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**Climate Change and Forced Displacements:  
Towards a Global Environmental Responsibility?**

*The Case of the Small Island Developing States (SIDS) in the South Pacific Ocean*

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**Abstract**

Much of the international effort aimed at tackling climate change is related to the curbing of greenhouse gases emissions, while its human impact, especially in the South, is still vastly neglected by policy-makers. An important part of this human impact will be the forced displacement of populations, especially in low-elevated regions, such as islands, coastal and deltaic areas. Particularly at risk is the small atoll of Tuvalu, in the South Pacific Ocean, which is the lowest-elevated state, and whose very existence is threatened by sea-level rise. The people of Tuvalu have reluctantly accepted the idea of relocation, and have started moving to New Zealand, under the terms of a negotiated migration scheme. Australia, which has not ratified the Kyoto Protocol, has refused to receive migrants from Tuvalu, and is now accused of 'eco-terrorism' by the authorities of the sinking atoll. Global warming is expected to force millions of people to relocate, and this paper looks at the possibilities of international cooperation in addressing this issue. Building on the case-study of Tuvalu, it examines how a global environmental responsibility could be shaped, and how the burden and responsibility of climate change-induced migrations could be shared and allocated. While the Kyoto Protocol provides an example of a burden-sharing scheme for the curbing of greenhouse gases emissions, such schemes are needed to meet the human cost of climate change such as the resulting forced migrations. Using the case of Tuvalu as a starting point, this paper tries to imagine which means of international cooperation could provide a new global public good : the protection of climate change 'refugees'.

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## **Introduction**

Environmental displacements have recently made headlines all around the world, following natural disasters such as the hurricane Katrina or the tsunami that hit South-East Asia at the end of 2004. In a way much less spectacular, climate change is also expected to displace millions of people. This slow-induced migration is unlikely to draw the attention of the global media, but share common characteristics with the brutal displacements induced by Katrina or the tsunami, in particular the absence of any legal status or organised protection. In this paper, I will first provide an overview of these forced displacements. I will then discuss the linkage between climate change and forced displacements, and try to show how these can be considered as an indirect externality of greenhouse gases emissions. Building on the case of Tuvalu, a little archipelago in the South Pacific Ocean threatened by sea-level rise, I will explore the ways for burden-sharing schemes to be implemented, and a global environmental responsibility to be acknowledged.

### **Environmentally-induced forced displacements: an overview**

Environment has probably always been a factor of migration. As early as in late prehistoric times, the first human beings used to migrate when they had exploited the resources of their immediate environment. Throughout history, environment has been a major trigger for migration and displacement, voluntary or not. More recently, natural disasters and increasing environmental disruptions have forced millions of people to relocate, temporarily or permanently, drawing scholars, NGOs and policy-makers to consider the emergence of a new category of forced migrants, improperly called ‘environmental refugees’.

The concept of ‘environmental refugees’ dates back to the 1970s, when Lester Brown, from the WorldWatch Institute, an environmental think-tank, used it in various speeches. But it is only in 1985 that a report from the United Nations Environment Programme (UNEP) specifically addressed the issue (El-Hinnawi 1985) and provided a first definition of these ‘environmental refugees’:

“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 jeopardised their existence and/or seriously affected the quality of their life. 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.”

Later, the concept has been frequently used in various international conferences, such as the 1992 Rio Summit, or the 1997 Kyoto Conference on Climate Change. High-profile officials such as former US President Bill Clinton or UN former Secretary-General Boutros Boutros-Ghali have also used the term, facilitating its recognition in the media. Since then, advocacy groups, environmentalists, NGOs, and a few

social scientists, have produced quite a lot of grey literature on this ‘new’ kind of migrants. But the topic is still quite controversial, some prominent figures in refugee studies going as far as contesting their very existence (Black 2001).

