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Control, Adapt or Flee

How to Face Environmental Migration?

Fabrice Renaud, Janos J. Bogardi
Olivia Dun, Koko Warner

InterSecTions

'**Inter**disciplinary **Sec**urity Connec**Tions**'
Publication Series of UNU-EHS

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Foreword

The present issue of InterSecTions is a special one. It does not only give the odd chance to write a foreword to an essay which is co-authored by myself but it is the first issue which is written by a team, rather than an individual. All of us are staff members of UNU-EHS. The interdisciplinary characteristics of InterSecTions are well emphasized when one looks at the academic background of the authors having degrees in so different areas as soil science, civil engineering, refugee studies and economics. The complex subject of this InterSecTions on environmental migration underlines the need to access it from different viewpoints, to follow up the chain of environmental deteriorations like land degradation, climate change, or sudden onset of hazard events. Potential control measures to contain the damage or rehabilitate ecosystems and the physical environment, the attempt of society as a whole and individuals to adapt to changed realities are the next steps. Once these measures did not come forth or failed nothing is left but to flee.

This InterSecTions is concentrating on the last option "flight" to deal with (extreme) environmental change, by acknowledging that there are many parts of the world where we overlooked the scale of destructions, man-made or natural ones, or did not counter processes of deterioration forcefully enough to stop them.

There is a growing number of migrants world wide and both observed evidence and scientific expectation indicate that more and more of them are on the road to flee from the loss of their livelihoods due to environmental reasons. The interlinkage of environment and human security is nowhere else more pronounced. When "perverted nature" strikes back, when ecosystem services get exhausted, hazard events devastate large stripes of land, then environment literally turns against humans. The apparent ecological imbalance or denuded land will be identified as a security threat.

It is difficult enough to acknowledge that humans do harm to humans, though history has ample proof. But at least since 1951 with the Convention on the Status of Political Refugees, we have a framework within which aid and assistance can be given to those who had to leave their native country due to violence, coercion or harassment. It is even more difficult to visualize that we harm even ourselves by destroying the ecological basis of our own existence. Environment may not force anyone to cross an international border, but no one can close the eyes from the terrible similarities between people running for their life threatened by guns or by droughts, famine, hurricanes or a Tsunami.

Migration is as old as humanity. It even shapes and enriches civilization. UN Secretary General Kofi Annan's appeal to have a more positive look on migration in his address to the High-Level Dialogue of the General Assembly on International Migration and Development in September 2006 was not only timely but also very important.

Humanity should look into the mirror and recognize that every one of us were, are or will be migrants. However there is a fundamental difference between forced and voluntary migration. Forced migration or flight out of fear or despair is a survival mechanism, revealing our vulnerability and lack of coping capacity to stand the ground. "Voluntary" migration may be a deliberately chosen option to cope with adverse effects – among them environmental ones – and/or to strive for a better life.

While no one leaves for a single reason, the authors felt the need to address the fuzziness and even prejudices associated with the notion of 'environmental migration'. We realized that policy makers need good estimates on number, origin and destination of people on the move due to environmental reasons.

We are still far from deciphering triggering mechanisms, the multitude of reasons, objectives and constraints motivating and governing the choice and process of migration. However and irrespective of using opposing definitions and being engaged in considerable scientific debate, there is a broad scientific consensus compelled with a concerned public expectation that the phenomenon on environmental migration, ill-defined as it may be, would turn worse in the years to come.

UNU-EHS is mandated to develop policy relevant knowledge focusing on the environment – human security nexus. Having this mandate, it was obvious that environmental migration would become one priority area of this still young institute of the United Nations University.

This issue of InterSecTions marks the beginning of concentrated efforts, rather than offering ready-to-use solutions. More question marks and "maybes" indicate that we are at the beginning of a challenging enterprise, motivated as much by scientific curiosity as by the profound dedication to help.

Scientific analysis, important as it may be is never the whole solution. A university can be most effective if it acknowledges its own limitations and forms thematic networks. Therefore addressing the problem of environmental migration was never conceived as an in-house exercise. Contributions and cooperation with agencies having operational mandate has been sought. UNHCR, IOM, UN-FPA and GEF-UNDP as IGOs are among our partners. Likewise this publication is a UNU-EHS contribution to EACH-FOR, an EC-supported joint project implemented by a consortium of several partners from Belgium, the Netherlands, Hungary, Austria, Germany and Spain on environmentally forced migration scenarios towards Europe. Also within the framework of the work programme of the Munich Re Foundation supported Chain on Social Vulnerability at UNU-EHS, migration issues play an increasingly important role.

It is my cherished privilege to thank all those who contributed to this volume through their comments and ideas. I am particularly indebted to our invited peer-reviewers, whose critical comments helped to bring more light into the jungle of problems, perceptions and potential policies.

Last, but not least I wish to thank the representatives of the media. Mr. Terry Collins was a great help in exposing UNU-EHS to the pertinent questions of journalists. Mac Margolis' 'Last Word' interview on Newsweek 31 October 2005 was a forceful proof of both the political interest and the dire need for knowledge-based information and scientific advice. This InterSecTions aims to prove that we have taken up those challenges.

Janos J. Bogardi
Director UNU-EHS

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Introduction

Environmental issues have been seen in the broader context of human security since the end of the Cold War, which marked the end of both the political bipolarity and the narrow, mainly military notion of security concepts and perceptions predominating the security discourse at that time (Brauch, 2005). There was a widespread expectation that humanity would be able to address global challenges and environmental threats instead. In this respect and at a policy level, the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit and held in Rio de Janeiro in 1992, was a critical point in the development of various UN Conventions dealing with environmental issues: the UN Framework Convention on Climate Change (UNFCCC) which was open for signature in 1992 and came into force in 1994; and the Convention on Biological Diversity which was open for signature in 1992 and came into force in 1993. The United Nations Convention to Combat Desertification (UNCCD) – not part of the UNCED process, only came into force in 1996 despite the fact that desertification had been recognised by the UN system as a major environmental threat exacerbating poverty for over 30 years - particularly since the 1977 United Nations Conference on Desertification (UN, 1994). These conventions directly and specifically address environmental issues that have great bearing on societies worldwide and contribute indirectly to improving several of the dimensions of human security. However, to date these initiatives and others that attempt to deal with environmental problems in order to limit their socio-economic consequences have not succeeded in stopping or slowing the ongoing overall degradation of our ecosystems (as observed by the MA, 2005a) irrespective of genuine efforts and partial successes. As a result migration processes have been further stimulated.

In parallel, the topic of migration has also received much attention at the international level and in particular has always been addressed through passionate and at times controversial debates both in receiving countries and countries of out-migration. Statistics from the International Organisation for Migration (IOM) show that in 2005 there were an estimated 191 million migrants worldwide, up from 176 million in 2000 and representing roughly 3 percent of the global population (IOM, 2007). Of these, the IOM estimated that 15-20% were illegal migrants (approximately 7 to 8 million in Europe and just over 10 million in the USA). The global number of refugees (the extreme form of migration) in 2005 reached an estimated 8.4 million persons (UNHCR, 2006a). Migration and issues related to asylum seeking remain high on the political and policy agenda of many countries, particularly during election periods. For example, a high-level delegation from the EU and Africa met in Libya in November 2006 to discuss issues related to both legal and illegal migration. In addition, the United States passed a bill allowing the construction of a controversial wall along portions of their border with Mexico (House Resolution 6061: Secure Fence Act of 2006 – HR, 2006).

