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Migration as a sustainable adaptation strategy

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1. Introduction

Climate migration is increasingly identified as one of the major challenges resulting from climate change,² while its scope is only very roughly estimated between 50 million and 1 billion climate migrants by 2050.³ Climate migration results in particular from a rise of the sea level threatening low lying small island developing states (e.g.: Tuvalu, the Maldives) and low lying coastal areas, mainly in developing countries (e.g.: deltas of the Ganges, Mekong, Niger and Nile), but also from land degradation, drought and desertification (e.g.: African Sahel, Mexico). The increasing frequency and severity of extreme weather events also increase the vulnerability of certain populations already leaving in vulnerable environments, creating an additional inducement to migration. For example, Dasgupta et al. estimated that, in Bangladesh, “[a] 27-centimeter sea-level rise and 10 percent intensification of wind speed from global warming suggests the vulnerable zone increases in size by 69 percent given a +3-meter inundation depth and by 14 percent given a +1-meter inundation depth.”⁴

Migration can result from sudden disasters that push large populations on the road or on the sea at once. It can also be caused by slow-onset environmental degradations that gradually reduce economic opportunities in a region, resulting in higher rates of emigration. In addition, climate change can be an indirect cause of migration, either through conflicts induced by increased competition over natural resources or by other climate migration flows,⁵ or through mitigation projects: many people have for instance been displaced by the construction of huge dams whose aim is, at least partly, to reduce greenhouse gas emissions.⁶

This paper reacts to an oft-heard idea that climate migration is intrinsically an undesirable phenomenon and that public authorities should strive to avoid it through adaptation. Therefore, this paper argues that migration should potentially be considered as part of a sustainable adaptation strategy: the costs and advantages of a adaptation through migration should be compared with those of other adaptation options. Part 1 compares two approaches of climate migration: the analysis of

² See e.g.: Bonnie Docherty & Tyler Giannini, *Confronting a Rising Tide: a Proposal for a Convention on Climate Change Refugees*, 33 HARV. ENVTL. L.REV. 349 (2009); Frank Biermann & Ingrid Boas, *Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees*, 10 GLOBAL ENVTL POL. 60 (2010); Jane McAdam & Ben Saul, *Displacement with Dignity: International Law and Policy Responses to Climate Change Migration and Security in Bangladesh*, 53 GERMAN Y.B. INT’L L. 1 (2010); J. Mcadam, “Swimming against the Tide: Why a Climate Change Displacement Treaty is Not the Answer” (2011, forthcoming) 23:1 INT’L J. REFUGEE L.; Benoît Mayer, *The International Legal Challenges of Climate-Induced Migration: Proposal for an International Legal Framework*, 22 COLO. J. INT’L L. & POL’Y (2011, forthcoming).

³ See e.g.: UN, *Report of the Secretary-General on Climate change and its possible security implications*, September 11, 2009, document A/64/350, available at <http://www.unhcr.org/refworld/docid/4ad5e6380.html>, at §54; Christian Aid, Interview with Norman Myers (London, 14 March 2007), cited in *Christian Aid, Human Tide: The Red Migration Crisis* (2007) at 48; Norman Myers, “Environmental Refugees: An Emergent Security Issue” (Paper presented to the 13th OSCE Economic Forum, Prague, 23 May 2005), online: http://www.osce.org/documents/eea/2005/05/14488_en.pdf.

⁴ Susmita Dasgupta et al., *Vulnerability of Bangladesh to Cyclones in a Changing Climate, Potential Damages and Adaptation Cost* (World Bank Policy Research Working Paper 5280, 2010), online: <http://ssrn.com/abstract=1596490>, abstract.

⁵ See Walter Kälin, *The Climate Change - Displacement Nexus* (presentation at the ECOSOC Panel on Disaster Risk Reduction and Preparedness: Addressing the Humanitarian Consequences of Natural Disasters, June 16, 2008), available at http://www.brookings.edu/speeches/2008/0716_climate_change_kalin.aspx?p=1.

⁶ See generally: Alex de Sherbinin, Marcia Castro & Francois Gemenne, *Preparing for Population Displacement and Resettlement Associated with Large Climate Change Adaptation and Mitigation Projects* (Background Paper for the Bellagio Workshop, 2-6 November 2010), available at http://www.iddri.org/Activites/Ateliers/101103_bellagio%20workshop_background%20paper.pdf, at 2.

migration as a failure of adaptation to climate change, and the approach of adaptation as a sustainable adaptation strategy as supported by this paper. Part 2 shows how different “climate migration” actually covers very different possible adaptation strategies, ranging from circular migration to permanent collective resettlement.

2. Reconciling adaptation and migration

2.1. Migration as a failure of adaptation

Climate migration is often considered negatively, as something that should have been avoided if that had been possible. Accordingly, climate migration represents a double failure. Firstly, it reflects a failure of mitigation: the incapacity of the international community, particularly developed countries, to prevent climate change. This first failure of mitigation created a need for adaptation: a significant change in environmental conditions is occurring and something should be done for vulnerable populations to cope with it. Yet, a second failure is that of adaptation: the incapacity of local or national authorities and communities to cope with changing environmental conditions. In other words, this view assumes that climate migrants move *because* they could not adapt, not as a result of a choice. They are “forced migrants.”

