



CLIMATE MIGRANTS: EXAMINING CUMULATIVE HEALTH IMPACTS

Geography 491: Health and Place

Professor: Dr. Denise Cloutier

Table of Contents

1.0 Introduction	1
2.0 Contextualizing Climate Migrants	2
3.0 Where are they coming from?	3
4.0 Determinants of Health Post-Migration	8
4.1 General health determinants for climate migrants	8
4.2 How climate migrants are vulnerable to health inequities, which as act as determinants to health	9
5.0 Case Studies: Legislation Surrounding Migrant Health Around the World	10
6.0 A Focus on Cumulative Health Impacts	13
7.0 Discussions and Conclusions	15

1.0 Introduction

Climate migrants are consistently underrepresented on the international stage, receiving limited attention, governmental support, and resources to help meet their varied health needs following resettlement. In this paper, climate migrants are conceptualized as individuals who are compelled to leave their homes and often their communities because of environmental factors, such as climate change induced events. This neglect in international attention results in a plethora of negative health consequences for these individuals both prior to and following displacement. The purpose of this paper is to recognize and understand the cumulative health impacts climate migrants face, and to recognize that by addressing these cumulative health impacts early on, the overall health and well-being of climate migrants will improve. The paper will first contextualize climate migrants by explaining their status on an international scale. Next, it will highlight the regions and nations which are currently the main points of origin for climate migrants, as well as areas which are anticipated to yield high numbers of climate migrants in future decades. Third, the social determinants of health which climate migrants are vulnerable to following resettlement are examined. Case studies examining legislation pertaining to migrant and refugee health in Canada and Australia, and a major court decision in New Zealand involving climate migrants are presented next. Finally, the role that cumulative health impacts play in governing the health of climate migrants will be discussed. Prior to the section focused on cumulative health impacts, the paper will establish linkages and relationships between the subject matter in question, and its contributing factors relative to cumulative health impacts. The paper will close with practical recommendations and conclusions to ensure climate migrants maintain an optimal level of health following resettlement.

Contextualizing Climate Migrants

Several sources of literature identify climate migrants as individuals who are compelled to relocate due to significant changes in their surrounding environment which have rendered their place of residence inhabitable (Biermann & Boas, 2008; McMichael & Barnett, 2012; Warner, 2010). An increase in extreme weather events exacerbated by climate change, including floods, droughts, and storm surges are all identified by several sources as key drivers which force people to move, thus rendering them 'climate migrants' (Laczko & Aghazarm, 2009; International Organization for Migration, 2014; McMichael, Barnett, & McMichael, 2012). An all-encompassing, international, legal framework defining climate migrants has yet to be developed, and this has several implications regarding the health of climate migrants (Spector, 2015).

The 1951 United Nations (UN) Convention on the Status of Refugees outlines that refugees are individuals who are forced to permanently flee their homeland due to a "well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion" (p. 14). Environmental factors are not listed in this original convention, nor has it been amended to include them. This limiting definition is a key element of this paper, which will be referred to in subsequent sections. Currently, climate migrants are not guaranteed the same level of support that political refugees receive from host countries or the international community, which is largely a function of the incomplete and inadequate definition provided by the UN Convention of the Status of Refugees (Warner, 2010). These differences are in spite of the fact that 2008 yielded 20 million environmentally displaced persons as opposed to 4.6 million political refugees (Laczko & Aghazarm, 2009). It was not until 2010 that the United Nations Framework on the Convention of Climate Change (UNFCCC) even recognized that the topic of climate migrants needed to be included in future discussions regarding climate change, thus exemplifying the lack of international urgency given to forming a

dialogue and conventions to help address the issue (McMichael et al., 2012; Biermann & Boas, 2008).

The definition must be expanded in the future to include climate migrants.

Biermann and Boas (2008) and McMichael et al. (2012) highlight that “climate refugees” is a misleading and incorrect term, due to the fact that climate migrants are not considered legal refugees on the international stage. Figure 1 conveys the four primary and appropriate terminologies utilized within current academia when discussing environmental displacement of refugees.