Statistics from IOM show that in 2005 there were an estimated 191 million migrants worldwide, […] representing roughly 3 percent of the global population.

With the exception of when a person's life is directly threatened, the decision to migrate is often made because of a variety of "push" and "pull"

factors. Rarely is the decision to migrate made due to a single reason. Among the root causes of migration are economic factors (poverty, unemployment), social factors (poor welfare or education), environmental factors (degradation of ecosystems, environmental disasters), and/or degraded security conditions (disrespect for human rights, persecution of minority groups, armed conflicts, etc.) (Boswell and Crisp, 2004). Migration is often also in response to perceived or actual differentials and disparities between regions or countries (GCIM, 2005), although other factors such as demography, and the level of poverty also play pivotal roles (Hatton and Williamson, 2003). The September 2006 UN High-Level Dialogue on Migration and Development[1] (UN, 2006a,b) highlighted that poverty is one of several factors forcing or encouraging people to migrate and that it is "essential to address the root causes of international migration to ensure that people migrated out of choice rather than necessity" (UN, 2006b:2).

In the past couple of decades […] there has been increasing debate as to whether environmental degradation is a major cause of migration throughout the world.

In the past couple of decades, since environmental degradation started to be included as a potential threat in the concept of human security, and in particular since the publication of a paper by El-Hinnawi (1985) on environmental refugees (in e.g. Castles, 2002), there has been increasing debate as to whether environmental degradation is a major cause of migration throughout the world. Despite the fact that more than twenty years have elapsed since the publication of El-Hinnawi's paper, debate is still ongoing with respect to definitions of what constitutes an "environmental migrant" or in extreme cases an "environmental refugee", the number of and routes taken by the migrants, and whether or not it is wise or necessary to develop a new category of migrants and/or refugees at all. As such, a point has now been reached at which it is important to investigate the extent and degree to which environmental degradation is a root cause for migration or displacement and moreover to urgently address the issue of environmental migration consistently through policies supported by rigorous scientific and academic research.

The objectives of this essay are to promote a reflection on the interrelationships between different environmental degradation processes and migration, particularly forced migration, and to suggest the coordinated implementation of five policy action points that should be considered in order to anticipate and be prepared should the frequently predicted large-scale environmentally-driven migrations be realised in the future. In addition to this topic being timely because of the current emphasis placed by many countries on the subject of migration, the topic of envi-

1 "In its resolution 58/208 of 23 December 2003, the [UN] General Assembly decided to devote a high-level dialogue to international migration and development during its sixty-first session in 2006. The purpose of the high-level dialogue is to discuss the multidimensional aspects of international migration and development in order to identify appropriate ways and means to maximize its development benefits and minimize its negative impacts. Additionally, the high-level dialogue should have a strong focus on policy issues, including the challenge of achieving the internationally agreed development goals, including the Millennium Development Goals (MDGs)." (UN *Department of Economic and Social Affairs, Population Division 2007, International Migration and Development Section*).

ronmental migrants/refugees is also timely because the United Nations is currently re-thinking its strategy with respect to the theme of migration through the High-Level Dialogue on Migration and Development mentioned above. There are, at the moment no specific distinctions being made in the UN debate on migration in terms of the "push" or "pull" factors so environmental migrants are not recognised specifically within this debate yet. It is also unlikely that the emerging comprehensive strategy on migration being announced and developed by the European Union (EC, 2006) and expected to be published in the summer of 2007 would acknowledge this particular category of migrants. As there is a broad consensus that migration is most likely to increase substantially in the future there is the urgent need to prepare potential immigration target countries to cope with the expected influx of migrants regardless of whether these countries are developed or developing.

Chapter I of this essay discusses the links between environmental degradation and migration and provides an overview of the current debate on the topic; Chapter II briefly describes the environmental changes that are currently observed and will continue in the future; and Chapter III presents a preliminary practical classification scheme for environmental migrants/refugees as well as policy actions that should be considered to tackle the issue of environmentally-driven forced migration.

I. Environmental Degradation/ Impacts and Forced Migration

Black (2001:2) noted that the concept of environmental refugees was introduced by Lester Brown of the Worldwatch Institute in the 1970s. It was subsequently addressed in a November 1984 briefing document of the London-based International Institute for Environment and Development (Black, 1998:11; Kibreab 1997:21) and entered into common usage after a 1985 United Nations Environment Programme policy paper written by E. El-Hinnawi entitled 'Environmental Refugees'. There have been several attempts to promote the idea that a new category of refugees (the extreme case of population movement) is needed in order to protect people who have to move because of environmental factors (e.g. Conisbee and Simms, 2003). However, the evidence put forward so far to link environmental factors to forced migrants/refugees is often not scientifically or factually rigorous and has often been dismissed by the detractors of the concept. In addition, there is no accepted definition of what an "environmental migrant/refugee" is. It is therefore important to develop more precise terminology in order to provide a professional basis for debate.

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

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who "has" to leave his/her place of normal residence because of an environmental stressor (see Chapter III) 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).

It can be seen that there are four key parts to this definition, namely:

- the person must be outside their country of nationality or former habitual residence;
- the person must fear persecution;
- the fear of persecution must be for reasons of one of the five convention grounds (race, nationality, religion, membership of a particular social group or political opinion); and
- the fear must be well-founded.

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Over the years, each of the elements of the Refugee Convention definition of refugee have been subject to detailed policy and legal inspection. *UNHCR's Handbook on Procedures and Criteria for Determining Refugee Status* has been a source of guidance with regard to this (UNHCR, 2001), particularly for those making refugee status determinations.

In addition to the Refugee Convention, some regional conventions have been adopted which extend the scope of the refugee definition outlined in the Refugee Convention. These include the 1969 *Organisation of African Unity/African Union Convention* (OAU Convention) which governs specific aspects of refugee issues in Africa and the 1984 Cartagena Declaration on Refugees (the Cartagena Declaration) which concerns Latin America (Jambor, 1992). Among other reasons, such as foreign domination or situations of generalised violence, both these Conventions build upon the 1951 Refugee Convention definition of a refugee to also include people who have been compelled to flee their countries due to events which have seriously disturbed public order (Jambor, 1992). It is perhaps this definition of a situation of seriously disturbed public order that comes closest to some form of official international recognition which could potentially encompass those compelled to leave their country of origin due to environmental factors. However, these Conventions only apply to individuals living within the African and Latin-American regions and do not draw attention to environmental issues specifically.