Environmental refugees are people fleeing an environmental disruption, natural or human-induced, brutal or slow-induced. This can include desertification, earthquakes, floods, deforestation, pollution, industrial accidents or climate warming, in a near future. It is estimated that there are currently about 25 million environmental refugees around the world (Myers and Kent 1995 : 16), outnumbering the ‘regular’ refugees recognised under the Geneva Convention, which are about 16 million, according to the United Nations High Commissioner for Refugees<sup>1</sup>.

An obstacle frequently encountered is the difficulty to identify and count them. Their definition, despite several unsuccessful attempts, still revolves around the one provided by El-Hinnawi, which doesn’t really allow us to distinguish between environmental refugees and other types of migrants, and neither does provide any way to distinguish between the environmental refugees themselves. As Bates points it out, “this definition makes no distinction between refugees who flee volcanic eruptions and those who gradually leave their homes as soil quality declines. So many people can be classified under the umbrella of ‘environmental refugees’ that critics question the usefulness of the concept.” (2002 : 466). A more precise definition would allow better identification of the environmental refugees, some classification and typologies, and therefore the design of public policies addressing the issue. Black writes that there are “as many typologies as there are papers on the subject” (2001 : 2), and he’s true.

This definition, to be usable and applicable, will need to establish a clear linkage between migration and environmental disruption. This linkage is still controversial, since migration is a very complex process, integrating a wide array of variables. People rarely move for one single reason, and migration is sometimes part of a social and routine process. It is also highly dependent on each individual : some people affected by an environmental degradation will decide to move, while others will stay. The environmental factor might also be difficult to isolate from other factors : many environmental disruptions are human-induced, such as deforestation or desertification, or associated with other difficulties. Isolating the environmental factor might eventually result in a biased perception and understanding of migration. For example, desertification is often associated with poverty or land-property issues (Gonin and Lassailly-Jacob 2002 : 145). Environment is also an economic and political stake, often used in wars in order to displace people: let us just recall here the napalm bombings during the Viet-Nam war, or the widespread dispersion of land mines in many conflicts. Both had the clear objective of making some lands inhabitable. Environment has always been an economic and political stake : no wonder it is used to displace populations. Finally, environmental refugees are also often refugees in their own country: they don’t flee their country, but their homeland, and

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<sup>1</sup> Source : UNHCR website, available at the following address : <http://www.unhcr.ch>

are often internally-displaced persons (IDPs). This, as well as a lack of empirical research, explains why the environmental refugees are difficult to identify, and why their number is still imprecise and poorly documented.

Even more fundamentally, environmental refugees are not recognised as refugees under the Geneva Convention or international law. They are “legal gypsies, without a home in the Geneva Convention” (Simms, 2003 : 6). No international organisation has any mandate to cope with these refugees. The Geneva Convention was drawn after World War II, in order to provide protection and assistance to the war refugees. It is today challenged by other group of forced migrants, such as the internally-displaced persons or the environmental refugees. But many scholars, in the field of migration studies, still regard the Geneva Convention as the paramount of protection, and fear that a legal recognition of environmental refugees would water the Convention and the very concept of ‘refugee’. This is why the concept of ‘environmental refugees’, despite its frequent use in the media, scholarly articles and public discourses, is misleading : for the rest of this paper, I will therefore use the term ‘environmental migrants’, or ‘environmentally-induced forced migrants’.

As I will discuss it in the next section of this paper, climate change is expected to dramatically worsen the situation. The International Panel on Climate Change (IPCC), a group of 2000 international experts mandated by the UN to assess the impact of climate change, estimates (2001 : 13) that global warming will provoke a rise of the global sea-level comprised between 9 and 88 centimetres by 2100. This means most of the coastal and deltaic regions, which are amongst the most densely populated in the world, will be affected. An international conference, “Avoiding dangerous climatic change”, convened by the British government in Exeter on February 1-3, 2005, has concluded that 150 million refugees could be displaced as a result of global warming by 2050. These refugees would be located in low-elevated areas such as small atolls and islands, and in coastal and deltaic regions, such as India, Bangladesh or Egypt.

