Climate change-induced migration: An overview of the debate

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"Greater resource scarcity, desertification, risks of droughts and floods and rising sea levels could drive many millions of people to migrate" (Stern, 2007, p. 111)

Abstract

The issue of climate change has risen to be of great concern to the international scientific, among others, community. Among the consequences projected is a large scale human displacement that is anticipated to mainly affect the developing world of the Global South. Nevertheless, the lack of agreement among several members of the scientific community, with regard to definitions and methodologies used, has caused the creation of two main approaches towards the alleged connection of climate change and (forced) human mobility. The first approach supports a mono-causal relation between the two phenomena, while the second sees climate change and environmental factors in general as just possible contributing factors to human mobility.

Keywords: Climate change, migration, displacement, developing world, sea-level, Tuvalu

Introduction

Over the past decades, climatic change has grown to become a major issue of concern in academic, policy and civil society circles, provoking a heated debate with regard to its consequences to human societies. Since the beginning of the Industrial Revolution, human activities have considerably added to the amount of heat-trapping greenhouse gases in the atmosphere, changing its composition (EPA 2010). Scientific evidence shows that climate change presents a rather serious global threat, demanding an "urgent global response" (Stern 2006, p. 1). In 2008, Ban Ki-moon, the United Nations Secretary General, stated that climate change is "the major, overriding environmental issue of our time, and the single greatest challenge facing decision-makers at many levels" (CCEMR 2009).

One of the most debated consequences of climate change seems to be that of its impact on human mobility. Is there such a thing as a climate change – migration connection? And if there is, what is the most probable effect of the former to the latter? Is there a way to measure or to predict the scale of human migration that might be caused by climate change? The answer to these questions, which are only indicative of the questions posed in this debate, has yet to come, with authors from a number of disciplinary backgrounds, such as migrations studies, human geography, social science and environmental studies providing different views that range from depicting the issue of climate change induced migration as an unavoidable future crisis (Stern 2007; Myers 2002), to approaching climate change as a push factor that combined with others may trigger mobility (Black 2001; Piguet et al. 2011).

This paper aims to highlight the history and the main arguments of this debate and shed some light to the challenges faced by researchers of the topic. In the first section of the paper, the main arguments of the climate change-migration debated are highlighted and the notion of 'environmental refugees' is analysed. The essay then focuses on the ways climate change might impact the human societies, with the emphasis given to the phenomenon of sea level rise. The third part makes reference to the case of Tuvalu and focuses on some elements of the decision making process of the Tuvaluans as to their migration strategy in response to climate change.

Before proceeding to the main issues of concern to this paper it is deemed appropriate to clarify in short just what climate change is about. Climate change is basically a natural procedure which takes place in Earth since the creation of the planet, operating either at time scales of hundreds of millions of years or even within just a few years (Miller 1999; Harvey 2000). Human activities and more specifically the burning of fossil fuels as well as the clearing of forest-covered land have increased the, otherwise natural, concentration of carbon dioxide, methane and other "greenhouse" gases in the atmosphere. The past 250 years, the atmospheric temperature has risen by approximately 0.6 C. Among the scientific community there is a consensus that most of the warming measured especially over the last 50 years is attributable to human activities (Hassol 2006). Climate change as it is going to be approached in this essay is, in short, the rapid increase of the global temperature due to human activity.

But why has climate change emerged as a major issue of international concern? The answer seems to be quite straightforward; shifting weather patterns could, for instance, threaten food production through increased unpredictability of rainfalls and droughts. Rising sea levels could contaminate freshwater reserves as well as increase the risk of catastrophic flooding, making the coastal areas quite vulnerable. Furthermore, a warming atmosphere would aid the spread of pests and diseases once limited to the tropics in the polar regions. There is already alarming evidence that in some cases, tipping points, leading to "irreversible changes in major ecosystems (...), may already have been reached or passed" (UNEP 2010).

Climate change and migration

The last two decades, climate change is being seen as yet another factor that could cause people to migrate. By and large, the topic is examined as part of a broader discussion on migration caused by environmental factors in general. While there seems to be a consensus that environmental factors can actually play a role among many others in migration, there is a controversy as to their significance. Following the assumption of some researchers, who view environmental phenomena as a primary factor for migration, the concept of 'environmental refugees' has been introduced (Perch-Nielsen et al. 2008). This concept, which has brought together a big controversy, will be examined in more detail later.