While a key element of refugee recognition is that a person is outside their country of nationality or former habitual residence, *Internally Displaced Persons* (IDPs) are people who have fled their homes to escape armed conflict, generalised violence and human rights abuses but who remain in their own country (UNHCR, 2006c). While IDPs are often displaced for the same reasons as refugees, IDPs remain within the borders of their own state (UNHCR, 2006c). Due to this fact the international response to the plight of IDPs differs significantly from that of refugees (UNHCR, 2006d).

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.

Myers (1993:752) defined environmental refugees as:

> people who can no longer gain a secure livelihood in their erstwhile homelands because of drought, soil erosion, desertification, and other environmental problems. In their desperation, they feel they have no alternative but to seek sanctuary elsewhere, however hazardous the attempt. Not all of them have fled their countries; many are internally displaced. But all have abandoned their homelands on a semi-permanent if not permanent basis, having little hope of a foreseeable return.

Bates (2002:468), taking into account the definitions of others over the preceding years, offers an intentionally vague definition to take account of the transformation of the environment to one less suitable for occupation by humans, stating that environmental refugees are "people who migrate from their usual residence due to changes in their ambient non-human environment."

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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 (see Chapter III).

Interestingly, Kibreab (1997:21) argues that the term 'environmental refugee' was "invented at least in part to depoliticise the causes of displacement, so enabling states to derogate their obligation to provide asylum. The rationale is that states have no obligation to provide asylum to those who flee their homes because of environmental deterioration rather than political persecution. In international refugee law, environmental conditions do not constitute a basis for international protection." We argue, to the contrary, that 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. A later Chapter of this essay offers a conceptualisation of how environmentally forced migrants/refugees might be categorised. It should be noted here that as can be seen above, many authors arguing in favour of the concept of "environmental refugees" include displacement due to the development of infrastructure such as dams within the extent of their definition. This type of displacement however is considered beyond the scope of this essay as its concern is to only focus on unplanned and unintended environmentally induced displacements in circumstances where no legally liable entity for indemnification of the displaced can be identified.

In international refugee law, environmental conditions do not constitute a basis for international protection.

1.1 The Debate on the Concept of Environmental Migrants/ Refugees

Given the lack of precise definition as to what constitutes an environmental migrant/refugee and the emotionally charged issue of migration, and sometimes outright fear of migrants in host countries, it is not surprising that the links between environmental change and forced migration is a topic which is causing much public and scientific debate. There are three main dimensions to the debate surrounding the notion of environmental migrants/refugees (e.g. Castles 2002):

- first, there is the definitional debate over the terminology "environmental refugee" and who can be classified under such a definition as has been highlighted above;
- second, there is the debate over whether such people even exist, i.e. can environmental factors be identified as a root cause of displacement? and
- third, there is the debate over who will provide protection to such a category of people should they exist.

With respect to the first aspect of the debate, we propose three categories of migrants/refugees to be considered for future policy actions in the third Chapter of this essay. The third aspect of the debate, i.e. who should provide protection to such people, is also addressed in Chapter III. With respect to the second aspect, the discussion presented in Chapter II and the evidence presented below point towards environmental factors as being major push factors for forced migration.

Myers (2002; 2005) claimed that in the future there could be up to 200 million environmental refugees. By contrast Black (2001) argued that there are no environmental refugees. Castles (2002) in exploring the environmental refugee debate sought to understand why there were such opposing views. His investigations led him to realise it was the different methodologies applied by various academics in their studies into the linkages between environmental change and forced migration that led them to vastly different conclusions concerning the existence of environmental refugees. For example, Castles (2002) noted that Myers links the macro-level changes of rapid population growth in less developed countries and global climate change to factors such as desertification, lack of water, deforestation, salinisation or irrigated lands, biodiversity depletion and rising sea levels and extrapolates broad conclusions from these links stating that these factors will necessitate movements of people; while others such as Black (2001) and Kibreab (1997) adopt a more empirically based approach to their study of environment and forced migration.

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A potential way to reconcile the different points of view would be, as proposed by Jambor (1992:54), to acknowledge that

> opinions are not unanimous on the reality and possible long-term effects of pollution, deforestation and use of certain products on our environment …[but] that a change in traditional climatic patterns, followed by a marginal rise of the sea-level, would [no doubt] threaten the habitat and basic livelihood of millions of people and would displace additional masses of people.

It is these people that are the ultimate concern of those engaging in the environmental refugee debate.

Another complicating factor feeding the debate is the complexity of the interactions between environmental degradation and migrations. Critics of the concept of environmental migrants/refugees sometime use the argument that environmental degradation is not as serious an issue as depicted in much of the literature. In addition, critics often use the valid

Environmental degradation is a serious problem that can be exacerbated by several social, economic, political and global environmental factors and could thus become one of the major "push" factors in the future.

argument that migration has many root causes to dismiss the need for a specific new category of migrant or to argue that the terminology "environmental refugee" is misleading and too narrow at best as it focuses on only one of many potential or real "push" factors (e.g. Black, 2001; Castles, 2002). This being said, environmental degradation is a serious problem that can be exacerbated by several social, economic, political and global environmental factors and could thus become one of the major "push" factors in the future. The Millennium Ecosystem Assessment notes that "droughts and loss of land productivity are considered predominant factors in the migration of people from drylands to other areas" and "these migrations often create environmental refugees (…)" (MA, 2005a:625; 645). The conclusion is that drought has impacts on income and food security in environments where few if any alternative livelihood opportunities exist and migration can be a coping strategy that has historically been used in the face of difficult situations. We note here that drought and desertification are not equivalent but because desertification is the consequence of land degradation, it is understood that climatic droughts (likely to be aggravated by climate change) would have a bigger chance of becoming agronomic droughts (thus affecting agricultural production) in desertifying areas.

In concluding, even critics of the concept of environmental migrants/ refugees such as Black (2001) contend that should environmental refugees be included in a future international convention, the scientific and empirical basis of the fluxes and specific needs will require further elaboration. Similar points of view were put forward in a brief review on the subject presented by Flintan (2001). Castles (2002) argued that the environmental refugee terminology and conceptualisation is inadequate but nevertheless did not dismiss the possibility that environmental factors can be very important for the triggering of migration in certain circumstances. This latter possibility is also highlighted by Oliver-Smith (2006) who argued that nature (as opposed to the environment which is understood to be the co-existence of nature and society) could be a single cause of migration (although up to now it has not been) but was rather one of several factors triggering migration. No one can disagree that there is a need to address these issues more scientifically and systematically, and that the fuzziness of the environmental refugell concept as it stands now, as well as the difficulty in estimating the number of people concerned or identifying migration routes should not be a reason not to act and move forward with adequate policies.

1.2 Fluxes of Environmental Migrants/ Refugees

As stated in the introduction, it is estimated that worldwide there are 191 million migrants, 23.7 million IDPs and 8.4 million refugees. Europe (including the Russian Federation) is the largest recipient of migrants, followed by Asia and North America (Table 1a). The USA, the Russian Federation and Germany are the three top ranking countries in terms of migrants living on their soil (Table 1b). But what is the proportion of migrants who have moved because of predominantly environmental "push" factors?