Indeed, the frequent notion of “climate refugees”⁷ do reflect this conception of climate migrants as forced migrants. Climate migrants do not fall within the scope of the Convention Relating to the Status of Refugees as they are not unable to come back to their home country “owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion.”⁸ In other words, the political source of persecution lacks for climate migrants to be political refugees. Yet, the oft-heard comparison between climate migrants and political refugees brought a certain understanding of the former as at least comparable to the latter. A similar double failure of the international community can actually be invoked in the case of political refugees. Firstly, the international community was unable to guarantee liberal regime everywhere, despite constant efforts to promote human rights (e.g.: minority rights) worldwide. Secondly, the international community did not intervene to protect the populations affected by this illiberal regime. Because the international mechanisms supposed to ensure “collective security” failed and resulted in forced migration, the international community is accordingly bound to welcome political refugees. Such responsibility-based arguments may be even more convincing when transposed to climate change induced migration, as it could relate to the historical (and present) “responsibility” of polluting states reflected for instance in the notion of a “common but differentiated responsibility.”⁹ Thus, the

⁷ See e.g.: Lester R. Brown, *Climate Refugees' Growing Tab*, USA TODAY (July 21, 2007); Emma Brindal, *Asia-Pacific: Justice for Climate Refugees*, 32 ALT. L.J. 240 (2007); Mike Hulme, *Commentary: Climate Refugees: Cause for a New Agreement?* 50 ENVIRONMENT 50 (2008), available at <http://www.environmentmagazine.org/Archives/Back%20Issues/November-December%202008/hulme-full.html>; Docherty & Giannini, *supra* note 2; Maria Stavropoulou, *Drowned in Definitions?*, 31 FORCED MIGRATION REV. 11, 12 (2008), available at <http://www.fmreview.org/FMRpdfs/FMR31/FMR31.pdf>.

⁸ *Convention relating to the Status of Refugees*, 189 U.N.T.S. 150, 28 July 1951, art. 1(A)2. See also *Protocol Relating to the Status of Refugees*, 606 U.N.T.S. 267, 4 October 1967, art. 1.2.

⁹ *Declaration of the United Nations Conference on the Human Environment*, 16 June 1972, UN Doc. A/Conf.48/14/Rev. 1, 11 I.L.M. 1416, principle 23; *Rio Declaration on Environment and Development*, 14 June 1992, UN Document A/CONF.151/26 (Vol. I), principle 7; *United Nations Framework Convention on Climate Change*, 9 May 1992, 1771 U.N.T.S. 107, 6th recital, art. 3(1) and art. 4. See generally Agnès Michelot, “A la recherche de la justice climatique: perspectives à partir du principe de responsabilités communes mais

comparison between political refugees and “climate refugees” led several scholars to plead in favor either of an extension of the scope of the Convention of the Status of Refugees,¹⁰ or of the drafting of a similar convention.¹¹

However, the comparison between political refugees and climate migrants is misleading, at least for three reasons. Firstly, climate migrants do not “exist” in the same way as political refugees. Political refugees are individuals that can be clearly distinguished from other migrants (i.e.: economic migrants) by their definition resulting from the Convention Relating to the Status of Refugees and its 1967 protocol.¹² Yet, the definition of climate migrants cannot be transposed in such an operational criterion: climate change is most often an inducement of migration, but very rarely a direct and unique cause of migration. While Jews fleeing Germany in the 1930s and early 1940s clearly migrated to escape persecution, “climate migrants” most often follow pre-existing migration flows of economic migrants, and rarely lead to new and separate migration patterns. In other words, determining the causal link between climate change and a given migrant may be extremely difficult, especially when migration happens gradually, following slow-onset environmental degradation. The picture gets even more complex when migration is indirectly caused by climate change: for instance when many Nigerien pastoralists come to the Northern Nigeria, creating higher competition on the resource of the region (which is itself affected by drought), thus pushing Northern Nigerian pastoralists to migrate in turn.¹³ In such cases, even more clearly, environmental degradation is only one inducement of migration among others, such as economic opportunities or socio-political stability. The distinction would be obvious in the case of a vast and sudden exodus of people fleeing an inundated island, but this scenario is the exception, not the rule. Bangladeshis affected by frequent floods go to the slums around Dhaka as some of them would do, even if they were no floods, to seek for economic opportunities; climate inducement is reflected in the overall numbers, not in individual cases. Environmental degradation will lead to an increase of the proportion of people who decide to migrate, but it may be difficult to determine specifically which individual is a “climate migrant” and which one is an “economic” one. Most frequently, individual, spontaneous “climate migrants” remain within the borders of a state, with the closest town being the most natural destination for most of them who merely want to find a job.¹⁴ However, part of those spontaneous climate migrants try to go abroad,

différenciées,” in CHANGEMENTS CLIMATIQUES ET DEFIS DU DROIT (Christel Cournil & Catherine Colard-Fabregoule eds. 2010) 183.

¹⁰ See: Republic of the Maldives Ministry of Environment, Energy and Water, *Report on the First Meeting on Protocol on Environmental Refugees: Recognition of Environmental Refugees in the 1951 Convention and 1967 Protocol Relating to the Status of Refugees* (Male, Maldives, 14–15 August 2006), cited in Franck Biermann & Ingrid Boas, “Protecting Climate Refugees: The Case for a Global Protocol” (2008) 50 ENVIRONMENT 8; Jeanhee Hong, “Refugees of the 21st Century: Environmental Injustice” (2001) 10 CORNELL J. L. & PUB. POL’Y 323.