This connection between the environment and human mobility goes more than a century back to Ravenstein's "Laws of Migration" that in 1889 included the "unattractive climate" among the factors that could produce "currents of migration". Almost two decades later, the American geographer E. C. Semple also wrote about human mobility connected to the search for more favourable environmental conditions, which necessarily leads them to places with sharply different climate than from their original habitat (Semple in Piguet et al. 2011).

Nevertheless, climate and the environmental factors lost their appeal in the study of migration to gradually disappear from the literature as significant pull factors over the course of the 20th century (Piguet 2009 in Gemenne 2011; Piguet et al. 2011). Indeed, it was not until the early 1990s, when a number of publications put the issue back to the spotlight (Piguet et al. 2011; Bettini 2013). One of the very first papers of the time, commissioned in 1985 by UNEP provided the public and the academia with the estimate of 30 million displaced people because of climate change (El-Hinnawi 1985). El-Hinnawi also provided one of the first definitions of environmental refugees, who in his view were "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" (1985, p. 4).

The estimation and the definition, and others that followed by other authors, for example Jacobson (1988) and Conisbee and Simms (2003 in Gemenne 2011), have drawn much attention from the media and the civil society (IFRC 2001;_Christian Aid 2007). However, they have also received heavy criticism; the estimation because of the methodological flaws behind it and its subsequent lack of credibility, and the definition because of its failure to make a distinction between internal and international migration. This definition, and other similar ones, has also drawn criticism for its wide scope that embraces too many categories of people affected by natural phenomena, some of which might be linked to climate change, such as desertification, and some that do not necessarily fall under the climate change concept, such as volcanic eruptions (Bates 2002; Gemenne 2011). One example of such other works that, similarly to that of El-Hinnawi's, received much criticism was a paper published in 1993 by Norman Myers, which claimed that up to 150 million people would be forced to move because of environmental reasons by the end of the 21st century (Myers 1993).

With regard to the core of the debate, there seem to be two main approaches, mainly within the academia. For some researchers (El-Hinnawi 1985; Jacobson 1988; Myers 1993), the link between climate change and migration seems to be obvious; "people will be forced to migrate if drought occurs, land is degraded, or sea levels rise" (Perch-Nielsen et al. 2008, pp. 375-6). According to Findlay (2011), this approach is based less on empirical data and the basic principles of contemporary migration theory, such as the influence migration networks play in the decision-making process of would-be migrants, and more on the straightforward logic that people in the most affected areas, mainly comprised of the island-States of the Pacific and the coasts of South and East Asia, will have to flee their lands sooner or later, as they will become uninhabitable either for natural reasons –e.g. increased inundation, or for livelihood reasons –e.g. agrarian communities would be most under threat. In the words of Piguet et al. (2011), this approach supports a certain "mono-causal relationship between environmental factors and human mobility", which sees human reaction under a deterministic scope of view.

On the other hand, there is a number of researchers (Black 2001; Piguet 2008, Piguet et al. 2011; Bettini 2013) who criticise this connection, arguing that it is not clear how exactly environmental factors force people to migrate. They observe that these connections lie mostly on 'common sense' as the linkages between climate and migration "are not explicitly demonstrated". According to them, "what 'common sense' fails to take into account is human reaction and adaptation to environmental change" (Perch-Nielsen et al. 2008, p. 376). This approach highlights "the complexity of environmental factors and migration and the fact that climate change is only one factor among several others in explaining migration dynamics" (Piguet et al. 2011, pp. 12-3).

From the discussion above, it is made apparent that mitigation and adaptation strategies claim a central part in the debate. According to Stern (2007), mitigation, which translates into the adoption of necessary actions in international level to reduce emissions, has become absolutely essential and it should be viewed as an investment that has to be made now, in order to avoid "very severe consequences in the future". Adaptation mechanisms and other measures that could be set forth in order to tackle the risks that may arise, suggest that migration is not the only option humans have in order to overcome the consequences of climate change.

The problem starts to become more complicated though, when the discussion turns to the developing world. In the Stern review on the economics of climate change, it is emphasized that developing countries face three main difficulties. The first is that developing regions are, by and large, already at a geographic disadvantage; they are usually warmer than developed regions and they also suffer from substantial rainfall variability. Secondly, the poorest of the developing countries are heavily dependent on agriculture, the most climaterelated of all economic sectors. Finally and maybe most importantly, "their low incomes and vulnerabilities make adaptation to climate change particularly difficult" (Stern 2007, p. 7).

