prevent harm from occurring (Hathaway, 1991). Unless it is assumed that “nature” or the “environment” can be the persecutor, the term refugee does not appear suitable for describing those displaced by environmental factors, if we consider the above strict definition.

However, in this essay we retain the term refugee to characterize people precipitously fleeing their place of residence because of an environmental stressor regardless of whether or not they cross an international border. Environmental conditions should be considered as one element forcing people to flee their places of origin and as such should be afforded similar rights and protection as refugees fleeing because of other causes.

### **Environmental Changes**

Environmental degradation such as land degradation and pollution of water, air or soil are brought about by the misuse of resources, poor planning, poor infrastructure and poor governance and monitoring. Such carelessness, mismanagement of resources and industrial accidents/pollution are on the increase worldwide to such an extent that ecosystem services are being compromised in all regions of the world (Millennium Ecosystem Assessment (MA), 2005a). When these factors are superimposed on global environmental change phenomena such as climate change (change in rainfall patterns, sea-level rise, increased frequency of heat waves, and so forth, depending on location) it can be foreseen that more of the global population will be facing environmental stresses in the future. Environmental degradation from local to global scales can also be coupled with increased exposure to environmental hazards (e.g. floods, droughts, hurricanes) and will thus increase the risks these hazards pose to local populations. These three themes of loss of ecosystem services, climate change, and environmental disasters are developed below to illustrate how increasing pressures on the environment and impacts of environmental hazards may serve in the future as major root causes for migration.

Ecosystems provide a wide range of services to society including products (e.g. food, fuel, and fibre), regulating factors (e.g. climate regulation), spiritual and aesthetic benefits (MA, 2005a). Ecosystems are affected by a variety of interacting direct and indirect drivers which operate in feedback loops. The Millennium Ecosystem Assessment identified direct drivers to be climate change, nutrient pollution, land conversion leading to habitat change, overexploitation, and invasive species and diseases; and indirect drivers to be demographic, economic, socio-political, scientific, technological, cultural and religious factors (MA, 2005a).

Ecosystems are however highly dynamic and in constant fluxes and rarely, if ever, in an equilibrium state. The implication is that ecosystems have their own resilience and even though they are constantly affected by anthropogenic and natural factors, they can still provide adequate levels of services to society. What is emphasised here is that at times the degradation can reach such levels that the provision of services is severely compromised and may then serve as one of several triggers for migration. The IPCC (2007a:8) noted that the resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, over-exploitation of resources).

In addition, social, economic, cultural and political factors shape the relationship between society and the ecosystems of which it is a part and from which it extracts services. Thus ecosystem degradation is in itself generated by a complex mixture of factors. For example Vlek (2005:8) stated that “by definition, land degradation should be considered a social problem that can be avoided”. These factors can and should be targeted by concrete actions and policies to reduce, stop and/or reverse the degradation processes.

The MA (2005a) has revealed an alarming degradation of ecosystems worldwide and thus of the services that could be provided to societies by these ecosystems. The General Synthesis Report of the MA (2005b) highlighted, among other points that:

- fifteen of twenty four ecosystem services analysed are being degraded or utilised in an unsustainable way, mainly through anthropogenic actions to increase the supply of specific services;
- these actions could further accelerate the degradation of ecosystems although more scientific evidence of this is required;
- the poor are the ones suffering the most from the decline in ecosystem services with the rural poor being particularly vulnerable to changes in ecosystem services.

All ecosystems are negatively affected in one way or the other by anthropogenic activities. Dryland ecosystems are particularly vulnerable as they are prone to desertification. Desertification is the process of land degradation in drylands. It is estimated that drylands cover some 41 percent of the land surface of the Earth and that they are home to more than 2 billion people who experience relatively low human well-being and development indicators including high infant mortality and low GNP per capita (MA, 2005a). The low level of human well-being is not only due to the low provisioning of services by dryland ecosystems but also, for example, due to low levels of health and educational infrastructures and political marginalisation prevailing in some dryland areas (MA, 2005a). It is important to mention here the on-

going debate concerning the extent and rate of desertification, as this may have implications when attempting to address the issue of environmental migration. Indeed, as was highlighted above, the concept of environmental migrants and refugees is not accepted by all and the argument that desertification is not as serious an issue as depicted in much of the environmental literature can and is used to criticise the concept itself (e.g. Black, 2001).

Verón et al. (2006) showed that assessment methods to quantify desertification have changed in time and that the coexistence of conflicting definitions and divergent estimates of the extent of desertification have led to scepticism and inaction or insufficient actions with respect to addressing the problem. The review of Verón et al. (2006) demonstrated that the variability of assessment tools at various points in time have led authors and media to either dramatise the extent and rate of desertification or to minimise them. This is why, the Millennium Ecosystem Assessment (MA, 2005b:101) highlighted that the “shortcomings of available assessments point to the need for a systematic global monitoring program, leading to development of a scientifically credible, consistent baseline of the state of (...) desertification”. This would then foster evidence-based discussions on the theme of desertification and migration.