¹¹ Docherty & Giannini, *supra* note 2.

¹² See: *Convention relating to the Status of Refugees*, *supra* note 8, art. 1(A)2 (defining a refugee as a person who “As a result of events occurring before 1 January 1951 and owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it”); *Protocol Relating to the Status of Refugees*, *supra* note 8, art. 1.2 (removing the temporal limitation of the source of persecution).

¹³ See e.g.: US Humanitarian Information Unit, *Niger and Nigeria: Food security drives population movement* (July 30, 2010), available at

https://hiu.state.gov/Products/NigerNigeria_FoodSecurityDrivesPopulation_2010Jul30_HIU_U239.pdf.

¹⁴ *Id.*

even illegally. For example, Feng et al. have showed “a significant effect of climate-driven changes in crop yields on the rate of emigration [from Mexico] to the United States.”¹⁵

A second reason to reject a comparison between climate migrants and political refugees is that climate migrants have specific protection needs that are different from the protection provided by the regime on political asylum. Political refugees are treated as individuals, not as groups. All political refugees fall within the same, undifferentiated category of “political refugees.” On the other hand, climate migrants flows can be individual or collective, but the climate change inducement to migration always affects a community, not solely individuals. Climate migration may be temporary or definitive; in the latter case, assimilation should be a right. Regarding refugees, any right to assimilation is excluded as it is considered that the right to political asylum is limited to the length of the risk of persecution in the home country. Very particular circumstances of climate migration should be taken into account, for instance the possibility that the whole nation living on an island state would need to be relocated to a safe place. Therefore, ad hoc treatment may be more efficient than a general, abstract legal regime.

A third reason against the comparison of climate migrants and political refugees is that climate migrants should be granted a preventive protection, as opposed to the essentially reactive nature of the protection of political refugees. Indeed, a “political refugees” is only recognized as such when he has reached a country other than his country of origin. Furthermore, flight of asylum seekers is rarely expected long before it happens: nobody could have foreseen the departure of thousands of Libyans, even one year ago. On the other hand, local environmental change and climate migration flows are foreseen with growing precision, years or decades before it happens. For instance, it is now well-established that a group of low lying islands will disappear under water within one century, that many large deltas will become uninhabitable, that land will considerably degrade in certain areas of sub-Saharan Africa and Central America, and that climatic hazard will increase everywhere, threatening the most vulnerable populations. Uncertainty remains as to speed and scope of environmental change or the time of occurrence of extreme weather events, but the mainlines make little doubt.

Therefore, unlike political asylum, climate migration can be foreseen and planned well in advance, without waiting for an avoidable disaster. As Bierman and Boas argue, a “planned and voluntary resettlement and reintegration of affected populations over periods of many years and decades” should be preferred to “mere emergency response and disaster relief.”¹⁶ This point could perhaps be illustrated by the consequences of the hurricane Katrina in New Orleans. In the few days before the Hurricane Katrina hit New Orleans, hundreds of thousands of persons were temporarily displaced.¹⁷ This sort of climate migration follows a failure to adapt: the hurricane preparedness for New Orleans was severely criticized and the Bush administration recognized that it had learned lessons from the catastrophe.¹⁸ Adaptation should perhaps have consisted in more solid dykes, but it may also have consisted in preventing settlement in at least some of the most dangerous areas, some of which lie 10

¹⁵ Shuaizhang Fenga, Alan B. Kruegera & Michael Oppenheimer, *Linkages among climate change, crop yields and Mexico–US cross-border migration* 17:32 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 14257 (2010), available at <http://www.pnas.org/content/early/2010/07/16/1002632107>.

¹⁶ F. Biermann & I. Boas, *Protecting Climate Refugees: The Case for a Global Protocol*, 50 ENVIRONMENT 8, 12 (2008).

¹⁷ Kate Zernike & Jodi Welgoren, *The Displaced, In Search of a Place to Sleep, and News of Home*, NEW YORK TIMES (August 31, 2005), available at http://www.nytimes.com/2005/08/31/national/nationalspecial/31stranded.html?_r=1&scp=1&sq=katrina+displaced&st=nyt.

¹⁸ FRANCES FRAGOS TOWNSEND, *THE FEDERAL RESPONSE TO HURRICANE KATRINA: LESSONS LEARNED* (February 2006), available at <http://library.stmarytx.edu/acadlib/edocs/katrinawh.pdf>.

feet below normal sea level, in an area prone to be affected by extreme weather events: hurricane Katrina created a 16 feet storm surge. Conducting a case analysis and taking a position on the question would go much beyond the scope of this paper, but one may at least ask whether some form of permanent resettlement could have been considered before the catastrophe. In the follow up of the hurricane, more one third of the population of New Orleans definitely migrated.¹⁹

Considering climate migration as a failure of adaptation reflects the idea that migration is a wrong on its own, and, therefore, should be prevented, as shown in the policies of hostility to migration that many Western states currently implement. For instance, the International Organization for Migration (“IOM”) considered that, “[i]n areas prone to natural disasters, as well as in areas severely affected by the effects of climate change, [its] foremost objective [should be] to reduce unmanaged migration pressure, preventing forced migration while also ensuring that the migration taking place is managed.”²⁰ On the contrary, next section argues that, under certain circumstances, migration may be an efficient strategy of adaptation. The wrong is not migration, but unmanaged migration, resulting in development of slums, human trafficking and “fourth world.”