More recently, a report from the UN University Institute for Environment and Human Security predicted that the number of environmental refugees would top 50 million by 2010, due to climate change, and urged the international community to “define, recognise and extend support to this new category of ‘refugee’.”<sup>2</sup> It also identified some areas of the world where environmental displacements were already occurring.

### **Climate change and forced displacements**

As said above, establishing a clear linkage between environmental disruption can be difficult, especially in the case of slow-induced environmental changes. The most salient example of this is probably global

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<sup>2</sup> United Nations University – Institute for Environment and Human Security (2005) *As Ranks of “Environmental Refugees” Swell Worldwide, Calls Grow for Better Definition, Recognition, Support*. Press release, 12 October.

warming, resulting from global climate change: the phenomenon will be spread over decades, and will result in a wide range of different effects in different regions of the world.

In a paradoxical way, it is climate change that is expected to displace the most people, bringing an exponential increase in the numbers of environmental migrations, with estimations topping 50 million by 2010<sup>3</sup> and 150 million by 2050<sup>4</sup>. The field of environmentally-induced forced migrations will be deeply transformed by climate change-related migrations, and yet this phenomenon is difficult to grasp as a whole. Before attempting to define and characterise the relationship between climate change and forced displacements, several obstacles must be overcome:

- Apprehending climate change as a whole is a difficult task. It will happen on a long period of time (though extremely short if compared with other climate change phenomena), with extremely various effects. Sometimes, it will only amplify a pre-existing situation.
- The extent of global warming, and of its effects, is still very uncertain and imprecise. Much will depend on the political will to curb greenhouse gases emissions. Therefore, one must rely on prospective data to assess the potential effects of climate change.
- Finally, the figures regarding the number of people that could be displaced by climate change look extremely high. These figures are often used by environmentalists and advocacy groups to sensitise public opinion and policy-makers to the realities of global warming, or to scare populations and governments about 'huge wave of immigrants that would overflow industrialised countries'. One must therefore be cautious when dealing with these estimations, since they might be potentially instrumentalised for political reasons. On this matter, it is interesting to note that a clear divide exists within the literature between environment scientists and migration specialists. The first ones tend to be strong advocates of environmental 'refugees', considered as a new category of migrants (Myers and Kent 1995), while the migration specialists seem to be much more sceptical about the concept, dreading a watering-down of the very concept of refugees: Black estimates that the concept is "unsound intellectually, and unnecessary in practical terms" (2001 : 7), while Kibreab pretends that "the label 'environmental refugees' is little more than a social construction designed to justify attempts by receiving states to relinquish their responsibility towards 'political' refugees" (1997 : 35).

Nevertheless, there is today a vast consensus in the scientific community on the existence of a phenomenon of global warming resulting from climate change. Despite some dissident voices, it is also widely

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<sup>3</sup> Source: UN University, Institute for Environment and Human Security.

<sup>4</sup> Source: "Avoiding dangerous climatic change", conference held at Exeter on February 1-3, 2005 and IPCC.

acknowledged that there's a clear linkage between human activity, and especially greenhouse gases emissions, and global warming<sup>5</sup>.

That being said, one can also qualify the climate as a **global public good**. The first studies on public goods have been conducted by Samuelson in the 1950s, who defined public goods as being non-rival and non-excludable goods, meaning that it was impossible to exclude an individual from consuming a certain good, and that the consumption of this good by the said individual was not harming another individual's consumption of the same good. More recently, researches funded by the UN Development Programme (UNDP) have pushed the concept forward, and have elaborated the concept of 'global public goods'. In a milestone book published in 1999, Kaul, Grunberg and Stern define global public goods as 'goods whose benefits extend to all countries, people, and generations' (Kaul, Grunberg and Stern 1999). The climate clearly fulfils the criteria of this definition, and can therefore be considered as a global public good.