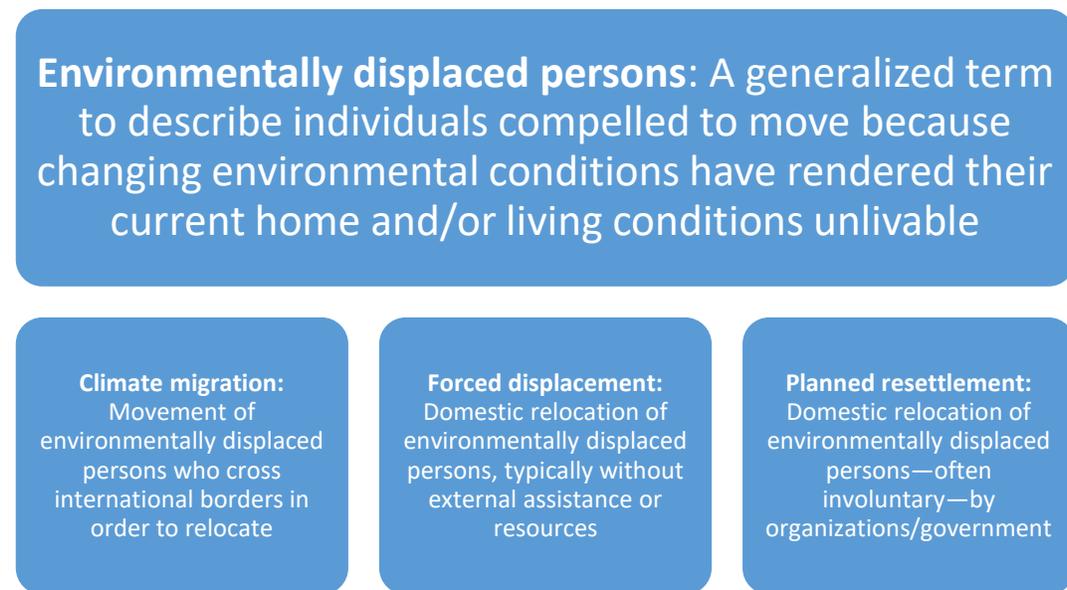


Figure 1. Where climate migrants fall within environmental displacement: Sources: McMichael et al. (2012) & Warner (2010)

3.0 Where are climate migrants coming from?

Estimates suggest that 200 million people will be forced to evacuate their homes by 2050 as a direct result of climate change (Biermann & Boas, 2008). The majority of people expected to be displaced are residents of the Global South—Asia, Africa, and Latin America—where the risks of climate change induced events such as flooding and droughts are most pronounced (Biermann & Boas, 2008; Dow & Downing, 2011).

Marshall Islands and Kiribati have identified themselves and other low-lying island nations in the Pacific, including the Maldives and Tuvalu, as permanently losing valuable land to sea level rise as a result of climate change (Pashley, 2015). This is a notion further supported by Biermann and Boas (2008), who specifically consider these islands to be eventually uninhabitable following a projected 1m rise in sea level, after which the only alternative for citizens of these island nations will be migration. Figure 2 displays a global map that details the number of people who will be affected from sea level rise by 2100 (Dow & Downing, 2011).

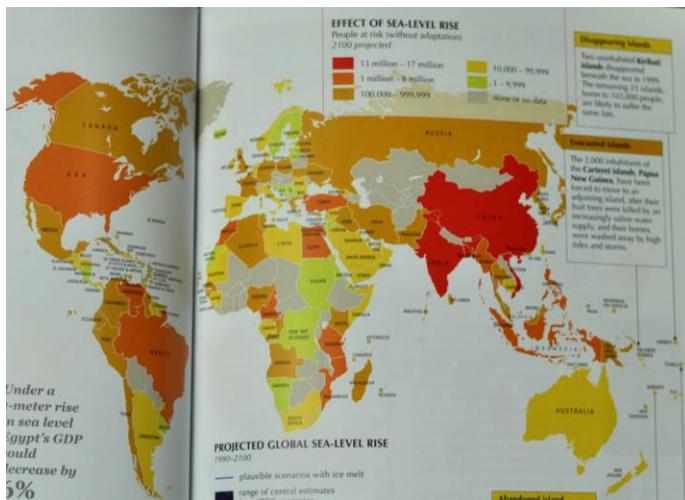


Figure 2. Effect of Sea-Level rise due to Climate Change

Source: *The Atlas of Climate Change*, by Dow & Downing, 2011, Berkley, California: California Press, p. 68.

Figure 2 indicates that up to 17 million people in each Southeast Asian nation of India, China, Bangladesh, and Vietnam will be impacted by sea level rise alone (Dow & Downing, 2011). Changes in global rainfall patterns are also anticipated to have a significant impact on the same regions and consequently on climate migration (Dow & Downing, 2011).