Despite the lack of precise definitions, several authors have attempted to determine the number of environmental migrants/refugees. This is a rather complicated exercise because, as has been highlighted above, of the diversity of factors that come into play and their complex interactions (Döös, 1997). Quantifications are further complicated by the fact that these migrations are mostly internal (at least in the initial phase). Nevertheless, estimates of environmental migration fluxes have been published. The Office of the United Nations High Commissioner for Refugees (UNHCR, 2002:12) for example, estimated there were then approximately 24 million people around the world who have fled because of floods, famine and other environmental factors. In 1994, the Almeria Statement mentioned that 135 million people could be at risk of being displaced as a consequence of severe desertification. Myers (2002, 2005) estimated that 25 million people in 1995 had migrated with a possible doubling of that number by 2010 with a potential of 200 million environmental refugees due to global warming impacts later in the 21st century. In a 2002 paper by a Green Party member of the European Parliament it was estimated that the number of people displaced by climate change in China alone was 30 million (Lambert, 2002). All these figures, their estimation methods and the underlying assumptions behind them are criticised and debated. We argue that generalisations in estimating the number of environmental migrants/refugees on a global scale are fraught with difficulties. An understanding of the scope of this issue is better examined by focusing on more concrete environment-human couplings, three of which are discussed below.

The UNHCR […] estimated there were […] approximately 24 million people around the world who have fled because of floods, famine and other environmental factors.

Table1a. Number of International Migrants in Different Geographic Regions of the World in 2005

Geographic Region	Number of migrants (millions)	As a percentage of total migrants in the world	As a percentage of total regional population
Europe	64	34	9
Asia	53	28	<2
North America	44	23	13
Africa	17	9	<2
Latin America and Caribbean	7	3.5	<2
Oceania	5	2.5	15

Source: UN, 2006c

Table 1b. Top Twenty Countries with the Highest Number of International Migrants in 2005

Country	Number of migrants (millions)	As a percentage of total migrants in the world	As a percentage of total country population*
1 United States of America	38.4	20.2	12.9
2 Russian Federation	12.1	6.4	8.5
3 Germany	10.1	5.3	12.2
4 Ukraine	6.8	3.6	14.6
5 France	6.5	3.4	10.7
6 Saudi Arabia	6.4	3.3	26.0
7 Canada	6.1	3.2	18.9
8 India	5.7	3.0	0.5
9 United Kingdom	5.4	2.8	9.1
10 Spain	4.8	2.5	11.2
11 Australia	4.1	2.2	20.3
12 Pakistan	3.3	1.7	2.1
13 United Arab Emirates	3.2	1.7	71.2
14 Hong Kong (China)	3.0	1.6	42.6
15 Israel	2.7	1.4	40.1
16 Italy	2.5	1.3	4.3
17 Kazakhstan	2.5	1.3	16.9
18 Cote d'Ivoire	2.4	1.2	13.2
19 Jordan	2.2	1.2	38.6
20 Japan	2.0	1.1	1.6

* Approximate percentage based on estimates of 2005 population made by UN Population Division in 2004.

Sources: UN, 2005; UN, 2006c

With respect to loss of ecosystem services […], the cause-effect relationship between, for example, desertification and migration have been flagged at various conferences worldwide and by different stakeholders.

1.3 Environmental Degradation and Migration

With respect to loss of ecosystem services (see Chapter II), the cause-effect relationship between, for example, desertification and migration have been flagged at various conferences worldwide and by different stakeholders. This was particularly true following an *International Year of Deserts and Desertification* (IYDD) event in Montpellier, France (the Désertif'Actions conference – September 2006), where representatives from civil society made statements to the press that implied links between desertification and migration. In addition, the Montpellier Appeal which emerged from the Désertif'Actions conference stated that land degradation "[…] leads to precariousness and poverty conditions,

and to an increasingly large marginalisation which worsen migratory flows, political instability and economic losses" (Désertif'Actions, 2006). The statements above remain however general with the cause-effect relationships not being systematically described or quantified. This is most likely due to the fact that given the complexity of the interaction between land degradation and migration - both are complex processes that occur because of a wide range of drivers, quantification is difficult if not impossible. Nonetheless, despite quantification difficulties and lack of definition clarity, both the IYDD and the conferences held in 2006 (and in particular Almeria II but also Almeria I which was held in 1994, both dealing exclusively with the links between desertification and migration) are crucial benchmark events marking the emergence of the political concern on this topic and reflect the need for comprehensive action.

Some attempts to measure the relationship between desertification and/or repetitive droughts at the national level on the one hand and migrations on the other are relatively recent. For example, it is estimated that close to two out of three families from the Malian region of Kayes have a member of their household who has emigrated overseas (Togola, 2006). For the same country, persistent droughts have forced people from the North to migrate to other West African regions. West Africa is the main recipient of migrants from Mali (Togola, 2006). However, the specific proportion of people migrating out of Mali because of desertification was not specified by Togola (2006). A second example can be taken from Mexico. A paper commissioned by the US Commission on Immigration Reform looked at the interlinkages between unsustainable land and water use and migrations from Mexico to the USA. The report concluded that migration was probably due to a set of factors that includes large wage differential between the two countries and extensive migrant network in the USA ("pull" factors) but also emphasised the fact that, based on Mexican Government's data, approximately 900,000 people left arid and semi-arid areas every year in part because of their inability to make a living from the land due to dry conditions and soil erosion (Schwartz and Notoni, 1994). A review by Leighton (2006) showed that migration induced by desertification and droughts in Africa, Latin America and Asia served as a coping mechanism as remittances are subsequently used by the local communities to complement their normal incomes. Actually, migrants transferring remittances are a significant force, and the amount of remittances transferred to developing countries has steadily grown in the past decade, well exceeding $100 billion worldwide by 2005 (IMF, 2005). The World Bank estimates that global flows of migrant remittances increased 43.5 percent from 2001, reaching $204.5 billion in 2004 (IBRD, 2006). For most countries, remittances exceed the volume of foreign aid and investment (Ratha, 2005). In 2004 remittance receipts were about 5 percent of developing countries' imports and 8 percent of domestic investment and were larger than official flows and private non-foreign direct investments flows to developing countries (Ratha, 2005). In many countries, remittances are larger than the earnings from their most important export (Page and Plaza, 2005).

A review […] showed that migration induced by desertification and droughts in Africa, Latin America and Asia served as a coping mechanism as remittances are subsequently used by the local communities to complement their normal incomes.

The concept of environmental refugees received considerable attention when the Pacific Island state of Tuvalu announced that it wanted to hold industrialised countries […] liable for causing sea level rise due to their high levels of greenhouse gas emissions.