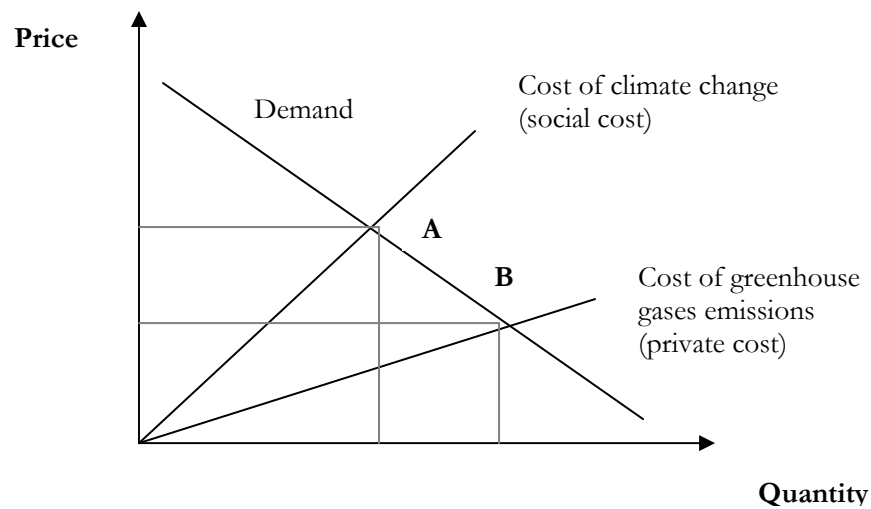
If climate is a global public good, any damage to this good can certainly be considered as a global public 'bad'. Reasoning by analogy with global public goods, I will here attempt to define a global public bad as a good whose costs extend to all countries, people and generation. If we accept this definition, climate change certainly qualifies as a **global public bad**.

I will now address the question of the forced displacement induced by climate change, that I propose to consider as a **negative externality of climate change**. Ronald H. Coase developed the theory of externalities, that can be defined as effects (positive or negative) of an economic decision not supported by the decision-maker (Coase 1988). There are, in other words, social costs or social benefits, separate from the decision-maker's costs or benefits. For example, a person smoking in a social environment will also harm the lungs of the people around, and not only hers/his. The damage provoked to other people's lungs, and their discomfort, will be a negative externality. The problem of externalities is that – far from being a mere 'neighbourhood effect', as advocated by Milton Friedman – they will often result in a distortion of the market: the true cost of a good will not match its market cost if the externalities are not taken into account. Therefore, the market will produce an outcome that is not socially optimal.

A good example of this is climate change. As shown on the graph below, climate change is considered as a negative externality of the emission of greenhouse gases emissions: it is the negative effect of these emissions, that is not supported by the emissions decision-maker. If the market is free and doesn't take into account this social cost, the equilibrium of the market will lie at point B. If the market is regulated and the social cost taken into account, the equilibrium will lie at a different point (A), resulting in a higher price and lower quantities produced. This is the *raison d'être* of international instruments aimed at regulating the market of greenhouse gases emissions, such as the Kyoto Protocol.

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<sup>5</sup> See, *inter alia*, the various reports of the Intergovernmental Panel on Climate Change (IPCC).



I propose to take this concept a step further, and to consider forced displacements induced by climate change as an externality of climate change, and therefore as an **indirect negative externality** of greenhouse gases emissions. Climate change would be an intermediary step between the emissions of gases and the resulting displacements. I am aware of the difficulties raised by such an assumption:

- greenhouse gases emissions are the main, but not the sole factor responsible for climate change ;
- as stated above, it is difficult to isolate the environmental factor in the migration decision, since it often mingles with other factors ;
- the line between forced and voluntary displacements is often blurred.

Nevertheless, I believe that in-depth case studies and comprehensive research of environmental migrations (still widely under-researched) can correct these imperfections, which do not undermine the central assumption. I have now showed how could climate change be considered as a global public bad, and how the related forced displacements could be considered as an indirect negative externality. It is now time to look at the regions that will be affected by forced displacements related to climate change.