Particularly highlighted by the MA (2005c) is the fact that the 2 billion people living in arid, semi-arid and subhumid regions are extremely vulnerable to the loss of ecosystem services, including water supply. The Desertification Synthesis of the MA (2005d) which directly addresses the situation in dry regions highlights in particular that (not an exhaustive list):

- 10 to 20 percent of drylands are already degraded (but noting the fact that there is uncertainty in the measurement of the extent of desertification);
- pressure is increasing on dryland ecosystems for providing services such as food, and water for humans, livestock, irrigation, and sanitation;
- climate change is likely to increase water scarcity in regions that are already under water stress, which accommodate close to a third of world population but harbour only 8 percent of global renewable freshwater resources;
- droughts are becoming more frequent and their continuous reoccurrence can overcome the coping mechanisms of communities.

These and all the other factors and impacts identified in the MA increase the stress on many communities and will make the respective Millennium Development Goals extremely hard to be achieved and sustained in certain parts of the world. In dryland areas, the loss of ecosystem services and the repetition of droughts have forced dryland communities to look for ways to cope with scarcity of resources that can last several years (MA, 2005b). A major problem arises when these coping mechanisms are exhausted by the extended duration of the scarcity. When the coping mechanisms and adaptation strategies of communities are overwhelmed by the loss of ecosystem services, droughts and loss of land productivity can become important factors triggering the movement of people from drylands to other areas (MA, 2005d; Leighton, 2006). Although we acknowledge that and agree with the fact that loss of ecosystem services has multiple root causes, particularly socio-economic ones, we consider that people moving because of loss of ecosystem services are environmental migrants/refugees but only when it is the consequences of the degradation of the resource base that triggers the decision to move.

The latest reports of the Intergovernmental Panel on Climate Change (IPCC, 2007a;b) have confirmed with more precision the conclusions of previous IPCC reports that anthropogenic factors have contributed to global warming with eleven of the last twelve years ranking amongst the warmest years on record. Some of the consequences are an increase in the rate of sea-level rise (3.1 mm/year during the period 1993-2003); significant increases of precipitation in the eastern parts of North and South America, northern Europe and northern and central Asia (period 1900-2005) and an increase in heavy precipitation worldwide; more intense and longer droughts since the 1970s in the tropics and subtropics; more frequent hot extremes or heat waves; and an increase of intense tropical cyclone activity in the North Atlantic since the 1970s (IPCC, 2007a). In addition, because of inertia in the global climate system, the IPCC (2007a:13) concludes that the global climate system will continue to change during the 21st century even more than what was observed during the 20th century. Projected sea-level rise for the period 2090-2099 (when compared to the period 1980-1999) under various greenhouse gas emission scenarios range between 0.18 and 0.59 m.

These projections indicate that in the future an increasing number of people worldwide will have to face more extreme weather events, sealevel rise and/or more intense weather-related hazards. There are now enough observations to confirm that temperature increases in particular affect natural systems worldwide, for example increasing ground instability in permafrost regions; changes in some Arctic and Antarctic ecosystems; changes in hydrological systems; changes in terrestrial biological systems such as increased growing seasons for vegetation; and changes to aquatic ecosystems with rising water temperature (IPCC, 2007b). The consequences are that water-stressed regions are likely to suffer more in the future as a decrease of 10-30 percent in annual average river runoff and water availability are projected at mid-latitudes and dry tropics (75-250 million people are projected to be exposed to water stress in Africa alone); areas affected by droughts will increase in extent; high-intensity precipitations will increase and thus augment flood risk; in seasonally dry and tropical regions risk of hunger is likely to increase because crop productivity is projected to decrease; millions of people will be flooded every year due to sea-level rise, particularly in megadeltas of Asia and Africa and in small islands (IPCC, 2007b). If the projections above realise themselves in the future, climate change and its consequences will therefore contribute greatly to future migration fluxes.

Environmental disasters severely affect millions of people worldwide, particularly the poorest people living in coastal areas or those areas vulnerable to land degradation. Further, as surface temperature has increased over the past decades, so has the damage caused by extreme weather events. Munich Re notes, "worldwide losses from natural catastrophes increased in the second half of the 20th century in a dramatic and disturbing way. This trend appears to have become even more firmly entrenched since the mid-1980s" (Munich Re, 1999:16).

Direct losses represent the financial value of damage to and loss of capital assets. Since the decades of the 1950s, the annual average direct losses from environmental disasters have increased from \$3.9 billion to \$40 billion a year by the 1990s (Freeman and Warner, 2001). Direct losses from environmental disasters are already frequently as high as \$100 billion annually (Stern, 2006;Munich Re, 2006); for example, direct losses in 1995 were US\$160 billion, and the total economic impact of Hurricane Katrina (2005) were estimated at \$125 billion for Louisiana, Alabama and Mississippi alone (EM-DAT, 2007).