According to Stern (2007), because of these three difficulties, climate change is likely to have a greater impact on them, reducing the already low incomes and increasing illness and death rates. Falling incomes from agriculture will increase poverty and subsequently reduce the ability of households to invest for the betterment of their future. At a national level, public finances will also suffer a big hit as it is likely that revenues will be cut and spending needs will rise considerably. In their case, adaptation or other measures might not be as easy to implement as in developed countries. The 'common sense' says that these people will probably be forced to migrate.

Under this perspective, the term "environmental refugee" made its appearance as a title in the aforementioned 1985 UNEP report. Since then it has been used widely both in political and academic discourses. The publication of the first IPCC report on climate change in 1990 reinforced the fears about mass migration caused by environmental factors. Among others, this publication stated that the most serious effects of climate change could be on human migration "as millions will be displaced" (IPCC 1990 in Piguet 2008). Indeed, one notable example of forced displacement owing to environmental reasons, has been the displacement of hundreds of thousands of people, who were forced to leave their houses and move to California and other States, after the occurrence of one of the most well-known natural disasters in the USA, the Dust Bowl droughts of the 1930s (NOAA, 2003).

Nevertheless, the use by numerous authors of the term 'refugee' has led to certain confusion, as it evokes the juridical status recognized by the 1951 Convention on the Status of Refugees, which defines as a 'refugee' 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" seeks asylum to a country other than his/her own (UNHCR 1951; Piguet et al. 2011). As this Convention was created under grave political and humanitarian circumstances, in the aftermath of the Second World War, and in an era when knowledge on climate change was not anywhere near the one that scientists have today, environmental reasons were essentially absent from this list. The problem with this approach is that if eventually climate change generates forced migration flows, a question regarding the rights of victims to a form of protection will become unavoidable (Piguet 2008; Leal-Arcas 2012).

Furthermore, it has been argued that as a term, it is "simplistic, one-sided and misleading" (Castles 2002). Being quite rare, up until today, for people to be forced to leave their countries only for environmental reasons, it is stated that this notion implies a certain mono-causality, which does not take into account other socioeconomic and political factors that might be present at the same time (Castles 2002; Piguet et al. 2011). Castles (2002, p. 5) further suggests in this regard that environmental factors "are part of complex patterns of multiple causality, in which [they] are closely linked to economic, social and political ones".

On the other hand, Richmond (1993 in Clark 2007) has suggested that "the reality of (...) migration induced mainly, or partly, by environmental factors cannot be denied". According to this approach, a major difference between forced migration caused by political reasons and/or conflict and forced migration attributed to environmental factors is that the latter seldom could affect a whole nation and that the displaced persons could possibly find shelter within their country (Hugo 1996).

But is this sufficient for the term "refugee" to be employed in this case? As has already been argued, this term has legal connotations, which make its use for people displaced, or predicted to be displaced in the future, for environmental reasons confusing. On the other hand, as McNamara (2007, p. 16) rightfully observes "[the] United Nations High Commissioner for Refugees (UNHCR), [has defined] a migrant (...) as someone who voluntarily leaves his [sic] country in order to take up residence elsewhere". So, the term 'migrant' and the voluntariness it implies, seem also inappropriate to describe the situation.

Moreover, the use of this term, according to the author, serves in downplaying the seriousness of the issue, "which in a legal context served to only further delegitimize" it.

For this reason, a considerable number of other terms have occasionally been used by researchers "to refer to persons fleeing climate hazards, and more generally, environmental disturbances". Today, the terms Environmentally Induced Population Movements (EIPM) and Environmentally Displaced Persons (EDP), seem as appropriate to describe the category of migration movements, where the environmental factor is "decisive, but not necessarily unique" (Piguet 2008, p. 4).

Sea level rise

Where there is a consensus among the scientific community is on that it is not easy to make very accurate predictions regarding climate and its impact on population movements. However, as was mentioned above, there are some expected consequences of climate change, which compared to past experiences could help establish a list of the populations most at risk and outline possible migration flows. According to IPCC (2007b), three consequences of climate warming appear to be the most threatening potential causes for migrations:

- The increase in strength of tropical hurricanes and the frequency of heavy rains and flooding, as a result of the rise in evaporation with increased temperatures.
- The growth in the number of droughts, with evaporation contributing to a decrease in soil humidity, often associated with food shortages.
- Finally, rising sea levels resulting from both water expansion and melting ice.