The environmental factors influencing health which drive climate migration are varied and complex; in addition to immediate threats of rising sea levels and the increased occurrence of extreme weather

events, heat stress and drinking water shortages are also expected to drive migration (Biermann & Boas, 2008; McMichael et al., 2012; Huynen, Martens, & Akin, 2013). Water-borne diseases are also likely to grow more prevalent, due to storm surges and floods, thus potentially resulting in increased migration (Boomgard, 2007; McMichael et al., 2012; Warner, 2010). Further, altered weather patterns have been observed to negatively impact crop yields and therefore food security for individuals of the Global South (Dow & Downing, 2011; Djoghlaif & Dodds; Warner, 2010). This loss in agricultural productivity not only holds negative implications for physical health because of malnutrition, but also worsens families' mental states due to loss of financial independence and livelihood (Warner, 2010). An overview of decreased global crop outputs is shown in Figure 3; these impacts are most significant in West Africa, Central Africa, Brazil, and South Asia, exemplifying points of origin for future climate migration (Dow & Downing, 2011).

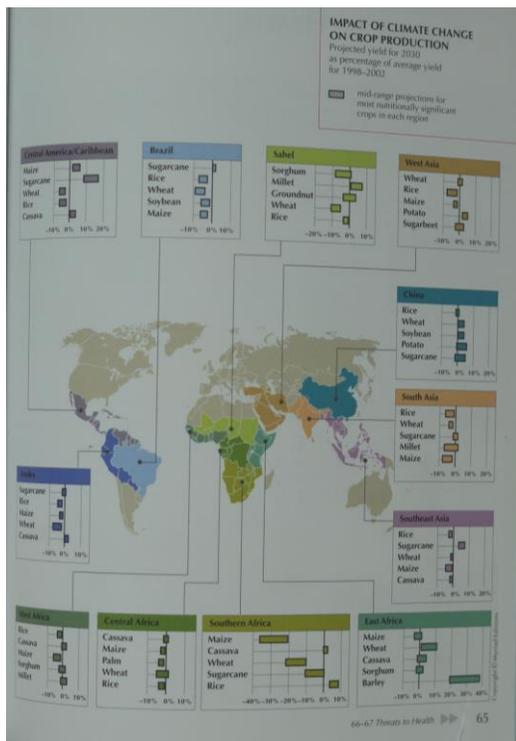


Figure 3. Impact of Climate Change on Crop Production.

Source: *The Atlas of Climate Change*, by Dow & Downing, 2011, Berkeley, California: California Press, p. 65.

Climate migrants fleeing to urban areas are most vulnerable to chronic diseases such as hypertension, diabetes, obesity, kidney disease, and cardiovascular illnesses; therefore, preventive measures should be implemented as soon as possible to mitigate the risk of these diseases (Amara & Aljunid, 2014). The International Organization for Migration (2014) further states that while migration to urban centers can offer better health support and access to health services, it can also pose new environmental health risks, such as the development of respiratory conditions due to air pollution. Housing, employment, ESL programs, and mental health support are all important determinants of health and must be taken into account for any regions receiving immigrants (Dickson, Weber, & Takaro, 2014). Several specific nations have been highlighted as being sources for the greatest number of current and projected climate migrants, due to the compounding effects of climate change. Within the field of health geography, it is important to recognize where individuals are emigrating from since each nation and region may present different health risks that the migrants were previously exposed to; being wary of the varied health risks associated with climate migration will foster the creation of better health policies for climate migrants post-migration.

The Nile river floodplain is Egypt's most populated area. In 1993, its population density was 1,600 people per square kilometre (Myers, 1993). As a result of changing agricultural conditions, food insecurity along the floodplain will drive displacement. Additionally, coastal regions of Egypt will likely experience a 1m sea level rise by 2050, thus compelling 14 million people to relocate (Myers, 1993). The 1m sea level rise scenario in China will result in the flooding of Shanghai, and an ensuing 26.8 million people will be displaced by 2030 (Myers, 1993). India, home to several river deltas and high numbers of coastal residents, will likely see 30 million people displaced by 2030 because of sea level rise and consistent river flooding (Myers, 1993). While the source of these statistics dates back to 1993, few recent studies have compiled similar estimates predicting the number of climate migrants to be displaced in coming decades. Based on additional research between 1993 and 2016 regarding an

unprecedented growth in greenhouse gas emissions and change in global climatic conditions, it is reasonable to assume that the above statistics are conservative estimates.