These changes are brought about by two major factors. First, variability in climate extremes has contributed to the rising trend in total direct damage. Variability in climate extremes is defined as the change of frequency and intensity of weather events. Climate variability goes along with, and is an integral part of, climate change (Hulme et al., 1999). Time series data show the relationship between climate variability and dramatic upward trends for total direct damages. Three main categories of disasters account for 90 percent of the world's direct losses: floods, earthquakes, and tropical cyclones (primarily hurricanes and typhoons). Earthquake occurrence remains relatively stable over time but, the incidence of weather-related events has dramatically increased. On a regional level, the IFRCRCS (2006:217) reported that for the decade 1996-2005 the disasters which affected the most people were droughts/famines in Africa and Oceania (accounting for 86 percent and 51 percent of the disaster-affected population in Africa and Oceania respectively) and floods in Asia, the Americas and Europe (accounting for 57 percent, 43 percent and 38 percent of the disaster-affected population in Asia, the Americas and Europe respectively). During the past decades, the economic costs of rainstorms, river floods, droughts, and other extreme weather events have increased 14 times from the decade of the 1950s to the decade of the 1990s (MunichRe, 2006). Second, larger concentrations of people and their assets in hazard prone regions contribute substantially to higher direct losses from disasters. Floods, earthquakes, and tropical cyclones periodically revisit the same geographic zones. Some of the highest risk areas are also some of the most populous: India, China, and Southeast Asia face both a high risk for seismic activity, as well as for floods, typhoons, and cyclones. The increased concentration of populations and assets in hazard prone regions will lead to more damage caused by environmental disasters. A growing number of extremely large cities are located in such areas, which means that large numbers of people may be affected (Klein and Nicholls, 1999). By 2010, at least 160 million people living in coastal areas – a very conservative estimate – may be at risk of flooding from storm surges (Nicholls, 2006).

The impact of these direct losses from catastrophes significantly affect the poor. In fact, in some of the most hazard prone regions of the world, the increased losses from environmental disasters could negate the capacity of economic development to reduce the number of people living in poverty. One serious manifestation of the burden of environmental disasters will be seen through international migration flows. The poor bear a disproportional burden of direct damage from environmental disasters compared to their relative financial and other coping capacities, and climate change will exacerbate this effect. Albala-Bertrand (1993:92) noted:

For both developed and developing countries, the lower the economic, political, and social status of the people (...) affected by disasters, the larger the loss burden (...) Consequently, the people and activities most affected by natural disasters are bound to be those belonging to the poorest and most powerless social sectors of less developed countries, especially in those countries undergoing rapid transition with little or no regard for social consequences at the margin.

Every major study of the impacts of natural catastrophes in developing countries reaches this conclusion (Benson, 1997; IPCC, 2001; Otero and Marti, 1995; Sen, 1999; World Bank, 2000a). The poor generally are more vulnerable, suffer greater costs, and have less capacity to take compensating action than richer societies/households. Even if the macroeconomic costs are small, the costs for the most vulnerable within society may be large. Research shows that long-term disability and destruction of infrastructure can trap families in chronic poverty (World Bank, 2000b).

An assessment of the impacts of Hurricane Mitch on the poor of Nicaragua using a household survey showed that not only do catastrophes slow or stall the reduction of poverty, they can cause more people to fall into poverty (Freeman and Warner, 2001; Carter et al., 2007). More recent research on poverty and migration finds that while the option of migrating is not available to all poor people, it is the poorest groups of people who are typically disproportionately represented in circumstance of distress migration – migration as a response to severe livelihood constraints (Waddington and Sabates-Wheeler, 2003).

### **Preliminary Practical Classification Scheme for Environmental Migrants/Refugees and Policy Actions**

We put forward that a precautionary principle should apply and serves as the basis of the following five-pronged policy approach to address the relationship between environmental degradation/change and forced migrations (see also Bogardi and Renaud, 2006; Renaud and Bogardi, 2006; Bogardi, 2007). These policy suggestions are to be implemented in parallel to efforts to limit environmental degradation worldwide (including climate change and land degradation) and to efforts to reduce poverty (the poor being economically and politically marginalised and thus more vulnerable to environmental degradation), particularly through the achievement of the Millennium Development Goals, effective land use planning and management, devolution of authority for natural resources management, or the provision of alternative livelihoods.