This section of the paper focuses on the third of the above-mentioned consequences that is the rise of the sea level, apparently the phenomenon that is most directly linked to climate change. According to Piguet et al. (2011) this phenomenon is "virtually irreversible and manifests itself in a more or less linear way over a long period of time". Moreover, rising sea levels constitute a hazard that could make migration the only possible option for the population affected (Piguet 2008). Although human societies have not yet experienced a large scale threat emanating from rising sea levels, historical evidence of the severity of this phenomenon do exist.

The case of Holland Island in Chesapeake Bay is perhaps the only or one of the very few case studies on forced migration caused by sea level rise. What happened there was that a rise of approximately 20 cm over a time period of 70 years, caused erosion of the coastal area and a subsequent loss of land, which gradually led to the abandonment of the island. The analysis of the strategy followed by this small community of 300 inhabitants indicates that before total abandonment, people first chose to take measures to prevent erosion or to relocate internally. What is interesting in this case is that final abandonment took place before the island became uninhabitable. It was concluded that the continuous out-migration did not leave sufficient inhabitants to sustain community services, which led to the final abandonment of the island (Gibbons & Nicholls 2006; Perch-Nielsen et al. 2008). As this case illustrates migration caused in the first place by environmental factors may in turn cause more migration.

The fact that population density is nearly three times higher along the coasts around the globe than on average and that the coastal populations tend to grow twice as fast as the global population, makes the potential impact of rising sea levels even more significant (Perch-Nielsen et al. 2008). As Piguet et al. (2011) point out, recent estimations suggest that "populations living at an altitude of less than 1 meter above sea-level" would be directly vulnerable within a decade. Anthoff et al. (2006 in Piguet et al. 2011) claim in this regard that approximately 146 million people, living mainly in overcrowded areas of South and East Asia, could be affected by rising sea level. Finally, as Perch-Nielsen et al. (2008) note, the sea level rise, in its projected rate, is a relatively new phenomenon for most world regions, meaning that there is little experience on how to tackle it. However, Kabat et al. (2009), discussing the measures taken by the Dutch government towards the improvement of the country's dykes' protection system, has highlighted the significance of financial resources in mitigating phenomena even of this magnitude.

Various processes, related to a warmer climate, tend to increase the sea level. Among them are the melting of small mountain glaciers, the melting of the Greenland ice cap, and the thermal expansion of the sea water itself. As far as the first process is concerned, it is projected that if all mountain glaciers were to melt, the level of the sea would rise by approximately 50cm. The second process could result to even an increase as big as 7,4m of the sea level if the Greenland ice cap were to melt completely. The third process refers to the decrease of the density of the sea water as it warms. This means that a given mass of sea water will occupy a greater volume as it gets warmer, thus increasing the average sea level. It should be noted that these processes are quite slow (Harvey 2000).

The way in which sea level rise is considered to affect migration then is quite straightforward: "as land is lost because of sea level rise, there will be an increase of out-migration" (Leatherman 2001 in Perch-Nielsen et al. 2008). Furthermore, sea level rise manifests itself not only through constant direct effects, like inundation, but also through action in discrete time steps through storms and consequent flooding. Moreover, relative sea level rise, that is the level of the sea relative to the land, can cause erosion of the beach, as waves would break closer to shore, acting farther up the beach profile. A move in shoreline of 0.8 to 2.4 m every 5 years until 2100, as projected by the IPCC (2007b), is indicative of the possible extent of the problem.

On the other hand, consequently, the damage to or loss of any structures near the sea used for economic activity can lead to a reduced income and loss of employment. One example related to this, comes from Alexandria in Egypt, where it was estimated that "a sea level rise of 50 cm could bring about a loss of approximately 200,000 jobs, 80% of which in industry". The tourism sector in affected areas is also particularly vulnerable as coastal zones are in general a main point for a substantial part of tourism in countries with sea. As a direct link between loss of property and migration indeed exists, the extent of migration seems to depend primarily on the adaptation options chosen (Perch-Nielsen et al. 2008).

Nevertheless, it is widely suggested (Fischer & Malmberg 2001; Findlay 2011) that the "(emotional) attachment to place" (Perch-Nielsen et al. 2008, p. 388), has also an important role to play and can be so strong that may even push the decision regarding the main strategy towards the phenomenon, to the adoption of protection or other measures, as shall be shown later in the case of Tuvalu.