In a way or another, all countries will eventually be affected by climate change. Forced displacements will occur due to sea-level rise, food and water shortages, land losses, desertification or melting of the ice cap. This will take place in regions of the world as diverse as the small islands of the South Pacific Ocean, sub-saharan African or Alaska. Currently, these are the three regions that are most at risk. As diverse as they might seem, they share however (at least) two characteristics : climate change-related migrations are already occurring in these regions, yet they are responsible for only a tiny fraction of the world's greenhouse gases emissions. In short, the countries that are the most vulnerable to global warming are also the ones that are the least responsible for it. There's clearly a distortion between the countries suffering from climate change

and those responsible for it.

This international disequilibrium calls for mechanisms of regulation, such as burden- and responsibility-sharing international and regional schemes. Building on the concepts of global public bad and negative externality explained above, I will try to show what such schemes could look like. But, first, I will examine the case of the small island developing states in the South Pacific Ocean, and in particular the most emblematic of them: Tuvalu.

### **Forced displacements and burden-sharing in the South Pacific Ocean**

The South Pacific Ocean is home to about 20 island states and about 7 million people. Many of these states are independent, most of them are self-governed. The region is also widely recognised as one of the most culturally diverse in the world. It is estimated that this region is responsible for 0.06 per cent of the world's greenhouse gases emissions. Yet it has been recognised by the IPCC that the risk related to climate change facing this region is three times bigger than in industrialised countries (IPCC 2001). The biggest threat facing these countries is the sea-level rise, due to the melting of glaciers and the thermal expansion of oceans, both linked to global warming. The IPCC estimates that sea levels will rise worldwide by 0.09m to 0.88m between 1990 and 2050, according to the most plausible scenarios. Most of the small island states are very low elevated, and therefore suffer repeated floods and tornados. Forced displacements have already begun, in Vanuatu, Kiribati, Papua-New Guinea and Tuvalu.

In Vanuatu, villagers from Tegua, in the Lateu settlement, have been moved last August to higher grounds, around 600 metres from the coast, since their coastal village was repeatedly devastated by huge waves and storms linked with climate change. The relocation has been completed within the framework of a programme called 'Capacity Building for the Development of Adaptation in Pacific Island Countries. In Kiribati, villagers also had to be moved inland, thanks to funds provided by the Canadian government. As similar relocation took place on the Cartaret Islands in Papua-New Guinea. But the most critical case, as for now, remains Tuvalu.

Constituted of nine tiny atolls, independent since 1978 and populated by 11,000 citizens, Tuvalu is one of the smallest countries in the world (24 square kilometres), and the lowest elevated: its highest peak culminates at 4 metres above the sea-level. The country is threatened by sea-level rise, and is slightly sinking into the Ocean. Its inhabitants are confronted with regular floods and tornadoes, which make life on the atoll everyday more difficult. These problems are worsened by other factors such as overpopulation (Tuvalu's population has almost doubled in the last decades and is one the most densely populated countries in the world), a poor system of garbage disposal, and the construction of an American military runway during World War II, which has considerably flattened the island.

Its national economy, surprisingly, greatly relies on an international trust fund, but also on the internet: in 2001, the sale of the internet country suffix “.tv”, that they had been attributed by the International Organisation for Standardisation (ISO), to an American company, “.TV Corporation”, has allowed Tuvalu to double its Gross Domestic Product, earning about \$4 million in royalties each year, in addition to the \$20 million received for the sale of the internet suffix. This two-fold increase in national income has allowed the officials of Tuvalu to send a permanent representative to the United Nations in New York, who put forward the issue of environmental refugees on the international agenda.

Tuvalu is expected to become inhabitable by 2050, and its leaders are actively seeking solutions for the future. Despite the desire of the Tuvaluans to stay on the islands, and the fear that their cultural heritage might be lost, relocation seems to be the most realistic option. But no solution seems to be definitive at the moment. As stated by Tuvalu’s Prime Minister and Minister for Foreign Affairs, Maatia Toafa, at the Mauritius meeting on the small island developing states that took place in January last year, « Tuvalu is already suffering from the impacts of climate change and sea level rise, and we are uncertain of the future of our atoll nation ».