1.4 Climate Change and Migration

The concept of environmental refugees received considerable attention when the Pacific Island state of Tuvalu announced that it wanted to hold industrialised countries such as Australia and the USA liable for causing sea level rise due to their high levels of greenhouse gas emissions (Seneviratne, 2002; Lambert, 2002). More recently debate on this issue has been raised again in Australia due to the release of the Stern (2006) review on the Economics of Climate Change, the latest findings of the *Intergovernmental Panel on Climate Change* (IPCC, 2007a), and a report by the *Australian Commonwealth Scientific and Industrial Research Organisation* (CSIRO) on climate change in the Asia-Pacific, which stated that "degraded landscapes and inundation of populated areas by rising seas may ultimately displace millions of individuals forcing intra and inter-state migration" (Preston et al., 2006:4). This latter report also highlighted that "challenges to human security are difficult to anticipate, but there is currently little awareness of the implications and regional management frameworks for addressing climate change-induced security and *migration issues are lacking"* (Preston et al., 2006:4; emphasis by authors).

Tuvalu, a small island state in the Pacific Ocean, has a peak height which rises just 5 metres above sea-level (Schmidt, 2005). The island currently often experiences flooding when tides are high and the further threat of sea-level rise could have devastating impacts (Schmidt, 2005; Patel, 2006). There are scientists who argue that localised activities in Tuvalu such as beach mining and construction of buildings, road and jetties along shorelines may also be playing a role in contributing to coastal erosion and loss of land on the island and that not all encroachment of the sea water in Tuvalu can be attributed to climate change impacts (Patel, 2006; Connell, 2003; Davissen and Long, 2003). However in recent months, reports such as the one by Preston *et al.* (2006) and IPCC *Report on Climate Change* (IPCC, 2007a) are now confirming that warming of the earth's climate is unequivocal and that the average global sea-level is rising.

As a concrete example showing how a small island state attempts to prepare to deal with future impacts of sea-level rise, Tuvalu joined the United Nations in 2000 with the specific objective of highlighting climate change issues and being vocal during international forums, particularly in pushing for countries to sign on to the Kyoto protocol which is aimed at reducing greenhouse gas emissions (Patel, 2006). As a further strategy Tuvalu also wished to discuss the option of immigration policies with the governments of Australia and New Zealand (Patel, 2006). Currently Immigration New Zealand accepts seventy-five citizens between 18 – 45 years of age from Tuvalu annually through its Pacific Access Category which is also available to citizens of Fiji, Kiribati and Tonga (Immigration New Zealand, 2006). However this programme is a labour migration programme and has not been implemented for the purpose of taking citizens of Tuvalu who want to migrate due to the threat of sea-level rise (Patel, 2006). The *Australian Department of Immigration and Citizenship* (formerly Department of Immigration and Multicultural Affairs) currently

has no scope to include such migrants under its current policies and there is no department within the Australian government that has as yet planned policies to tackle the issue of what one representative of the Australian Greens Party refers to as "climate refugees" (Commonwealth of Australia, 2006:15). Importantly Patel (2006) highlights that despite reports in the media that people from Tuvalu are already evacuating their home island, the reality is that very few people are leaving. The example of Tuvalu has received widespread media attention and even though not all media pieces reported all the facts accurately, Tuvalu has contributed to raising the profile of environmental displacements, more so than much more devastating events that actually occur annually.

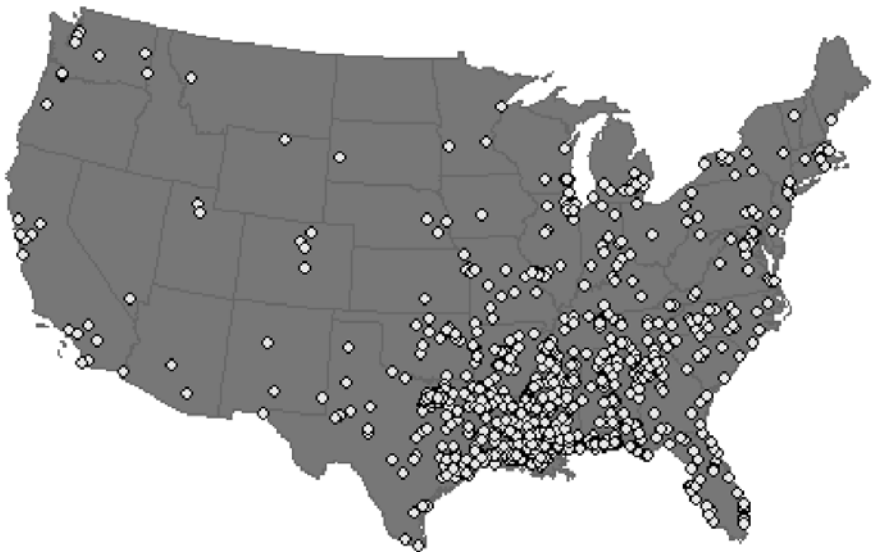
The issue of climate change-induced sea level rise is a valid and serious worry for many small island states. In August 2006, a meeting attended by representatives of several nations, NGOs and international organisations was held in the Maldives with this theme and produced the "Protocol on environmental refugees: recognition of environmental refugees in the 1951 Convention and 1967 protocol relating to the status of refugees" (Unpublished Working Draft of the Proposal prepared by Michael See).

The issue of climate change-induced sea level rise is a valid and serious worry for many small island states.

1.5 Disasters and Migration

Hurricane Katrina was a category 5 hurricane which was "weakened" to a category 3 when it made landfall just outside of New Orleans, Louisiana in August of 2005. The hurricane devastated much of the north-central Gulf Coast of the United States, affecting millions of people and their assets. The disaster was the costliest and one of the deadliest hurricanes recorded in the USA. Katrina was an environmental disaster that was complicated by failing infrastructure, regional poverty, and inadequate institutional management. Hurricane Katrina resulted in the largest displacement of Americans in the country's history, in about 14 days.

Figure 1. Places of Displacement Following Hurricane Katrina



Source: Epodunk, 2007 (reproduced with permission)

Hurricane Katrina ultimately caused about 1.5 million people to be displaced temporarily (Grier, 2005). Estimates suggest that 300,000 of these migrants will never return (Grier, 2005). Of the 1.5 million displaced people, an estimated 107,000 illegal immigrants and temporary guest workers experienced secondary displacement due to Katrina (Castillo, 2005). Figure 1 shows the distribution of Katrina refugees – based on an analysis of 40,000 postings on the internet by survivors – and illustrates that most remained within the region and that all displacements remained within the USA (Epodunk, 2007).

Another devastating natural catastrophe, the Indian Ocean Tsunami in late 2004, displaced over 2 million people, many of whom are still living in refugee camps in the region (AidWatch, 2006).The UN Office of the Special Envoy for Tsunami Recovery estimated that 1.5 million people lost their livelihoods as a result of the tsunami, further complicating resettlement of migrants (AidWatch, 2006). In order to achieve a better understanding of the diverse vulnerabilities of different social groups affected by tsunami, Grote *et al.* (2006) conducted a survey of 500 households in the Sri Lankan urban area of Galle within the framework of a UNU-EHS lead project. One of the variables statistically analysed dealt with the decision of households to migrate after the tsunami – to reduce their vulnerability – or not. The results showed that households that had been directly affected by the tsunami in terms of damage to their houses had a higher migration probability than others (this was a safety consideration although households affected from a human loss point of view showed the inverse trend). Having relatives at a potential new place and/or having received financial and/or material support such as tents were additional factors that influenced the household's decision to leave affected places (thus implying that some support schemes encouraged people to leave high-risk areas). Factors that decreased the probability of migration were higher education, good access to information and the ownership of properties.