In reality, research conducted so far shows that due to the number of factors involved, it could not be suggested that climate change would inevitably result in mass migrations. Indeed, even if environment became more harsh in the future and the sea level actually rose substantially, "political efforts and measures of protection", along with persistence due to emotional attachment, could probably be able to limit the need for migration, provided that the essential financial means were made available (Findlay 2011). The erection of dykes for instance, could, at least partially, counteract the rising sea levels. The Stern report states exactly that the number of people who will be displaced or forced to migrate will largely relate to the "level of investment, planning and resources', before estimating the cost of mitigation to be several billion dollars" (Piguet 2008, p. 8).

Small-island States and the case of Tuvalu

Within this context, it is made apparent that the projected impact that sea level rise can have on small island States in general and in Tuvalu more specifically is considerable. Small-island (often atoll or reef islands) States were chosen as a case-study among other regions because of their special characteristics, such as their limited size and the fact that they have a considerably low adaptive capacity, also due to the adaptation costs which are high in relation to their GDP. It is suggested that these characteristics tend to make them more vulnerable (IPCC 2007).

Coral reef environments, which exist in many small island States, are considered to be "the most vulnerable ecosystems to each degree of change in global temperature" and subsequently to a "sudden", in geological time, change in climate (Locke 2009, p. 171). They are distributed throughout the tropical Indo-Pacific oceans and are home to as many as 700,000 people. These islands are generally small, with a low altitude, and as already mentioned, some are situated only centimetres above water. Thus, they are highly susceptible to elevated sea levels caused by global warming (Yamano et al. 2007).

The environmental threats illustrated earlier, combined with socioeconomic factors could have an even more negative effect on these low-lying small island countries (Locke 2009). Their relative geographical isolation from the big world markets, along with their small internal market and the small diversity of natural resources create significant economic disadvantages. Furthermore, some of these islands, like Tuvalu, have also little land mass, they are quite scattered in the ocean (especially Kiribati) and their soils are extremely poor, all elements that exacerbate the situation (Tisdell 2002). Taking into account that mitigation measures can be very expensive, one can appreciate that the options for at least some of these island States might be limited.

Furthermore, given that the infrastructure is not the same in all islands even within one State, in some of these countries residents are forced to migrate from the more vulnerable outer islands to the capital ones, creating a situation of mutually reinforcing economic and environmental declines (Locke 2009).

Tuvalu is located in the tropical south Pacific. The country, the name of which means "eight standing islands", is actually an archipelago situated in Western Polynesia. With a population of approximately 11,000 people and land mass of 25.63km² that includes nine scattered islands, it is the fourth smallest country in the world. It is composed on its whole of reef islands on atolls and table reefs, which do not elevate more than 4.5 m above sea-level, thus being extremely vulnerable to inundation and coastal erosion, especially in light of the expected future rises in sea level (Tisdell 2002; Farbotko 2005; Yamano et al. 2007).

The relative isolation, geographical segmentation and poor soils of Tuvalu restrict its economic capabilities. The country relies mostly on foreign aid and on its own resources, although to a lesser extent, for the implementation of developmental projects. Nevertheless, the fact that this foreign aid is not stable throughout the years seems to delay the realisation of the projects that are necessary for the protection of the island from environmental hazards of the future (Tisdell 2002).

What makes this small island State so special in comparison to other endangered small island States, like Kiribati, is that due to its geomorphologic and socioeconomic characteristics, it is believed that within the next decades will be rendered uninhabitable due to the rising sea levels. Evidence of future inundation is increasing. Indeed, in 2007, one of Tuvalu's small islets, once rich in flora and fauna, disappeared beneath the sea (Locke 2009).

According to a study conducted in two marine and climate research institutes of Australia, the rate of relative sea-level rise at Funafuti, capital of Tuvalu, is 2 ± 1 mm yr⁻¹. This finding means that rising sea level in this region is a reality. As these scientists noted, they expect that the direct and indirect effects of this rise will cause serious problems for the inhabitants of the country, during the 21^{st} century (Church et al. 2006).

So, the government of Tuvalu, even since 2001, has been in search for possible destinations for the people of this endangered country. Australia and New Zealand have been identified as potential destinations to relocate its population. However, Australia has refused

to discuss relocation agreements with Tuvalu, in line with their strict immigration policy. New Zealand on the other hand, offered to accept as many as 75 Tuvaluans per year. Of course with this rate the country would not empty within this century, but several other labour arrangements have been established to contribute to a gradual, long-term permanent migration of the Tuvaluans (Locke 2009).