What are the solutions currently considered ?

- Buying land.

Tuvalu’s government is considering the idea of buying some land to Australia or New Zealand, or a desert island in the area. This would certainly preserve Tuvalu’s cultural heritage, but there’s no sign that New Zealand and Australia would agree to such a deal, and the whole charge of the burden would probably rely on Tuvalu.

- Moving to Niue.

Niue is a self-governing state, dependent on New Zealand. Tuvalu’s officials have approached the government of Niue at the end of last year, and are still awaiting an answer. The governments are still discussing the status of the Tuvaluan potential migrants, and the provision of their homes.

- Moving to Kioa, Fiji.

Donald Kennedy, a Tuvaluan campaigner settled in New Zealand, is trying to persuade the Tuvaluan government to move Tuvalu’s population to Kioa, a Fijian island. Kioa was an island given to Tuvaluans fleeing Tuvalu in the 1950s. The Fijian has recently granted Fijian citizenship to the citizens of Tuvalu who moved to the island in the 1950s and 1960s. According to Donald Kennedy, this would ensure that Tuvalu’s culture will be preserved instead of being scattered all around the world. However, Tuvalu’s government doesn’t regard this solution as a priority for now, and Fiji’s government is also very reluctant to this option.

- Burden-sharing agreements

A burden-sharing scheme would be the solution most favoured by the Tuvaluan government, as its Prime Minister Maatia Toafa confirmed it at the last high-level session of the UN General Assembly, in September last year: « There are global issues that are beyond our control for which Tuvalu needs the supporting hand of regional bodies in the Pacific, and the international community. » Tuvalu's government is preoccupied by two different issues that can sometimes contradict each other. On the one hand, Tuvalu is highly reluctant to bear alone the whole cost of a relocation, and on the other hand, a major concern is that Tuvalu's culture would not be scattered around the world. Tuvalu is part of different regional organisations, such as the Alliance Of Small Island States (AOSIS) or the network of Small Island Developing States (SIDS-Net), but none of these organisations has yet proposed a burden-sharing scheme. But two schemes have been proposed by New Zealand and the Australia's Labor Party :

### ***1. The Pacific Access Category (PAC)***

The Pacific Access Category (PAC) is an immigration arrangement that was proposed by New Zealand in 2001 following a request of Tuvalu, and agreed between the governments of Tuvalu, Fiji, Kiribati, Tonga, and New Zealand. The scheme enables environmental forced migrants displaced from their homes by the effects of climate change to move to a less vulnerable environment. Each country has been allocated a set quota of citizens who can be granted permanent residency in New Zealand each year. The PAC allows 75 residents from Tuvalu and 75 residents of Kiribati to move to New Zealand annually, whereas Tonga and Fiji have a quota of 250 each (including their partners and dependent children). These migrants are selected on a random basis, through a raffle-drawing. But the scheme bears many other conditions:

- an age requirement (between 18 and 45);
- a minimum level of English language ability (assessed by immigration officers);
- an 'acceptable' offer of employment in New Zealand (full-time);
- a minimum income requirement (NZ\$ 24,793 annually if accompanied by children);
- a requirement of health and character;
- the payment of a NZ\$ 50 registration fee;
- a residence in the country of origin or in New Zealand.

Family members of the successful applicants can also be granted residency. As one can see, such an agreement cannot be a definitive solution for the relocation of Tuvaluan people, since it does not provide any solution for the people who wouldn't meet the requirements listed above, and accepts

only immigrants on a quota basis. Furthermore, it does not mention the threat of climate change and does not acknowledge any responsibility for the displacement of these populations. The agreement is merely a 'special immigration agreement'. Unwilling to create a legal precedent, New Zealand has refused to grant these migrants a status of 'environmental refugee'.