Bangladesh is considered one of the most vulnerable nations to climate change and its resulting health, environmental, physical, and economical implications (Environmental Justice Foundation, 2012; Myers, 1993). The key factors resulting in Bangladesh's high vulnerability include: extreme poverty, coastal adjacency, and frequent occurrences of natural disasters (Environmental Justice Foundation, 2012). As the world's densest nation in terms of population, and being situated a mere 5 metres above sea level, it is also unequipped to appropriately protect its citizens from drought, sea level increase, and increased floods and storm surges (Environmental Justice Foundation, 2012; Myers, 1993). Sea level rise and flooding within Bangladesh are also responsible for growing salinization of drinking water via ponds and wells (Environmental Justice Foundation, 2012). Current data estimates that 11% of Bangladesh will be flooded by 2030, thus affecting upwards of 15 million people (Environmental Justice Foundation, 2012).

Internal displacement due to climate change currently occurs more often than broader scale climate migration; it provides fewer legal obstacles, is closer in proximity, and allows individuals to remain within their cultural environment (Environmental Justice Foundation, 2012; McMichael et al., 2012). However, internal displacement can only perpetuate itself for a limited time; eventually, nations such as Bangladesh will no longer offer enough physical space to allow for incoming displaced persons, who at that point, will be faced with migration as their only option (Environmental Justice Foundation, 2012).

4.0 Determinants of Health Post-Migration

4.1 Experiences taking place prior to migration, acting as health determinants

In order to better comprehend the cumulative health impacts climate migrants face, it is important to be cognizant of the climate migrants' experiences prior to arriving in the destination country, and how

those experiences (both pre and post) may act as health determinants. Internal displacement, which may occur before migration, often results in higher incidence of mental health illnesses including post-traumatic stress disorder and depression (Siriwardhana & Stewart, 2012). The health conditions contracted as a result of internal displacement often follow climate migrants to their destination countries, and have the potential to exacerbate future health issues if not immediately addressed. For example, World War II survivors who were subjected to forced displacement displayed signs of lower life satisfaction six decades later (Siriwardhana & Stewart, 2012). Migration across the Mediterranean Sea in winter is perilous, yet is a reality for many migrants from Pakistan, Syria, Somalia, Iran, and Bangladesh (Brod & Brod, 2015). Once arriving at their destination, climate migrants often experience domestic displacement camps, which are home to poor living conditions, including poor sanitation and limited access to food and water (McMichael et al., 2012). Moreover, these camps present heightened risks of violence and sexual abuse to the internally displaced women (Brod & Brod, 2015; McMichael et al., 2012). Close living conditions result in greater risks of being exposed to infectious diseases such as measles, hepatitis, and cholera which may amplify other health issues post-migration (McMichael et al., 2012).

Degraded mental health post-migration is another prominent concern surrounding refugees and climate migrants alike. Being forced to leave one's homeland, where they have built a livelihood and fostered community ties can often be detrimental to their social and mental well-being (McMichael et al., 2012). Examples of the most important social determinants of health as identified in a British report included community resilience, safe and appropriate labour environments, healthy surrounding environments, and adequate income to support oneself (Marmot & Allen, 2014). The displacement experienced by climate migrants disrupts all of the above factors, as the individuals are no longer able to support themselves financially, and have likely retreated to an unknown environment which no longer provides strong social networks.

4.2 How climate migrants are vulnerable to health inequities, which act as determinants to health

Immigrant status, unemployment, types of employment, and low quality housing are all identified as sources of health inequities within Britain and other developed nations (Dahlgren & Whitehead, 2007; Kulkarni & Subramanian, 2009; Working Group on Inequalities, 1980). Health inequities are the resulting disparities in health between groups of individuals in society, typically due to the avoidable societal factors listed above (Kulkarni & Subramanian, 2009). Health inequities are major health determinants, as they have implications for individuals regarding healthcare access and healthy lifestyles. The Black Report was a groundbreaking British report in 1980, authored by the Working Group on Inequalities in Health. Amongst its various findings, it determined that workers in lower employment classes had limited access to healthcare services, likely because of decreased means, access, and income. This notion supports arguments made by Dahlgren & Whitehead (2007) and Kulkarni & Subramanian (2009) that working conditions are important determinants of health. The BC Healthy Living Alliance (2009) outlines the various demographics and societal groups who experience health inequities, and includes new immigrants (2009). In addition, it is reasonable to assume that many immigrants and refugees, including climate migrants, face employment challenges upon relocation, which as evidenced above, act as barriers to attaining optimal health.