In 2004, a National Summit on Sustainable Development took place in Tuvalu, in order to create the basis for a national development strategy. The Tuvaluan government and island authorities, as well as private and community sector representatives, highlighted the need for the introduction of a national climate change adaptation and mitigation strategy. Particularly, emphasis was placed on a need to 'promote awareness on adaptation strategies at all levels' and to 'increase awareness on the issue of sea-level rise and climate change' (Farbotko 2005, p. 282).

Whether the inhabitants of Tuvalu will be forced to abandon their country at some point in the future, as a result of sea level rise and climate change in general, remains to be seen and in any case it is not within the scope of this essay to speculate on it. Rather, having in mind the discussion that has preceded, it seems more interesting and perhaps useful to see how the Tuvaluans themselves see the alleged threat surrounding their island and the possibility of leaving it permanently.

In 2007, Colette Mortreux and Jon Barnett (2009) did some relevant fieldwork which provided them with very interesting information. With respect to the interviewees who planned to remain in their homes indefinitely, the main reason that gave in their answers for this decision was the "lifestyle" in which they were accustomed to. 'Lifestyle' for that research included "a low-stress working environment, close family networks, free time for social activity, and enjoyment of the natural environment".

This conforms to what Findlay (2011, p. 51) has observed from the literature on migrants' destination decisions:

(...), even in adverse environmental circumstances that may be undermining livelihoods and producing lower standards of living, the first principle suggests that the majority of people will seek to remain immobile. This reflects the fundamental observation that most migration 'decisions' are taken in relation to the value systems shared by family, friends and community, and these value systems tend to favour immobility for most people.

For example, one local woman said in this regard: 'Here, a man might catch lots of fish one day and sell it, and the next day he can relax, sleep, visit friends, loaf around for the whole day. You can't do that in New Zealand. You have to work every day, work maybe two or three jobs – and hard labour, construction or factory work – just to make a living' (Mortreux & Barnett 2009, p. 108).

One thing to be noticed from this quotation is the comparison of Tuvaluan lifestyle with that of people in other, more developed, parts of the world. Migration in this way is described as something hard, with considerable disadvantages (Mortreux & Barnett 2009). The second, striking, element is the absence of any reference on sea level rise or climate change in general, thus giving the impression that is not a matter of great concern.

Indeed, it was observed that climate change was not used very often as a reason to leave the atoll. Rather, it was employment and better opportunities that were cited as the major reasons leading to migration. Remarkably, of the interviewees who were planning to migrate, only one cited climate change as the main reason for taking this decision, while another one mentioned it as a secondary factor. Both of them, though, cited other factors as well that influenced their decision, mainly economic ones (Mortreux & Barnett 2009).

Conclusions

This paper has dealt with the issue of climate change induced migration. Disagreements over methodological and definitional issues have divided the academia into two main approaches. The first, supports a certain mono-causality in the relationship between climate change and human mobility, in the sense that the former could act as a primary, even an exclusive, agent to affect the latter. The second approach criticises this view, on the grounds that there is no clear connection or hard empirical evidence to link the two phenomena, other than the "common sense" used by a number of researchers in this regard.

The main elements of this discussion have been highlighted and a short history of this debate has also been provided, so as to set a context for the contemporary research challenges. The paper has also provided an insight into the consequences of climate change in human societies, focusing mainly on the issue of rising sea levels and the possible impact they could have to (forced) human mobility. Finally, the emphasis is placed on the case of Tuvalu and certain elements of the decision making process of its inhabitants.

In its core, the paper has discussed climate change as a phenomenon that is likely to affect people in the near future, causing, potentially, among other things mass migration flows. Developing countries seem to be extremely vulnerable to this scenario, due to their geographical position and socioeconomic characteristics. Nevertheless, as discussed above, migration is not seen from a number of researchers as the only possible human reaction to the predicted harsh environmental conditions. Instead, it is argued by some that other adaptation and mitigation strategies could be employed in order to provide sufficient protection to the most affected populations, if this is economically feasible.

From a migration point of view, and what has already been mentioned, people are in general reluctant to leave their homelands, opting for other solutions first. Whether this is realistic for the poorest and most endangered countries of the world, as the small island States of the Pacific are, seems to be highly based on the cooperation of the international community, in order to address the issue and implement durable solutions. As a Tuvaluan UN ambassador (McNamara 2009) said: "(...) the issue of relocation and resettlement is a very, very serious issue that we are continuing to investigate, but we do not want to leave our land."

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