2.2. Migration as adaptation

While many current climate migrants clearly reflect a failure of adaptation efforts, this paper argues that climate migration could also be monitored as part of adaptation strategies. Conceived as adaptation, migration is not forced, but voluntary; it is not reactive, but preventive; it is not precipitated, but anticipated; it is not “inflicted” on public authorities, but decided and organized by them or, at least, with them, with the aim of reaching a mutually beneficial program. Like other adaptation strategies, migration may be a way for a community to cope with a change in environmental conditions. This may even be the only realistic strategy under certain circumstances.

Let’s take the case of small, low-lying islands developing states such as Tuvalu and the Maldives, which may be permanently submerged before the end of the Century if nothing is done.²¹ What adaptation is possible, on the long term, to a rise of the sea level? Male, the capital city of the Maldives, is inhabited by one hundred thousand inhabitants, who live on the five square kilometers of a unique island – one of the most densely populated places in the world. In an attempt to protect the island from storm surge and king tides, a 3.5 meter high concrete wall has been built.²² Yet, one may wonder whether a wall may be sufficient to safely protect an isolated and densely populated low lying island that is going to face always more frequent and more extreme weather events. The situation is even worse for the rest of the country, that count 193 other inhabited islands, 1,5 meter high in average. Even though the technology for adaptation may exist or be developed, applying it to the most

¹⁹ Cain Burdeau, *New Orleans' Has Highest Population Since 2005*, BLACK AMERICA (March 19, 2009)

²⁰ INTERNATIONAL ORGANIZATION FOR MIGRATION, *DISASTER RISK REDUCTION, CLIMATE CHANGE ADAPTATION AND ENVIRONMENTAL MIGRATION: A POLICY PERSPECTIVE* (2010), available at http://www.iom.int/jahia/webdav/shared/shared/mainsite/activities/env_degradation/DRR-CCA-Policy-Paper-Final.pdf.

²¹ See generally: Ilan Kelman, *Island Evacuation*, 31 FORCED MIGRATIONS REV. 20, 20 (2008), available at <http://www.fmreview.org/FMRpdfs/FMR31/FMR31.pdf>. See also: REPUBLIC OF MALDIVES, *FIRST NATIONAL COMMUNICATION OF THE REPUBLIC OF MALDIVES TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE* (Malé: Ministry of Home Affairs, Housing & Environment, 2001), available at < <http://unfccc.int/resource/docs/natc/maldnc1.pdf>, at 49 sq. For a thorough presentation of Tuvalu facing climate change, see: Patrick Barkham, *Going down*, THE GUARDIAN (February 16, 2002), available at <http://www.guardian.co.uk/environment/2002/feb/16/weekendmagazine.globalwarming>.

²² *Sea wall 'saves Maldives capital'*, BBC NEWS (January 10, 2005), available at http://news.bbc.co.uk/2/hi/south_asia/4161491.stm

remote territories would have extensive costs that a developing state, even with important international aid, will certainly not be able to afford. On the economic point of view, the risk is that the Maldives will increasingly rely on foreign aid; on a human perspective, ill-funded adaptation may be unsafe.

For several years at least, the Maldives have undertaken policies that “promote internal migration to facilitate population and development consolidation and to reduce in-migration to selected islands.” This plan includes to:

1. “Establish qualitative and quantitative standards for facilities such as schools, shops, health care services and recreation spaces in residential areas.
2. Conduct advocacy and awareness raising for population consolidation and regional development.
3. Provide long term solutions like land-reclamation, resettlement or increase accessibility for small or isolated islands.
4. Develop employment and income earning opportunities in growth centres.
5. Develop comprehensive urban centres with a variety of public and private facilities.”²³

Even though this “population policy” does not mention adaptation to climate change, this is obviously one of the objectives at issue. In its 2009 National Program of Adaptation to Climate Change, the government of the Maldives highlighted that it had adopted this program “[t]o address the challenges posed by environmentally vulnerable islands, that are currently experiencing severe impacts from climate change and associated sea level rise, with remote and dispersed population.”²⁴ Regrouping populations on less numerous islands will certainly allow to increase the safety of the population, but adaptation remains a very great challenge in the Maldives as a whole.

The Maldives are not the only case of low lying small islands threatened by climate change. Another adaptation program relying on migration has been implemented in the six Carteret atolls in Papua New Guinea, where a 2,325 people community used to live. Like in many similar cases, climate change and rise of the sea level is only one of several factors of vulnerability, together with soil erosion and dynamic geological features. Any agriculture became impossible after salt water infiltrated in the ground, and the inhabitants have become highly dependent on aid and remittance sent by expatriates. In 2007, the government of Papua New Guinea apparently promised to adopt a \$800,000 relocation program, but this was not implemented.²⁵ Thus, the local community set up their own relocation plan, helped by the Catholic Church which provided a field in Bougainville, and part of the families have already been relocated.²⁶

When the costs and advantages of migration are compared with those of other adaptation strategies, migration may appear as a very preferable adaptation strategy. On the one hand, migration may

²³ Maldives Ministry of Planning and National Development, *Population policy of the Maldives* (working document, July 2004), available at <http://planning.gov.mv/publications/PopulationPolicyMaldives.pdf>, goal 26, at 38.