## ***2. The Pacific Climate Change Alliance***

The Pacific Climate Change Alliance is a proposal recently put forward Australia's Labor Party. Australia has not ratified the Kyoto Protocol, and its government has refused to accept any migrant from Tuvalu, arguing that this would be discriminatory towards other migrants. However, its Labor party, currently in the opposition, has recently issued a policy paper in which a regional burden-sharing scheme, the Pacific Climate Change Alliance, is proposed. The paper suggests the establishment of a Pacific climate monitoring centre, assistance to Australia's neighbours in their mitigation, adaptation and emergency efforts, assistance with intra-country evacuations, training of potential migrants in order for them to meet the immigration requirements of receiving countries (!), assistance to preserve cultural heritage, and, more fundamentally, an 'international coalition to accept environmental refugees' (Sercombe and Albanese 2006). According to the authors, the action of Australia should take two directions on this matter : firstly, it should 'help to develop a coalition of Pacific Rim countries willing to accept climate change refugees' – this is clearly a call for regional burden-sharing. Secondly, Australia 'should be working at the UN to ensure appropriate recognition of climate change refugees in existing conventions, or through the establishment of a new convention on climate change refugees'. This brings the issue of international responsibility, that I will now address.

### **Towards a global environmental responsibility?**

Far from being just an anecdotal example, the case of Tuvalu underlines the main challenges faced by countries at risk of global warming. While burden-sharing arrangements might provide regional solutions, as detailed in the precedent sections, many voices call today for an international recognition of 'environmental refugees' in international conventions. Furthermore, if these migrations are to be recognised as a negative externality of greenhouse gases emissions, this could open the way to the establishment of a global environmental responsibility, that would reach further than regional burden-agreements. The UN Environment Programme has recently organised a roundtable<sup>6</sup> on the common challenges faced by the Inuits and the islanders of the South Pacific, underlying the need to respond globally to climate change.

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<sup>6</sup> The roundtable was entitled 'Many Small Voices – Arctic and Pacific meet' and was held in Montreal on 6 December 2005.

Two aspects need to be distinguished. First, the question of the legal status of these migrants ; and then the issue of financial compensation.

The legal status of these environmental migrants is still very imprecise. Not being prosecuted for their belonging to a particular group and not always crossing an international border, they cannot qualify for the status of ‘refugee’ as defined by the Geneva Convention. They are “legal gypsies, without a home in the Geneva Convention” (Simms, 2003 : 6). No international organisation has any mandate to cope with these migrants. The Geneva Convention was drawn after World War II, in order to provide protection and assistance to the war refugees. The Geneva Convention is today challenged by other group of forced migrants, such as the internally-displaced persons or the environmental migrants. As said before, many scholars, in the field of migration studies, still regard the Geneva Convention as the paramount of protection, and fear that a legal recognition of environmental refugees would water the Convention and the very concept of ‘refugee’. However, many voices at the UN and among decision-makers are now calling for a re-drafting of the Convention that would include environmental migrants in its field: this is the case, among others, of UN Under-Secretary General Hans van Ginckel, British MEP Jean Lambert, Belgian Senator Philippe Mahoux, and many others. The Pacific Access Category elaborated by New Zealand in response to demands of its neighbours might open the way for this.

Whether these migrants are eventually recognised as refugees or not, the issue of financial compensation will remain. A government that needs to expropriate residents for the completion of an infrastructure project will offer them a financial compensation. Shouldn’t the same mechanism be applied to climate change forced displacements?

The UN Framework Convention on Climate Change (UNFCCC) contains an appendix aimed at constituting a global adaptation fund, that would to meet the costs of adaptation to climate change. The costs of migrations induced by climate change can certainly be considered as ‘costs of adaptation’. Article 4.4 of the Appendix states that ‘developed country Parties and other developed Parties in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects’. If such an adaptation was to be implemented, this would be an implicit acknowledgement of a global responsibility. However, despite repeated pledges, this part of the Kyoto Protocol is still in the limbo.