Requirement for a strong scientific basis: there is a need to put in place programmes to allow a better understanding of the cause-effect mechanisms between environmental degradation and forced migrations. This echoes ideas put forward in 1994 at the end of the International Symposium on Desertification and Migrations in Almeria (see Almeria Statement, 1994). Most reports on the topic of environmental migrations recommend further quantification and research and few if any research activities have attempted rigorous quantification. This needs to be rectified now. In addition, there is a need to develop proper definitions of environmentally motivated and/or forced migration, environmental migrants/refugees. All this can only be achieved if there is political recognition of the importance of the problem, if the research topic is accepted by major funding organisations, if long-term, sustained funding for research is made available, and if research cooperation between emigration and immigration countries as well as international organisations is achieved. In early 2007, the project Environmental Change and Forced Migration Scenarios (EACH-FOR) funded by the European Commission was launched. While the concept and expected results are steps in the right direction, neither the project duration (2 years) nor the scope (migration towards Europe) are sufficient to answer all questions. In parallel to the above activities, and given the large extent of land degradation worldwide, we endorse the proposal put forward by Vlek (2005) for an International Panel on Land Degradation (IPLD) – along the same lines as the IPCC – that would allow distilling scientifically-based information regarding the impacts of land degradation on societies.

Increasing awareness: it is important to raise worldwide knowledge based public and political awareness of the issue and its environmental, social and economic dimensions. This step is particularly timely and important as the debate on migrations is high on the agenda of many countries/regions. The UN is currently addressing the issue of migration through the mechanism of a High-Level Dialogue. Environmental forced migrations need to be included in any future debate dealing with migration issues in general. In addition, it is recommended that the issue of environmentally forced migrants be included in the work of the Intergovernmental

Panel on Climate Change and the proposed IPLD. Finally, the fact that migrants/refugees are first of all people who have faced hardship rather than people coming to “steal” other people’s livelihoods needs to be communicated more efficiently throughout the world.

Improving legislation: following the two steps above there is then a need to put in place a framework of recognition of environmental migrants/refugees either in a separate Convention or anchor it in Intergovernmental Environmental Treaties. It is not suggested here that the 1951 Convention on refugees be amended (as for example put forward by Conisbee and Simms, 2003), as adding a new category of refugees to that convention could weaken the case for refugees traditionally covered by it, a legitimate worry put forward by for example Castles (2002) and Gemenne et al. (2006). Furthermore, during the 50th Anniversary of the 1951 Refugees Convention Global Consultations meetings in 2001, there was overwhelming agreement amongst the international community to reaffirm its support for the current Refugee Convention (UNHCR, 2007). This implies there would be understandable and legitimate reluctance on behalf of states which are party to the Refugee Convention to deviate from the current definition of refugee to potentially encompass “environmental refugees” within its definition. However, individuals who are clearly displaced by environmental degradation processes (even if mixed with other socio-economic factors as will often be the case) should be protected adequately by an international mechanism that would afford them certain rights. Bilateral arrangements are being sought with respect to sea-level rise, but this should be systematised (possibly in other forms) for the most pressing environmental degradation issues.

Giving the means for adequate humanitarian aid: there is a need to empower the relevant entities in the United Nations system and other major assistance organisations to provide aid to environmental migrants/refugees, particularly when considering the displacement of entire communities. This can best be achieved if there is an international mechanism in place recognising this category of individuals. For example, King (2006) suggested the creation of an International Coordinating Mechanism for Environmental Displacement that would address the chain prevention-preparedness-mitigation-rehabilitation-resettlement through the coordination of specialised and competent international and intergovernmental agencies, although the exact functioning and funding of this mechanism were not explicitly described. The Office of the United Nations High Commissioner for Refugees (UNHCR 2002:13) as the agency mandated with responsibility for protecting refugees<sup>2</sup>, has been urged by “environmental refugee” advocates to also assume responsibility for the ensuring that the rights of such people are also protected.

As previously mentioned, the UNHCR (2002:12) does acknowledge that there are approximately 24 million people around the world who have fled because of floods, famine and other environmental disasters. They also recognise that the common element between such people and refugees is the forced nature of their flight and their need for assistance and permission to reside elsewhere (UNHCR 2002). However, the UNHCR (2002:2), while recognising that the “relationship between refugees and the environment has long been overlooked” and that “civilians were often forced to flee in the first place because of environmental degradation and the battle for natural resources”, has often dismissed its role as the agency primarily responsible for ensuring that people displaced by environmental factors are protected. The UNHCR explains this by way of clarifying that there is a difference between Convention refugees and those popularly known as “environmental refugees” (UNHCR 2002:13) stating that “refugees could not turn to their own governments for protection because states were often the source of persecution and they therefore needed international assistance, [...] whereas environmental

migrants continued to enjoy national protection whatever the state of the landscape.” This is often backed by the fact that the definition of refugee contained in the 1951 Refugee Convention does not include environmental factors, therefore the Office of the UNHCR has no mandate for the protection of “environmental refugees” (Zlotnik, 1994).