II. Environmental Change and Society

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.

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 (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.

2.1 Loss of Ecosystem Services

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* (MA) 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.

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.

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% 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 lead 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.

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".

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% 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 (see Chapter III).

2.2 Climate Change

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, sea-level 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,

In the future an increasing number of people worldwide will have to face more extreme weather events, sea-level rise and/or more intense weather-related hazards.

2007b). The consequences are that water-stressed regions are likely to suffer more in the future as a decrease of 10-30% 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 mega-deltas 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.

2.3 Increasing Trends in Environmental Disaster

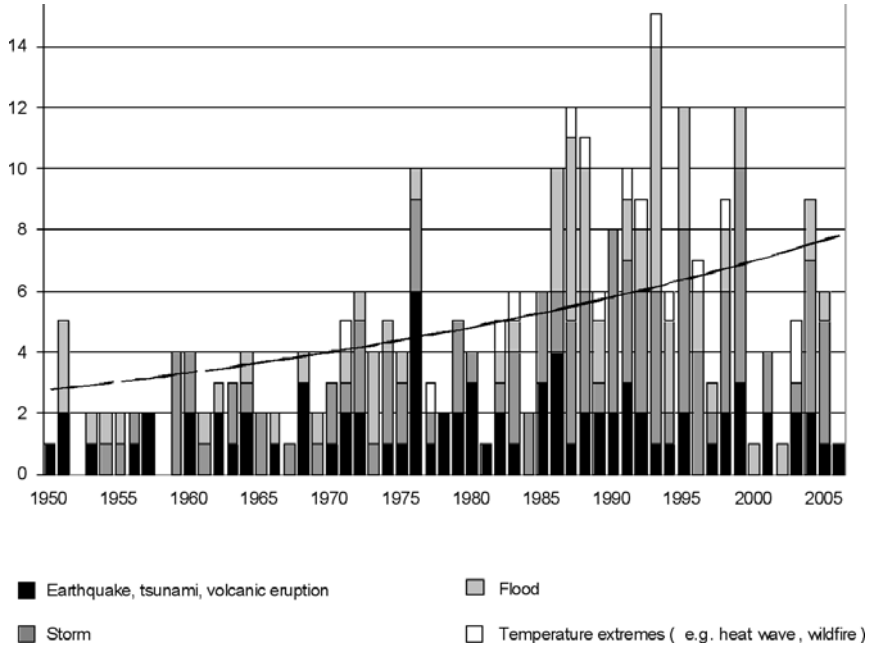
Environmental disasters severely affect millions of people worldwide, particularly the poorest people living in coastal areas or those areas vulnerable to land degradation. Further, as surface temperature has increased over the past decades, so has the damage caused by extreme weather events. Munich 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).

Direct losses from environmental disasters are already frequently as high as $100 billion annually.

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% 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 (Figure 2). 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% and 51% of the disaster-affected population in Africa and Oceania respectively) and floods in Asia, the Americas and Europe (accounting for 57%, 43% and 38% 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).

Figure 2. Great Natural Disasters (1950-2006): Number of Events



Source: Munich Re (2007). © 2007 Münchener Rückversicherungs-Gesellschaft Geo Risks Research, NatCatSERVICE (reproduced with permission)

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:

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.

> 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).

The evidence presented above points to increasing environmental deteriorations in the future regardless of immediate actions the international community may take to mitigate or prevent them.

The evidence presented above points to increasing environmental deteriorations in the future regardless of immediate actions the international community may take to mitigate or prevent them. These environmental impacts will undoubtedly affect an increasing number of communities and become a major push factor for displacement. It is thus important to rapidly address, at the policy level, the issue of environmental migrants/refugees.

III. Applying the Precautionary Principle Through Appropriate Policies

3.1 Proactiveness to Avoid Future Humanitarian Disasters

Lonergan and Swain (1999:2) carried out a cautious and critical analysis of the relationships between environmental degradation and migration. They pointed out many weaknesses in the concept but nevertheless noted that

> although the estimates and projections of environmental refugees are based almost entirely on anecdotal evidence and intuitive judgements, it is important not to trivialize the role environmental change and resource depletion may play in population movement.

Given this and the empirical evidence of the movements from many regions of the world, the academic debate briefly discussed in Chapter I

on whether there are environmental migrants/refugees or not becomes superfluous and jeopardises the urgent development of knowledge-based policies. Scientific "concerns" instead of the pragmatic application of a precautionary principle paralyse both the scientific and the policy making communities. It is the strong conviction of the authors that in the face of the unfolding human tragedy with considerable political explosiveness, the "regular" and usually slow sequential approach: science-policy-action cannot be afforded. Instead a simultaneous though iterative approach is advised.

Although migration models are useful tools for prediction of migration fluxes (if they account for all "push" and "pull" factors), Hatton and Williamson (2003) argued that future trends in migration will probably be driven more by policies that are difficult to model. But sound policy recommendations that are based on facts and consider all factors advanced by proponents and critics of the concept of environmental migration/refugees are required, if future humanitarian disasters are to be avoided. When dealing with the concept of environmental migration, the question becomes: is there a specific need for a new category of migrant or refugee? The environment being shaped by human activities is, by definition, in constant flux and as highlighted above, there is increasing evidence that serious and relatively rapid alterations to ecosystems induced by natural and anthropogenic factors mean that ecosystems cannot sustainably supply many communities with required essential services. It is therefore likely that increased stresses on ecosystems will have direct and indirect impacts on societies which, when their other coping mechanisms are overcome, will have no other option but to migrate as a permanent or temporary coping strategy.

An unavoidably long process to gain recognition in order to assist a potentially emerging new category of forced migrants has only just begun. While the multiple reasons and their respective weights case-by-case make it fairly difficult to assign individuals or group of migrants into well defined categories like political, economic, ethnic or even environmental migrants/refugees, there are potential sub-classes which may be useful to indicate the motivation to move and the urgency to receive assistance. Various authors have proposed different environmental migrant/refugee categories (see for example in Black, 2001; Flintan, 2001). Concerning environment-related mass movement of people we propose to distinguish between:

- Environmentally motivated migrants;
- Environmentally forced migrants; and
- Environmental refugees.

An environmentally motivated migrant "may leave" a steadily deteriorating environment in order to pre-empt the worse. The displacement can be either temporary or permanent and can be illustrated with examples like depopulation of old industrial and mining areas or the rural exodus of northeast Brazil to Sao Paolo due to long dry spells (Bela Petry, Oral Communication). Environmentally forced migrants on the other hand

It is the strong conviction of the authors that in the face of the unfolding human tragedy with considerable political explosiveness, the "regular" and usually slow sequential approach: science-policy-action cannot be afforded. Instead a simultaneous though iterative approach is advised.