²⁴ Ministry of Housing, Transport and Environment, *National Adaptation to Climate Change* (background paper for the Maldives Partnership Forum, March 23-24, 2009), available at <http://www.maldivespartnershipforum.gov.mv/pdf/Adaptation%20to%20Climate%20Change.pdf>, at 10-11

²⁵ Rowan Callick, *Sinking islanders await rescue*, THE TIMES (December 18, 2010).

²⁶ Dr. Sanjay Gupta, *Pacific swallowing remote island chain*, CNN (July 31, 2007), available at <http://www.cnn.com/CNN/Programs/anderson.cooper.360/blog/2007/07/pacific-swallowing-remote-island-chain.html>. See also the website of the association Tulele Peisa, <http://www.tulelepeisa.org/>.

certainly be a sound economic decision. Isolated islands such as those of the Carteret atolls are often highly dependent on external assistance. Agriculture is ruined by sea water infiltration, and seafood remains the only source of revenue. Delocalizing elsewhere, following an adequate, culture-sensitive program, may open many developmental opportunities. The cost of an accompanied resettlement program can be small when compared with the cost of staying and trying to cope with increasingly bad conditions.

On the other hand, in terms of security, migration may also be a safer solution than in situ adaptation. Preventing human settlement in dangerous places is a very common practice in many countries. When a population has already settled in such a place, adaptation may be possible, but the risk of a failure must be kept in mind. Adaptation failure is a very concrete reality that endangers and condemns the lives of many if, for example, a dike breaks in the middle of a hurricane, as happened in New Orleans. Leaving below or low above the sea level is, in itself, a risk, which can be mitigated, but never removed, by the construction of dikes. Including migration within an adaptation strategy, as one option amongst others, allows, when necessary, early planned preventive action, as opposed to incremental adaptation with the risk of a deathful environmental disaster.

3. Framing migrations programs as sustainable adaptation strategies

There is a wide range of possible migration-based adaptation strategies. Climate migration can be temporary or definitive. In certain circumstances, of course, “temporary” climate migration may transform into definitive resettlement: this was the case of some of the displaced persons from New Orleans who never came back after their homes were destroyed. Climate migration also ranges from purely individual initiatives, that may be regulated or encouraged by public policies, to concerted resettlement programs or mandatory temporary displacement decided by public authorities. Below is a matrix of four possible forms of climate migration that are discussed in this part.

Degree of political coordination / Expected length	Individual	Communities
Temporary	Circular migration	Temporary displacement
Definitive	Individual assimilation abroad	Permanent resettlement

The distance of the migratory flows is another dimension that is not specifically discussed here, but should be considered when comparing the costs and advantages of migration with those of other adaptation strategies.

3.1. Circular Migration

Circular migration is certainly the “lightest” form of climate migration. Circular migrants earn money and send remittances; because remittances often reach some of the poorest in a given society, they are

said to be one of the most efficient development tools.²⁷ Circular migrants do not bring only financial resources, but also new ideas and new skills, thus possibly acting as development agents within a society. Amongst many other examples, de Brauw and Harigaya showed that circular migration have greatly contributed to splitting the benefits of the Vietnamese growth between urban centers and rural communities.²⁸ Circular migration allows to keep link with both the place of origin and the place of destination; it may be a first step toward a permanent individual migration. Alternatively, circular migration may be a way to relieve pressure over local natural resources.²⁹

Circular migration is in no case something new: it has been implemented for a long time in many societies. Amongst other examples, the circular migration of young adults in the Sahel, between rural communities and industrial towns to search for work during the dry season, has been documented for several decades now.³⁰ In other cases, circular migration is organized by states and international organizations. This is the case in particular of the Colombian “Temporary and Circular Labour Migration” program, through which rural Colombians are sent to Spain for a period of work. Even though this program is not explicitly linked with climate change, most migrants concerned are victims of natural disaster in Colombia and their brief stay abroad temporarily decreases the pressure on the soil and allows environment to recover. Public support to this program, from both governments and also the International Organization for Migration, funded training programs for those migrants, with the goal that, when coming back home, these migrants will become “development agents.”³¹ This shows how circular migration may be a form of sustainable adaptation with limited costs and great advantages.

3.2. Individual assimilation

Climate migrants are most instinctively perceived as permanent migrants. This notion of “climate migrants” necessarily being permanent individual migrants relates to the frequent comparison between climate migrants and political refugees – even though the protection of political refugees lasts only as long as their persecution in their home country, this, in practice, generally means permanent migration. Yet, here again, the comparison is misleading. In the case of political refugees, their persecution prevents them from returning home at any time until a change of political context. On the contrary, climate migrants are often able to return to their country at least for a short period: their country may be dangerous only during certain seasons (e.g. the monsoon and hurricane season in Bangladesh, or the dry season in the Sahel), or they may solely be deprived of means of existence without any immediate threat to their life or security. In many circumstances, circular migration may be sufficient; but in other cases, environmental degradation may reach a “tipping point where the costs of return migration outweigh the value of maintaining ever declining means of local

²⁷ See e.g.: Priya Deshingkar, *The role of circular migration in economic growth*, 2 AGRICULTURE & RURAL DEVELOPMENT 54 (2006), available at <http://www.odi.org.uk/resources/download/4187.pdf>.

²⁸ Alan de Brauw & Tomoko Harigaya, *Seasonal Migration and Improving Living Standards in Vietnam* 89 AMER. J. AGR. ECON 430, 443-44 (2007).