Strengthening institutions and policies: the final suggestion is that concepts need to be devised and institutions reinforced or created in order to be able to assist the flux of forced environmental migrants, both at the international and national levels. At the national level, this could imply strengthening and encouraging various ministries to work hand in hand (e.g. ministry of interior, ministry of environment, ministry of cooperation, etc.) in order to address jointly the issue thus incorporating a multi-dimensional array of competences and perspectives. There also needs to be a better understanding of the social and economic losses people experience in order to help structure aid responses, particularly community resettlement. Tools have been developed within the context of development induced displacement and resettlement (Oliver-Smith, 2005) which could be further developed and/or adapted in the case of environmentally-driven forced migration. Finally, new policies should also acknowledge the various environmental migrant categories.

### **Literature / Links**

AidWatch (2006): U.N. Office of the Special Envoy for Tsunami Recovery. In: Reuters AlertNet. <[http://www.alertnet.org/printable.htm?URL=/db/crisisprofiles/SA\\_TID.htm](http://www.alertnet.org/printable.htm?URL=/db/crisisprofiles/SA_TID.htm)>, 24 December 2006.

Albala-Bertrand, J.M. (1993): Political Economy of Large Natural Disasters with Special Reference to Developing Countries. Clarendon Press, Oxford.

Almeria Statement. (1994): The Almeria Statement on Desertification and Migration. Statement following the International Symposium on Desertification and Migrations, Almeria, 8-11 February.

Bates, D.C. (2002): Environmental refugees? Classifying human migrations caused by environmental change. In: Population and Environment. vol.23, no.5, pp. 465-477.

Benson, C. (1997): The Economic Impact of Natural Disasters in Fiji. Overseas Development Institute, London, UK, pp. 97.

Birkmann, J. (Ed.) (2006): Measuring Vulnerability to Natural Hazards. Towards Disaster Resilient Societies. United Nations University Press, Tokyo.

Black, R. (1998): Refugees, Environment and Development. Addison Wesley Longman Limited, New York.

Black, R. (2001): Environmental Refugees: myth or reality? In: New Issues in Refugee Research. Working Paper No. 34. United Nations High Commissioner for Refugees (UNHCR), Geneva.

Bogardi, J.J. (2007): Impact of Gradual Environmental Change on Migration: a Global Perspective of Trends and Solutions. Presentation at the Expert Workshop on International Dialogue on Migration. Bangkok, Thailand. 22-23 Feb 2007.

Bogardi, J.J.; Renaud, F. (2006) : Migration Dynamics Generated by Environmental Problems. Paper presented at the 2nd International Symposium on desertification and Migrations, Almeria, 25-27 October 2006.

Boswell, C.; Crisp, J. (2004): Poverty, International Migration and Asylum. Policy Brief 8, United Nations University World Institute for Development Economics Research.

Brauch, H-G. (2005): Environment and Human Security. Towards Freedom from Hazard Impacts. InterSecTions No. 2.

United Nations University, Institute for Environment and Human Security, Bonn, Germany.

Carter, M. R.; Little, P. D.; Mogue, T.; Negatu, W. (2007): Poverty traps and natural disasters in Ethiopia and Honduras. In: World Development doi: 10.1016/j.worlddev.2006.09.010.

Castillo, E. E. (2005): Illegal immigrants afraid to get storm aid. In: Associated Press, September 9, 2005.

Castles, S. (2002): Environmental change and forced migration: making sense of the debate. In: New Issues in Refugee Research. Working Paper No.70. United Nations High Commission for Refugees, Geneva.

Conisbee, M.; Simms, A. (2003): Environmental Refugees. The Case for Recognition. New Economics Foundation, London.

Commonwealth of Australia (2006): Official Committee Hansard (Senate): Standing Committee on Legal and Constitutional Affairs: Department of Immigration and Multicultural Affairs Discussion. Supplementary Budget Estimates 30 October 2006 Transcripts of parliamentary proceedings, Canberra.  
<<http://parlinfoweb.aph.gov.au/piweb/Repository/Committee/Estimate/Linked/5079-5.PDF>>, 13 March 2007.

Connell, J. (2003): Losing Ground? Tuvalu, the Greenhouse Effect and the Garbage Can, In: Asia-Pacific View Point. vol. 44, no. 2, pp. 89-107.

Davissen, J.; Long, S. (2003): Islands Are Lost Even Before the Sea-level Rises: the Impacts of Climate Change on Small Island States. Friends of the Earth, Australia.

Désertif'Actions. (2006): The Montpellier's Appeal to Combat Desertification. Forum International Désertif'Actions.

Désertification et Société Civile, Montpellier 21-23 September 2006. <[http://www.desertif-actions.org/files/appeal\\_Montpellier\\_Appeal.pdf](http://www.desertif-actions.org/files/appeal_Montpellier_Appeal.pdf)>, 1 December 2006.