"have to leave" in order to avoid the worst, often on a permanent basis. Examples include movement due to sea-level rise or migration from the Sahel zone of Africa due to desertification. These two categories may imply the option to decide to stay or not to stay, or when to leave, though these questions are already part of the survival dilemma (Brauch, 2005). The distinction between environmentally forced migrants and environmental refugees could be sought in the swiftness of necessary actions. Environmental refugees (including disaster refugees) flee the worst and the displacement can be either temporary or permanent and can be illustrated by displacements due to floods, extensive droughts and the exodus due to Hurricane Katrina.

Another distinguishing criterion could be sought in environmental assessment. Would it be possible to rehabilitate the degraded environment to undo migration, or should people be allowed to seek permanent refuge (and livelihoods) elsewhere? Farmers whose livelihood was destroyed by irrevocable desertification clearly need status and assistance similar to that of people fleeing from violence, war, ethnic cleansing or other harassment, irrespective of whether they crossed a border or not. Although the discussion has so far been more at the level of the individual it is evident from some of the examples cited above that entire communities might have to move at least temporarily such as in the case of extensive droughts or major coastal hazards. The implication is that entire social networks may be lost by the displacements thus putting individuals in an even more vulnerable situation when on the move. This complicates further policy-making as it is the reconstruction of entire social networks that needs to be thought of when tackling the issue of environmental migration, but the classification scheme presented above is still applicable.

Farmers whose livelihood was destroyed by irrevocable desertification clearly need status and assistance similar to that of people fleeing from violence, war, ethnic cleansing or other harassment, irrespective of whether they crossed a border or not.

The authors argue that internationally agreed standards are needed to identify these or similar sub-groups in order to devise appropriate strategies, measures and assistance programmes on how to assist those falling into the different categories of displaced persons. These standards could possibly be discussed within the UN High-Level Dialogue addressing Migration and Development. Likewise, they could serve as basis for emerging migration policies and assistance schemes. It has been reported that individuals who could possibly fall under the above environment-related categories have received assistance from UNHCR and other humanitarian agencies occasionally (Stefan Berglund, Oral Communication, 2006). It is to be noted that without recognition status and corresponding mandating of the respective aid organisations this assistance, based on human solidarity and compassion, would not be sustainable. In order to avoid potential human disasters at a massive scale, institutional empowerment and funding are needed.

Table 2 attempts to categorise migrants and displaced persons in cases where environmental degradation or change is the main cause of displacement/migration. The table attempts to identify where the proposed three different categories of environmental refugee, environmentally forced migrant and environmentally motivated migrant may fit

according to the nature of an environmental trigger event and the type of assistance available to the exposed communities, the latter also reflecting the inherent vulnerability (i.e. independent of event magnitude) of the communities. Although vulnerability assessment requires the quantification of many social, economic and environmental parameters (e.g. Birkmann, 2006), we simplify the concept here to that of coping capacity, which we link to the type/level of assistance available at the point of origin of the affected community. It is to be emphasised that Table 2 serves the purpose of illustration rather than making a definitive proposal for classification. The distinction between the three categories of environmental migrants (i.e. environmental refugee, environmentally forced migrant, environmentally motivated migrant) is made by thinking about the situation of a person or group of persons at the point in time when they actually depart their usual place of residence i.e. at the time the flight or migration commences. The qualifier "environment" in the three categories of migrants comes from the column headings. The "intensity" of movement (fleeing, forced or motivated) is dependent on both the nature of the environmental event i.e. gradual or sudden (column headings) and also the type of support available (row headings) to the person departing. By level of support, assistance and help available to the person we have taken the assumption that the persons do not want to leave their place of residence (since here we are discussing situations of forced migration in which environmental degradation or change is the main reason for displacement or migration and not for example, economic reasons) and therefore by stating that the different levels of help available we mean help available to create a situation in which a person does not have to depart.

Internationally agreed standards are needed to identify […] sub-groups in order to devise appropriate strategies, measures and assistance programmes on how to assist those falling into the different categories of displaced persons. [p. 30]

Table 2. Identifying Categories of Environmental Migrants

			Nature of Environmental Degradation			
		Inherent Vulnerability of Affected Communities/ Persons	DIRECT, GRADUAL (e.g. land degradation, pollution)	INDIRECT, GRADUAL (e.g. sea-level rise)	DIRECT, SUDDEN (e.g. flood, typhoon, eath-quake)	INDIRECT, SUDDEN (e.g. volcanic ash fallout, drought
Type of assistance or help available/needed/exected to cope with environmental degradation at point of origin	Self-Help (skills/financial)	Low	III	III	II	II
	State Assistance	Medium	III	III	I-II	II
	International Assistance	High	II-III	III	I-II	II
	No Assistance Expected	Very High	II	II	I	I-II
Key: I = Environmental Refugee, II = Environmentally Forced Migrant, III = Environmentally Motivated Migrant						

If there is a gradual direct or indirect environmental change or degradation situation then people living in the affected area usually have time to react and make a decision about how to cope with the impact of the environmental change or degradation on their livelihood. Even if assistance is available in some form to help in order to cope with the environmental degradation event, people might still make a decision to move away from the affected locality. In such a case we would view the people making such a decision as environmentally-motivated migrants if their main reason for moving is triggered by the environmental degradation or by the frequent reoccurrence of the triggering hazard event. If no help or assistance is available to try and cope with or resolve the environmental change or degradation impacts then a decision to migrate is considered to be a forced migrant.

If there is a sudden direct or indirect environmental change or degradation situation then people living in affected areas do not have time to react and make a decision about how to cope with the impact of the environmental change or degradation on their livelihood. Even if assistance would be available in some form to help to cope with the environmental event, people might still be forced to move away or flee from the affected locality, at least temporarily. In such a case we would view the people forced to make such a decision as environmentally-forced migrants or environmental refugees if their main reason for moving is triggered by the environmental event. If no help or assistance is available or expected to try and cope with or resolve the environmental change or degradation impacts then a decision to migrate may be entirely involuntary and as such the people forced to flee are environmental refugees.

An agency trying to determine whether or not an individual […] is a refugee or migrant will need to look into the severity of environmental process, and also […whether or not a] return to the place of origin [is possible].

In addition to the dimensions covered in Table 2, an agency trying to determine whether or not an individual or group of individuals (e.g. entire community) is a refugee or migrant will also need to look into the severity of environmental process, and also whether or not an individual or entire communities can or cannot return to their place of origin (see e.g. King, 2006). These two criteria depend at least in part on whether an environmental degradation process is directly triggered or is a secondary manifestation of other drivers (the direct/indirect qualifiers in Table 2). We do not propose a definitive position on what does or does not constitute an environmental motivated/forced migrant or environmental refugee by presenting Table 2. Rather, the aim in presenting Table 2 is to offer a different perspective in the thinking surrounding this topic, that of assistance available to persons or entire communities displaced due to environmental factors.