Let’s briefly examine here how such a fund could established:

- On a system of voluntary contributions.

This system would be similar ton the one implemented for the funding of the United Nations. Each Party to the Kyoto Protocol would contribute on a voluntary basis. Studies by Eiko Thielemann

(2003b), among others, have shown how some countries were more willing than others to participate in such schemes.

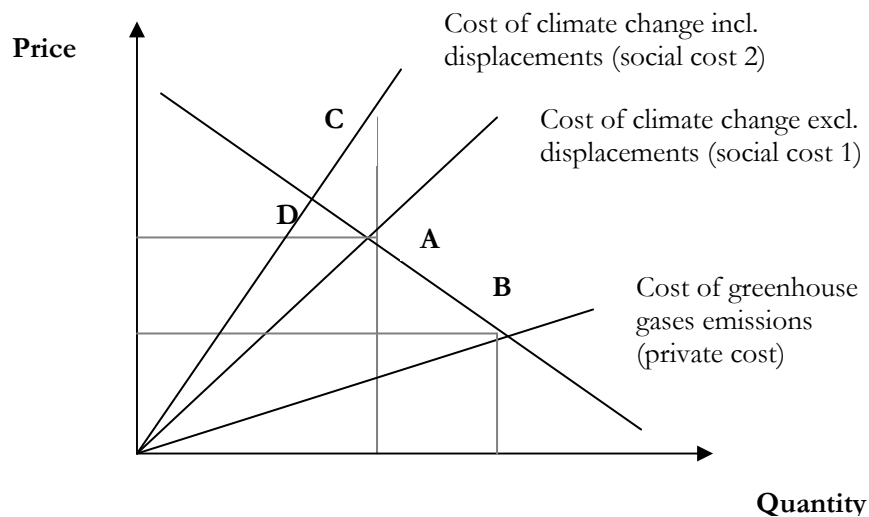
- According to each country's volume of carbon emissions.

In 1997, Schuck argued that an international burden-sharing regime could be implemented on the basis of tradable quotas, where an international would allocate countries quotas of refugees they should accept, based on criteria such as GDP or population. On a next step, countries would be allowed to trade these quotas on an international market. A very similar process has been implemented within the Kyoto Protocol, where countries have been allocated emission quotas which they can trade.

Regarding climate change refugees, one could imagine a similar system where each country would have to contribute according to its level of carbon emissions. In climate change migrants burden-sharing schemes, independent from the adaptation fund, the same system could be applied with tradable quotas.

- On the basis of a regulated market.

If we accept the idea that climate change forced displacements are a negative externality of carbon emissions, I can draw the following graph and put forward another proposal :



I have added another curve to the graph, which represents the externality of forced displacements. The point A represents the equilibrium of the market in the hypothesis where the Kyoto Protocol would be respected and implemented. However, the current state of the Protocol does not take into account the forced displacements of people. If these were to be considered as an additional externality, it would superpose itself to the first social cost (Social cost 1), resulting in a higher social cost (2). However, no

further reduction of greenhouse gases would be needed, since this externality would represent an adaptation to climate change, and not its curbing. Therefore, the equilibrium of the market would be situated at point C (same quantities, higher price). The extra amount of money, represented by the triangle ACD on the graph, could be allocated to the adaptation fund.

## **Conclusion**

Each of these systems has advantages and shortcomings, and the goal of this paper is not to discuss the best way to fund an adaptation fund. Furthermore, the social cost of forced displacements is difficult to apprehend: one should also take into account the possible loss of intangible cultural heritages, the psychological trauma...

For these reasons, I would rather recommend a two-fold system of burden-sharing :

- People burden-sharing on a regional basis, if possible within the framework of an international agreement on the status of these migrants .
- Costs burden-sharing on the international level, through an adaptation fund or a similar scheme.

The case of Tuvalu shows us the challenges ahead.

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