Döös, B.R. (1997): Can large-scale environmental migrations be predicted? In: Global Environmental Change. vol. 7, pp. 41-61.

Emergency Disasters Data Base (EM-DAT)(2007): EM-DAT: The OFDA/CRED International Disaster Database. Brussels, Belgium. Center for Research on the Epidemiology of Disasters. Université Catholique de Louvain.

European Commission (EC) (2006): Towards a Common European Union Immigration Policy. Directorate-General for Justice, Freedom and Security, European Union, Brussels, <[http://ec.europa.eu/justice\\_home/fsj/immigration/fsj\\_immigration\\_intro\\_en.htm](http://ec.europa.eu/justice_home/fsj/immigration/fsj_immigration_intro_en.htm)>, 20 March 2007.

El-Hinnawi, E. (1985): Environmental Refugees. United Nations Environment Programme, Nairobi.

Epodunk. (2007): <<http://www.epodunk.com/top10/diaspora/destination-map.html>>, 21 March 2007.

Flintan, F. (2001): Environmental Refugees – a Misnomer or a Reality? A contribution to the Wilton Park Conference Report on Environmental Security and Conflict Prevention, March 1-3, 2001. <[http://www.frameweb.org/ev02.php?ID=13114\\_201&ID2=DO\\_TOPIC](http://www.frameweb.org/ev02.php?ID=13114_201&ID2=DO_TOPIC)>, 10 October 2006.

Forced Migration Online (FMO) (2007): What is Forced Migration? Refugee Studies Centre, Oxford <<http://www.forcedmigration.org>>, 20 March 2007.

Freeman, P.; Warner, K. (2001): Vulnerability of Infrastructure to Climate Variability: How Does this Affect World Bank Infrastructure

Lending Policy? Washington, DC, World Bank Disaster Management Facility, Provention Consortium: 42.

Gemenne, F.; Pattie, D. ; Boulharouf, R. (2006) : Understanding Migration Choices : the UNCCD as a Mechanism for Developing Coping Strategies. Paper presented at the 2nd International Symposium on desertification and Migrations, Almeria, 25-27 October 2006.

Global Commission on International Migration (GCIM) (2005): Migration in an Interconnected World: New Directions for Action. GCIM, New York.

Grier, P. (2005): The great Katrina migration. In: The Christian Science Monitor. September 12, 2005. <<http://www.csmonitor.com/2005/0912/p01s01-ussc.html>>

Grote, U.; Engel, S.; Schraven, B. (2006): Migration Due to the Tsunami in Sri Lanka – Analyzing Vulnerability and Migration at the Household Level. Discussion Paper (April), Centre for Development Research, Bonn.

Hatton, T.J.; Williamson, J.G. (2003): What Fundamentals Drive World Migration? Discussion Paper No.2003/23, United Nations University World Institute for Development Economics Research, Helsinki.

Hathaway, J.C. (1991): *The Law of Refugee Status*. Butterworths, Toronto.

Hulme, M.; Barrow, E.M.; Arnell, N.W.; Harrison, P.A.; Johns, T.C.; Downing, T.E. (1999): Relative impacts of human-induced climate change and natural climate variability. In: *Nature*. vol. 397, pp. 688-691.

House Resolution (HR) (2006): House Resolution 6061. <<http://thomas.loc.gov/cgi-bin/query/D?c109:1:./temp/~c109clwzom::>>, 21 March 2007.

International Bank for Reconstruction and Development (IBRD) (2006): *Global Economic Prospects 2006: Economic Implications of Remittances and Migration*. IBRD, World Bank, Washington, D.C.

International Federation of Red Cross and Red Crescent Societies (IFRCRCS) (2006): *World Disasters Report. Focus on Neglected Crises*. IFRCRCS, London, UK.

International Monetary Fund (IMF) (2005): *World Economic Outlook: Globalization and External Imbalances*. IMF, Washington, D.C.

International Organisation for Migration (IOM) (2007): *Facts and Figures: Global Estimates and Trends*. International Organization for Migration, Geneva <<http://www.iom.int/jahia/page254.html>>, 28 February 2007.

Immigration New Zealand (2006): *Pacific Access Category*. <<http://www.immigration.govt.nz/migrant/stream/live/pacificaccess>>, 8 April 2007

Intergovernmental Panel on Climate Change (IPCC) (2001). *Climate Change 2001: Impacts, Adaptation, and Vulnerability*. IPCC, Geneva, Switzerland.

Intergovernmental Panel on Climate Change (IPCC) (2007a): *Climate Change 2007: The Physical Science Basis, Summary for Policy Makers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, February 2007. IPCC, Paris.

Intergovernmental Panel on Climate Change (IPCC) (2007b): *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability, Summary for Policy Makers. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, February 2007. IPCC, Brussels.