3.2 Policy Suggestions

Agreeing with the statement from Lonergan and Swain (1999) presented above, 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.

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.

There is 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.

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[2], 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

2 As defined under Article 1A of the 1951 Convention relating to the Status of Refugees amended by the 1967 Protocol (the Refugees Convention).

(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.

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.

Conclusions

There is still significant scientific and conceptual debate as to the relevance of including a new category of migrants/refugees within international treaties or developing a new international convention that would recognise individuals or communities whose displacement is mainly by environmental factors. In order to shed further light on the debate it is important that the issue of developing a definition for such categories of people is addressed through gaining a better understanding of circumstances in which environmental factors are the main root cause for migration. We proposed here a preliminary classification that takes into account the type of environmental stressor and the type of assistance available to cope with the environmental stressor at the habitual place of residence of a potential migrant/refugee. This is a preliminary conceptualisation and will need to be strengthened by additional research, discussion and debate.

We propose here that environmentally forced migrants/ refugees be properly recognised within some form of international treaty.

While this takes place however, it is essential to keep in mind why we propose here that environmentally forced migrants/refugees be properly recognised within some form of international treaty: it is so that displaced individuals or groups of individuals are afforded the same or similar rights as refugees displaced by other causes and recognised under the 1951 Refugee Convention. Furthermore there is, unfortunately, increasing scientific evidence pointing to the continuous deterioration of our environment. Such findings are being made irrespective of the scale of analysis of the scientific investigation. Land degradation will continue unabated unless we address the issue seriously; global warming will not be halted any time soon even if drastic measures are taken today because of inertia in the global climate system; the impacts of environmental disasters are likely to continue increasing due to a combination of environmental deterioration and socio-economic factors such as population increase, international migration to hazard-prone areas and our failure to eradicate poverty which contributes to vulnerability. It is important that the debate continue but it should not impede the development of adequate policies that can then be converted to concrete actions to address the issue of environmentally forced migrants/refugees before it is too late and at a point when the international community has to deal with a major human catastrophe of mass displacement for which it is caught unprepared. The five-pronged policy approach proposed above and which should be implemented jointly with efforts to limit further environmental degradation and with efforts to eradicate poverty, aims to provide the framework to develop concerted actions and measures helping to avoid such a situation.

Abbreviations

CSIRO	Commonwealth Scientific and Industrial Research Organisation
EACH-FOR	Environmental Change and Forced Migration Scenarios
EC	European Commission
EM-DAT	Emergency Disasters Data Base
GEF	Global Environmental Facity
GNP	Gross National Product
HR	House Resolution
IASFM	International Association for the Study of Forced Migration
IBRD	International Bank for Reconstruction and Development
IDPs	Internally Displaced Persons
IOM	International Organisation for Migration
IPCC	Intergovernmental Panel on Climate Change
IPLD	International Panel on Land Degradation
IFRCRCS	International Federation of Red Cross and Red Crescent Societies
IYDD	International Year of Deserts and Desertification
MA	Millennium Ecosystem Assessment
NGO	Non Governmental Organisation
OAU	Organisation of African Unity
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-FPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNU-EHS	United Nations University Institute for Environment and Human Security

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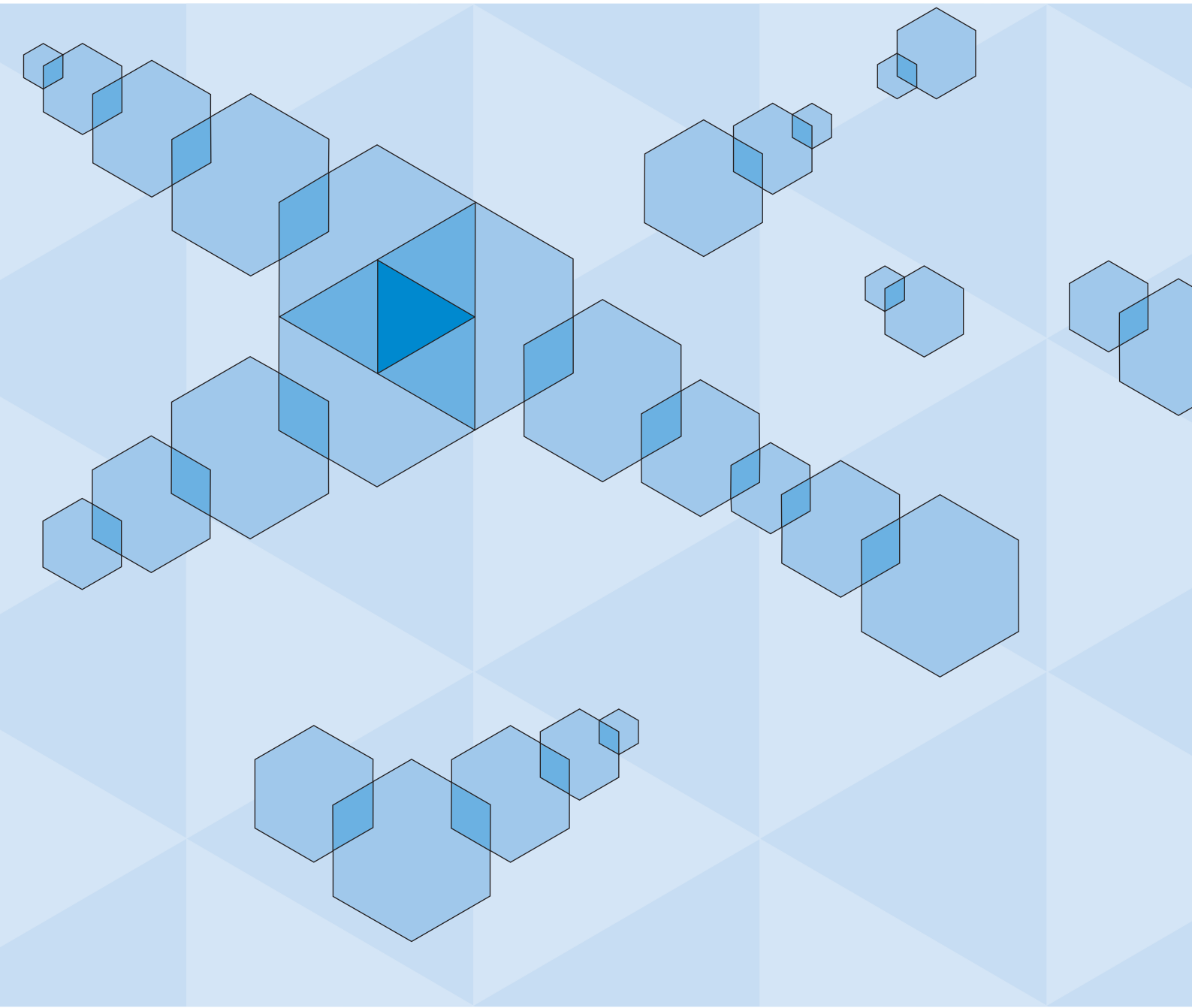

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