After identifying and recognizing the social factors causing health disparities and negative health conditions, the same factors must also be analyzed to determine how they have resulted in health inequities amongst disadvantaged populations, such as climate migrants (Kulkarni & Subramanian, 2009). A key point is that negative health issues do not have a uniform distribution spatially, ethnically, or across income levels (Kulkarni & Subramanian, 2009). Advancements in health research, technologies, and medical procedures may adequately address diseases and health conditions, but will not inherently eliminate inequities (Kulkarni & Subramanian, 2009).

The BC Healthy Living Alliance (2009) provides local examples of the health challenges faced by new immigrants who arrive in British Columbia. Migrant status as a social determinant of health is also supported by the International Organization for Migration (2014), which states that migrants experience greater barriers to receiving proper treatment, as well as having an increased risk of contracting diseases. Research has confirmed that immigrants who were in relatively good health prior to arriving in their host country often experience declines in health, mainly attributed to added stressors, adjustment difficulties, and a loss of social networks (BC Healthy Living Alliance, 2009; Ng, 2015). This conclusion illustrates that migration to a new country with a more stable government, fewer climate change induced disasters, and improved standards of living does not automatically guarantee optimal health for immigrants.

5.0 Case Studies: Legislation Surrounding Migrant Health Around the World

The lack of recognition on an international scale regarding climate migrants as refugees presents significant health implications, both cumulative and acute. In particular, Canada and Australia are highlighted as obstructing the health of migrants and refugees post-movement; specific pieces of Canadian legislation which have prevented immigrants and refugees from attaining optimal health are presented first.

Canada's Bill C-31, which was implemented under the Conservative government in 2012, drastically reduced access to healthcare for refugees and recent immigrants (Eggertson, 2015; Payton, 2014; Taylor, 2015). These cuts were vast, including a loss of counselling, vision, and dental services (Eggertson, 2015). Further, this piece of legislation cancelled additional coverage, including prenatal coverage as well as coverage for privately sponsored refugees fleeing from more stable nations. The result created classes of refugees and immigrants with different levels of healthcare coverage

(Eggertson, 2015). Based on previous discussions regarding the international definitions of refugees, and the fact that climate migrants are often not fleeing politically unstable nations, any climate migrants arriving in Canada after 2012 would have likely been receiving extremely limited healthcare coverage, if any at all. The government's rationale was based on preventing illegal immigrants from gouging the Canadian healthcare system; however, legitimate, privately sponsored refugees were also barred from accessing needed services (Webster, 2015). The 2014 Federal Court ruling cited these cutbacks as 'unconstitutional,' as they clearly violated basic human rights of refugees and immigrants by placing their health at risk, however, the federal government failed to reverse the legislation (Payton, 2014; Webster, 2015). Further, the decision highlighted Bill C-31 as being especially damaging to child refugees, who at a critical growth and development period in their lives, cannot afford to be deprived of basic healthcare services (Payton, 2014).

Bill C-49, also legislated by the Conservative government, removed time limits on refugee deportation: such that refugees could be deported at any time, regardless of a pending application, the amount of time they have spent in Canada, or their employment status (Burr, 2011). Together, Bills C-49 and C-31 pose significant risks to the mental and psychological health of refugees, by creating further legal obstacles hindering their ability to remain within the country (Burr, 2011; Taylor, 2015). Bills C-49 and C-31 have allowed the federal government to easily and immediately imprison refugees arriving on human smuggling ships, and reserve the right to refuse recognition of refugee status; due to the lack of international support directed at climate migrants, they often must resort to illegal entry via ships when forced to migrate (Burr, 2011; Taylor, 2015). Heightening the difficulties already involved with applying for permanent residency, Canadian physicians agree that both bills impose unnecessary psychological stress on refugees, worsening their mental health and infringing upon their personal security (Burr, 2011; Taylor, 2015). A case study of 43 walk-in clinics in Ottawa, following the enactment of Bill C-31, found that only 14 of the clinics treated refugees without requiring upfront payment; four of them did

not treat the refugees at all, and 25 demanded payment before treatment (Eggertson, 2015). The physician consensus was similar, noting that refugees should not be compelled to provide payment initially, then attempt to be reimbursed at a later date (Eggertson, 2015). Doing so invokes excess stress on refugees. Both bills and their resulting implications are examples of how stress accumulates and affects the health of climate migrants.