²⁹ See generally: International Organization for Migration, *Migration and the Environment* (discussion note, November 1, 2007), doc. no. MC/INF/288, available at http://www.iom.int/jahia/webdav/shared/shared/mainsite/about_iom/en/council/94/MC_INF_288.pdf, §10.

³⁰ Oli Brow, “*Eating the Dry Season*”: *Labour mobility as a coping strategy for climate change* (Opinions and insights from the International Institute for Sustainable Development, June 2007), available at http://www.iisd.org/pdf/2007/com_dry_season.pdf.

³¹ See generally the page on “Colombia” on the website of the International Organization for migration, <http://www.iom.int/jahia/Jahia/colombia>.

livelihood,³² thus leading to permanent migration. In those latter cases, climate migrants need not a temporary asylum, but rather seek new economic opportunities.

Individual migrants first want to go to the place where they have cultural links and may already have some relatives. Therefore, most of the time, individual migrants are displaced within their state. Already during the 1984-85 famine in Ethiopia, 600,000 persons were displaced, with the support of the government, often on long distance, but always within the national borders.³³ In other circumstances, however, individual climate migrants have no choice but to cross international borders. This is almost necessarily the case in very small countries such as the Maldives and Tuvalu. For instance, migrants from Tuvalu mainly head to New Zealand, Fiji and Australia.³⁴ In other circumstances, internal environmental and demographic pressure renders internal migration unsustainable. Such is the case of Nigeria, for instance, where a very strong demographic growth combines with severe environmental constraints: land degradation, drought and desertification in the North, and floods in the Niger delta in the South. In addition, climate migration flows from Niger to Nigeria still increases the pressure on environmental resources in the latter country. States may try to control or merely prevent international migration. However, it is likely that prohibiting flows of forced migrants will not prevent them: if they have no other option, migrants will go through illegal channels, possibly reinforcing human and drug trafficking and other forms of international organized criminality.

Individual assimilation in another environment is a very costly and difficult adaptation strategy. When moving, an individual loses his social marks. Social and cultural differences between the place of origin and the place of destination may be huge, and climate migrants are often low-educated persons who may have difficulties adapting to a new social environment. The result may be a spiral of exclusion and poverty. In Bangladesh, for example, half a million rural inhabitants of the South are displaced by floods every year and most of them abound the shantytowns surrounding Dhaka.³⁵ The same exclusion happened in developed states, for instance in California after the arrival of thousands of “Okies” fleeing the dust bowl, in the 1930s. In other cases, the high number of persons displaced may increase resource scarcity at the place of destination and trigger conflicts, as happened in Darfur.³⁶

The key for a successful individual assimilation is active public support. Before departure and after arrival, individual migrants need to be trained to live in a new environment. Their professional skills must be adapted. If need be, they should be provided with language training. But at the very least, rights should be recognized and protected. Unlike political refugees, climate migrants may be permanent migrants, with close to no hope to be able to come back home, in an submerged area or in

³² International Organization for Migration, Migration and the Environment (discussion note, November 1, 2007), doc. no. MC/INF/288, available at

http://www.iom.int/jahia/webdav/shared/shared/mainsite/about_iom/en/council/94/MC_INF_288.pdf, §12.

³³ H. Kloos & A. Aynalem, *Settler Migration During the 1984-85, Resettlement Programme in Ethiopia*, 19 GEO-JOURNAL 113 (1989).

³⁴ François Gemenne & Shawn Shen, *Tuvalu and New Zealand* (Environmental Change and Forced Migration Scenarios program, case study, 15 February 2009), available at http://www.each-for.eu/documents/CSR_Tuvalu_090215.pdf.

³⁵ See: Lisa Friedman, *Bangladesh needs the West's help, but isn't waiting for it*, E&E NEWS, available at http://www.eenews.net/special_reports/bangladesh/; Syful Islam, *Dhaka in building boom to accommodate climate migrants*, ALERTNET (February 12, 2010), available at <http://www.trust.org/alertnet/news/dhaka-in-building-boom-to-accommodate-climate-migrants/>.

³⁶ See e.g. VIKRAM OEDRA KOLMANSKOG, *FUTURE FLOODS OF REFUGEES: A COMMENT ON CLIMATE CHANGE, CONFLICT AND FORCED MIGRATION* (2008), available at http://www.nrcfadder.no/arch/img.aspx?file_id=9904602, at 18.

a desert at any time. Public should strive to assimilate them with local populations, including naturalization in case of transnational migration.

3.3. Temporary displacement

Massive temporary displacements can follow or anticipate huge disasters. There are plenty of examples of natural disasters leading to massive displacements. Hundreds of thousands of inhabitants of New Orleans were displaced before the arrival of the hurricane Katrina in 2005.³⁷ The 2010 Pakistan floods displaced 6 to 7 million persons.³⁸ In some cases, damages due to natural disasters prevent return: temporary displacement is prolonged and may become permanent.³⁹

Even more than other forms of climate migration, temporary displacement is often perceived as a failure of adaptation rather than as part of adaptation. The United States failure to anticipate a catastrophe in New Orleans was severely criticized. People lost homes, and many lost lives. In New Orleans and elsewhere, adaptation should have reduced vulnerability and prevented such catastrophes. However, an adaptation strategy must also be realistic: technology may be insufficient to prevent all environmental hazard, and emergency temporary displacement may be necessary at some time when facing an exceptional climate hazard. Adaptation should include disaster risk management strategies whose aim is to increase preparedness to a natural disaster which would lead to an adaptation failure.⁴⁰ In other words, adaptation should extend to preparing the possibility of its own failure.⁴¹ This includes in particular early warning systems and response plans and sanitary assistance.