Jacobson, J. L. (1988): *Environmental Refugees: A yardstick of habitability*. In: *Worldwatch Paper 86*. Worldwatch Institute, Washington D.C.

Jambor, P. (1992): *Indochinese Refugees in South East Asia: Mass Exodus and the Politics of Aid*. Bangkok, Thailand.

Kibreab, G. (1997): *Environmental Causes and Impact of Refugee Movements: A Critique of the Current Debate*. In: *Disasters*. vol. 21, no. 1, pp. 20-38.

- King, T. (2006): Environmental displacement: coordinating efforts to find solutions. In: Georgetown International Environmental Law Review. vol 18, pp. 543-565.
- Klein, R.J.T.; Nicholls, R.J. (1999): Assessment of coastal vulnerability to climate change. In: *Ambio* 28(2), pp. 182-187.
- Lambert, J. (2002): Refugees and the Environment: The Forgotten Element of Sustainability, The Greens/European Free Alliance in the European Parliament. Brussels, Belgium.
- Leighton, M. (2006): Desertification and migration. In: Johnson, P.M.; Mayrand, K.; Paquin, M. (Eds), *Governing Global Desertification*. Ashgate, UK, pp. 43-58.
- Loneragan, S.; Swain, A. (1999): Environmental Degradation and Population Displacement. *Aviso* 2. Available at <<http://www.gechs.org/aviso/02/index.html>>
- Millennium Ecosystem Assessment (MA) (2005a): *Ecosystems and Human Well-being: Current State and Trends*. Volume 1, Island Press, Washington, DC.
- Millennium Ecosystem Assessment (MA) (2005b): *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC.
- Millennium Ecosystem Assessment (MA) (2005c): *Living Beyond Our Means. Natural Assets and Human Well-being: Synthesis from the Board*. <<http://www.millenniumassessment.org/en/products.aspx>>.
- Millennium Ecosystem Assessment (MA) (2005d): *Ecosystems and Human Well-being: Desertification Synthesis*. World Resources Institute, Washington, DC.
- MunichRe (1999): *Topics: Natural Catastrophes. The Current Position*. Munich Reinsurance Company, Munich.
- MunichRe (2006): *Topics Geo Natural catastrophes 2006*. Munich Reinsurance Company, Munich.
- Myers, N. (1993): Environmental refugees in a globally warmed world. In: *Bioscience*. Vol. 43, pp. 752-761.
- Myers, N. (2002): Environmental refugees: a growing phenomenon of the 21st century. In: *Philosophical Transactions of The Royal Society B*. vol. 357, pp. 609-613.
- Myers, N. (2005). *Environmental Refugees: An Emergent Security Issue*. 13th Economic Forum, Prague, 23-27 May.
- Nicholls, R. J. (2006): Impacts and responses to sea-level rise: a global analysis of the SRES scenarios over the twentyfirst century. In: *Philosophical Transactions of The Royal Society A*. vol. 364, no. 1841, pp.1073 - 1095.

Oliver-Smith, A. (2005): Applied anthropology and development-induced displacement and resettlement. In: Kedia, S.; and Willigen, J. (Eds): Applied Anthropology: Domains of Application. Praeger Publishers, Westport, USA, pp.189-219.

Oliver-Smith, A. (2006): Reflections on Nature, Environment and Society in Vulnerability Research. Draft of a forthcoming publication of UNU-EHS.

Otero, R. C.; Marti, R.Z. (1995): The impacts of natural disasters on developing economies: implications for the international development and disaster community. In: Munasinghe, M.; Clarke, C. (Eds): Disaster Prevention for Sustainable

Development: Economic and Policy Issues. The International Bank for Reconstruction and Development/The World Bank, Yokohama, pp. 108

Page, J.; Plaza, S. (2005): Migration Remittances and Development: A Review of Global Evidence. World Bank. Washington, D.C.

Patel, S.S. (2006): Climate Science: A Sinking Feeling. In: Nature. vol. 440, no. 7085, pp. 734-736.

Preston, B.L.; Suppiah, R.; Macadam, I.; Bathols, J. (2006): Climate Change in the Asia/Pacific Region: A Consultancy Report

Prepared for the Climate Change and Development Roundtable. Commonwealth Science and Industry Research Organisation (CSIRO), Australia.

Ratha D. (2005): Sending Money Home: Trends in Migrant Remittances. In: Finance and Development.vol. 42(4).

Renaud, F.G.; Bogardi, J.J. (2006): Forced Migrations Due to Degradation of Arid Lands: Concepts, Debate and Policy Requirements. Paper presented at the Joint International Conference Desertification and the International Policy Initiative, Algiers, 17-19 December 2006.

Schmidt, C.W. (2005): Keeping Afloat: A Strategy for Small Island Nations. In: Environmental Health Perspectives. vol. 113, no. 9, pp. A606-A609.