3.4. Permanent resettlement

Permanent resettlement is the most extreme migration solution, but it may be a very rational adaptation strategy in certain circumstances. A community can take a decision to go, collectively, to another place. Resettlement can be implemented at once or over a long period of time. For example, The Carteret Islands relocation program began several years ago and has not yet been fully implemented, even though it concerns only a few hundred families.⁴²

Kivalina, in Alaska, is a 400 inhabitant indigenous community situated on a small and narrow peninsula. Since 1952, the village has been considering relocation, as erosion was already threatening the village. Referendums were organized in 1953 and 1963, but no majority was in favor of relocation. Only in 1992, however, a third referendum approved relocation, with a very wide majority: 72 votes against 7. In the past two decades, the village has been striving to implement this decision,

³⁷ See *supra* note 17 and accompanying text.

³⁸ Carlotta Gall, *Evacuations Continue in Southern Pakistan*, NEW YORK TIMES (August 27, 2010), available at http://www.nytimes.com/2010/08/28/world/asia/28pstan.html?_r=1&scp=3&sq=displaced%20pakistan&st=cse.

³⁹ International Organization for Migration, Migration and the Environment (discussion note, November 1, 2007), doc. no. MC/INF/288, available at http://www.iom.int/jahia/webdav/shared/shared/mainsite/about_iom/en/council/94/MC_INF_288.pdf, §13.

⁴⁰ See: *Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, advanced unedited version, adopted by the Conference of the Parties to the UNFCCC, 16th Session, 10 December 2010, online: http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf, §14(e).

⁴¹ This is substantially the argument developed in INTERNATIONAL ORGANIZATION FOR MIGRATION, DISASTER RISK REDUCTION, CLIMATE CHANGE ADAPTATION AND ENVIRONMENTAL MIGRATION: A POLICY PERSPECTIVE (2010), available at http://www.iom.int/jahia/webdav/shared/shared/mainsite/activities/env_degradation/DRR-CCA-Policy-Paper-Final.pdf.

⁴² *Supra* note 25 and accompanying text.

facing in particular budgetary issues. The place of destination which was selected is only a few miles away from the current location of the village.⁴³

Tuvalu, a low-lying small island developing state in the Pacific, which is inhabited by only 10,000 inhabitants, has also contemplated a collective resettlement, as the whole country is endangered by a rise of the sea level and by extreme weather events. However, a new Prime Minister elected in 2006 rejected any such program, stating that “Tuvalu is a nation with a unique language and culture” and that “[r]esettlement would destroy the very fabric of our nationhood and culture.” Accordingly, collective resettlement is “the last option – an option we do not want to face.”⁴⁴

Permanent resettlement brings many challenges. Firstly, a legal challenge concerns international relocation: Tuvalu, for instance, could not relocate but on another state’s territory. Secondly, the socio-economic integration of resettled climate migrants may constitute a major challenge. This latter difficulty appeared through the Vietnamese “living with floods” program, a resettlement plan of 20,000 landless and poor households living in regularly flooded areas to very close but safer places.⁴⁵ Criticisms of this program showed that it had destroyed social links and economic organizations.⁴⁶ The socio-economic challenges of protecting social links during resettlement would certainly be much greater in the case of a long distance relocation. Part of the challenge is to relocate the community as such, without destroying the links that unite individuals within the community.

Moving as a group, rather than as individuals, may reduce the cost of adaptation and it may enable a community to preserve its cultural identity. However, it requires a collective decision that may be difficult to take. Obviously, nobody should be forced to move with others, but, as a matter of fact, a minority of persons opposed to a resettlement would have little choice but to follow the majority, or to be isolated.

4. Conclusion

This paper argues that, under certain circumstances, migration may be a sustainable adaptation strategy. Part 2 argued that migration should be integrated within adaptation strategies, and not only conceived as a last resort solution after a failure of adaptation. Part 3 showed that climate migration can take different forms, reflecting different degrees of actual or expected environmental change, and that these different forms of migration can constitute sustainable adaptation strategies in different circumstances.

This paper could not extensively deal with several thorny issues, which should at least be mentioned. Firstly, one may wonder whether the whole contemporary approach of (climate) migration as a burden for the place of destination is right. Immigration is not necessarily an economic burden; it may also be a factor of economic development for the place of destination, as immigrants, like anyone else, do work, consume and live. Furthermore, climate migration is always conceived as emigration from a negatively affected place, a pushing pole. But other countries or regions may be positively affected by

⁴³ Page on “relocation” on the website of the “City of Kivalina,” available at <http://www.kivalinacity.com/kivalinarelocation.html>.

⁴⁴ Apisai Ielemia, *A Threat To Our Human Rights: Tuvalu’s Perspective On Climate Change*, 44 UN CHRONICLE 18, 18 (2007).

⁴⁵ KOKO WARNER ET AL., IN SEARCH OF SHELTER: MAPPING THE EFFECTS OF CLIMATE CHANGE ON HUMAN MIGRATION AND DISPLACEMENT (2009), available at

http://www.care.org/getinvolved/advocacy/migration_report.asp, 2:15.

⁴⁶ *Id.*

climate change, or, at least, they may benefit from new opportunities thanks to climate change – even though they will have to bear the cost of adapting to these new opportunities. For example, it has been predicted that warmer weather has or will at least slightly benefit to agriculture through increased productivity or possibility to use new lands, in Russia, Canada and the United States.⁴⁷ These countries will be able and may be willing to welcome more migrants who will benefit from these new economic opportunities. In other words, climate migration should perhaps not only be considered as adaptation to adverse environmental change through emigration from affected lands, but also as adaptation to positive changes through immigration to lands who encounter new economic opportunities.

A second issue relates to the role of the international community in protecting climate migrants and supporting climate migration as part of adaptation. Migration was never mentioned by the UNFCCC before the Cancun conference on Climate change, in December 2010. The Cancun “enhanced action on adaptation” included “Measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels”⁴⁸ within its priorities. Yet, these measures are limited to mere studies, and it seems that migration programs cannot be funded through UNFCCC climate finance tools. This reflects a certain suspicion of many developed states toward migration in general and climate migration in particular. International cooperation will nonetheless be essential, not only to fund migration programs, but also, when necessary, to allow international migration. It must be understood that most climate migrants are likely to be internal migrants, and, amongst those who will need or decide to cross an international border, most are likely to remain to neighboring countries. In other words, only a small share of climate migrants will come to developed states. Therefore, the role of developed states, in compliance with the principle of common but differentiated principle, should be to provide good offices for regional migration arrangements and to fund migration programs so as to ensure that climate migrants dignity is protected.

A third issue is to determine circumstances which would justify a form of migration as an adaptation strategy. The choice between migration and other adaptation strategies is not a “all but nothing” alternative, as little constraining forms of migration such as circular migration may help in situ adaptation while preparing the possibility of a future permanent resettlement. Nonetheless, a final decision to stay or to leave should be taken at a certain time. Massive in situ adaptation programs are not necessary if resettlement is the only possible adaptation strategy on the long term. Deciding between in situ adaptation and migration should be based on a risk assessment, which requires to take into account a certain risk aversion. This actually brings us to wider interrogations in the field of adaptation generally: how to assess risks, costs and efficacy of different adaptation options? A recent

⁴⁷ Regarding Canada, see WADE N. NYIRFA & BILL HARRON, ASSESSMENT OF CLIMATE CHANGE IMPACTS ON AGRICULTURAL LAND-USE SUITABILITY: SPRING SEEDED SMALL GRAINS ON THE PRAIRIES (2008), available at <http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1210289174331&lang=eng>. Regarding the United States, see Dr. Thomas Fingar (Deputy Director of National Intelligence for Analysis), House Statement on the National Security Implications of Global Climate Change (Statement for the record at the House Permanent Select Committee on Intelligence, on the National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030, June 25, 2008), available at http://www.dni.gov/testimonies/20080625_testimony.pdf, at 4. Regarding Russia, see: JOINT GLOBAL CHANGE RESEARCH INSTITUTE AND BATTELLE MEMORIAL INSTITUTE, RUSSIA: THE IMPACT OF CLIMATE CHANGE TO 2030, A COMMISSIONED RESEARCH REPORT (April 2009), Doc. NIC 2009-04D, available at http://www.dni.gov/nic/PDF_GIF_otherprod/climate_change/climate2030_russia.pdf, at 16.

⁴⁸ *Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, *supra* note 40, §14(f).

publication of the Pew Center listed six different methods of evaluating uncertain risks in adaptation strategies:

- *No-regret: Actions that make sense or are worthwhile regardless of additional or exacerbated impacts from climate change.*
- *Profit/opportunity: Actions that capitalize on observed or projected climatic changes.*
- *“Win-win”: Actions that provide adaptation benefits while meeting other social, environmental, or economic objectives, including climate change mitigation.*
- *Low-regret: Measures with relatively low costs for which benefits under climate change scenarios are high.*
- *Avoiding unsustainable investments: Policies or other measures that prevent new investment in areas already at high risk from current climatic events, where climate change is projected to exacerbate the impacts.*
- *Averting catastrophic risk: Policies or measures intended to avert potential or eventual catastrophic events—i.e., events so severe or intolerable that they require action in advance based on available risk assessment information.⁴⁹*

A fourth question concerns the decision making process: who should choose between different adaptation options? Democratic decision-making is probably the only acceptable option, at least at the local or national level, but what procedure should be followed? The Alaskan village Kivalina decided through referendums: 72 persons voted for a relocation and 7 voted against. Yet, should the 7 opponents to the relocation be free to stay? Beyond collective resettlement, the question is also to be asked concerning for example circular migration: to a certain extent, migration of workers can deplete their place of origin from a precious labor force and create a spiral of economic downturn through “hollowing out” the local economy.⁵⁰ Therefore, states or local authorities may be tempted to prevent emigration in order to keep labor force.

⁴⁹ Pew Center on Global Climate Change, *Adaptation* (brief, Climate Change 101: Understanding and Responding to Global Climate Change, January 2011), available at <http://www.pewclimate.org/docUploads/climate101-adaptation.pdf>, at 8.

⁵⁰ OLI BROWN, *MIGRATION AND CLIMATE CHANGE* (2008) at 40.