Schwartz, M.L.; Notini, J. (1994): Desertification and Migration: Mexico and the United States. US Commission on Immigration Reform, Washington, DC.

See, M. (2006): Protocol on Environmental Refugees: Recognition of Environmental Refugees in the 1951 Convention and 1967 Protocol Relating to the Status of Refugees, Mimeo.

Sen, A. (1999): Development as Freedom. Alfred A. Knopf, New York.

Seneviratne, K. 2002. Tuvalu to sue Australia, US over greenhouse cop-out. In: The Paper. No. 39, pp.1-16.

Stern, N. (2006): Stern Review on the Economics of Climate Change. HM Treasury, London.

Togola, I. (2006): Désertification et les migrations: la promotion du Pourghère comme outil de lutte contre la désertification et facteur de création d'emplois pour la lutte contre la pauvreté. Paper presented at the 2nd International Symposium on desertification and Migrations, Almeria, 25-27 October 2006.

United Nations (UN) (1994): Elaboration of an International Convention to Combat Desertification in Countries Experiencing Serious Droughts and/or Desertification Particularly in Africa. A/AC.241/27.

United Nations (UN) (2005): World Population 2004. ST/ESA/SER.A/242 August 2005. Population Division, Department of Economic and Social Affairs, UN, New York.

United Nations (UN) (2006a): Migration. Priority issues for CEB sessions in fall 2006 and spring 2007. CEB High-Level Committee on Programmes. CEB/2006/HLCP-XII/CRP.5.

United Nations (UN) (2006b): Summary of the High-Level Dialogue on International Migration and Development. A/61/515, 13 October 2006. Population Division, Department of Economic and Social Affairs, UN, New York.

United Nations (UN) (2006c): Trends in Total Migrant Stock: The 2005 Revision, CD-Rom Documentation. POP/DB/MIG/Rev.2005/Doc February 2006. Population Division, Department of Economic and Social Affairs, UN, New York.

United Nations High Commissioner for Refugees (UNHCR) (2001): General Assembly of the Executive Committee of the Higher Commissioner for Refugees, 13. September 2001.

United Nations High Commissioner for Refugees (UNHCR) (2002): A critical time for the environment. In: Refugees. no.127, p.2.

United Nations High Commissioner for Refugees (UNHCR) (2006a): Refugees by Numbers: 2006 Edition. UNHCR/MRPI/B.1/ENG1, September 2006. UNHCR, Geneva. <<http://www.unhcr.org/basics/BASICS/4523b0bb2.pdf>>, 12 March 2007.

United Nations High Commissioner for Refugees (UNHCR) (2006b): Convention and Protocol Relating to the Status of Refugees: Text of the 1951 Convention Relating to the Status of Refugees, Text of the 1967 Protocol Relating to the Status of Refugees, and Resolution 2198 (XXI) adopted by the United Nations General Assembly, UNHCR, Geneva.

<<http://www.unhcr.org/protect/PROTECTION/3b66c2aa10.pdf>>, 22 February 2007.

United Nations High Commissioner for Refugees (UNHCR) (2006c): Internally Displaced People: Questions and Answers, UNHCR/MRPI/Q&AA.3/ENG1, September 2006, UNHCR, Geneva. <<http://www.unhcr.org/basics/BASICS/405ef8c64.pdf>>, 22 February 2007.

United Nations High Commissioner for Refugees (UNHCR) (2006d): State of the World's Refugees 2006: Human Displacement in the New Millennium. Oxford University Press, New York.

United Nations High Commissioner for Refugees (UNHCR) (2007): An Agenda for Protection. UNHCR, Geneva. <<http://www.unhcr.org/global-consultations.html>>, 22 February 2007.

Verón, S.R.; Paruelo, J.M.; Oesterheld, M. (2006): Assessing desertification. In: Journal of Arid Environments. Vol. 66, pp. 751-763.

Vlek, P. (2005): Nothing Begets Nothing. The Creeping Disaster of Land Degradation. InterSecTions no. 1/2005, United Nations University Institute for Environment and Human Security, Bonn.

Waddington, H; Sabates-Wheeler, R. (2003): How Does Poverty Affect Migration Choice? A Review of the Literature. Working Paper T3, Sussex, Institute of Development Studies, Development Research Center on Migration, Globalisation and Poverty, University of Sussex.

World Bank (2000a): Managing Economic Crises and Natural Disasters. In: World Development Report 2000/2001: Attacking Poverty, Oxford University Press, World Bank, Washington, D.C., pp. 161-176.

World Bank (2000b): The World Development Report 1999/2000. The International Bank for Reconstruction and Development/The World Bank, Washington, D.C.

Zlotnik, H. (1994): Expert Group Meeting on Population Distribution and Migration. In: International Migration Review. vol. 28, no.1, pp.171-204.

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