Laws promoting poorer health for refugees are also in effect in Australia, with many parallels to the Canadian legislations previously described. Australia has been found to regularly detain refugees upon entry, which has been linked to self-harm, suicides, and overall poor mental health for adults and children alike (Taylor, 2015). To counteract the poor treatment of refugees, the province of Western Australia has enacted a successful program involving comprehensive screening for paediatric refugees, followed by referring the children to paediatric specialists to address their specific health needs (Francis, Mutch, Rutherford, & Cherian, 2012). However, a universal program as such is lacking throughout all of Australia, and Francis et al. (2012) call upon the federal government to enact universal health coverage targeted at paediatric refugees. Paediatric refugees are susceptible to vitamin and mineral deficiencies, as well as various infections including schistosomiasis, tuberculosis, malaria, and Hepatitis B (Francis et al., 2012). Further, separation from close family and friends and living in refugee camps combined with their young age has been proven to exacerbate issues of post-traumatic stress disorder (Francis et al., 2012).

A 2015 New Zealand court case denying a family status as climate refugees is a further example of the lack of international compassion and support provided for climate migrants. The couple in question arrived in New Zealand in 2007, and felt compelled to remain in the country past their permit expiration in 2010 because of rising sea levels and fears of drinking water contamination in their home nation of Kiribati (Dastgheib, 2015). When it was eventually brought to the attention of police that the couple

and their three children had overstayed their permit; they were then sentenced to deportation (Dastgheib, 2015). The family's lawyer argued that their basic civil rights stipulated that they should be granted refugee status. The safety and security of their children was threatened due to fear of storm surges, losing their home to rising sea levels, and health risks associated with water contamination (Dastgheib, 2015). However, the judge denied the request because the family was not considered legal refugees under the UN Convention on the Status of Refugees: they would not be exposed to political turmoil or immediate government harm upon return to Kiribati (Dastgheib, 2015). After being denied refugee status, the family was forced to return to Kiribati (Dastgheib, 2015).

6.0 A Focus on Cumulative Health Impacts

Combined and compounded health risks, also known as cumulative health impacts, are frequently experienced by climate migrants, and are hypothesized to have significant effects on their post-migration health (Alexeeff, Faustk, August, Milanes, Randles, Zeise, & Denton, 2012). Cumulative health impacts can be described as health issues which manifest and persist over an extended period of time (Morello-Frosch, Zuk, Jerrett, Shamasunder, & Kyle, 2011). They can also be considered as positive feedback loops: continual, compounding effects resulting in new negative health conditions, of which each are more severe than the previous (Dahlgren & Whitehead, 2007). Cumulative health impacts are not often taken into account when designing health prevention and remediation strategies; however, they are key underpinnings to the overall health of climate migrants. They begin to take effect when climate change induced events compel the migrants in question to relocate, whether internally or in the form of cross-border migration. The simple notion of losing all community ties and independence because of climate change induced events, followed by a state of limbo and loss of identity due to not being legally recognized as climate refugees, acts as the base from which many future health issues stem.

A preferred technique for addressing issues caused by cumulative health impacts involves addressing the health concerns from all four levels of health determinants as identified by Dahlgren & Whitehead: socio-economic, cultural, and environmental conditions; living and working conditions; social and community networks; and individual lifestyle factors (2007). Doing so avoids a reductionist approach, in which each cumulative impact is viewed as separate and non-related from other observed health impacts (Dahlgren & Whitehead, 2007). A key identifier of cumulative health impacts is that it is a product of several different sources. Therefore, comprehensive solutions are the most conducive, such as the solution presented above, in which multiple factors are taken into account to devise an appropriate framework (Dahlgren & Whitehead, 2007). Removing legal barriers, such as Bill C-31, for climate migrants when accessing healthcare; improving employment opportunities targeted at climate migrants; and assisting climate migrants in establishing new social ties in the communities they have resettled in are all viable methods for which the above model can be used to improve climate migrant health.

Health inequities have also been determined to be functions of cumulative health impacts, and can be transferred between generations if not appropriately addressed (Working Group on Inequalities in Health, 1980). The Black Report study (1980) referenced by Dahlgren & Whitehead (2007), provided an example of children whose guardians were either unemployed, part of lower occupational classes, or driven to dwell in low-quality housing. The risks of morbidity and mortality these children faced in comparison to their peers were significantly heightened because of the described cumulative health impacts which acted as determinants to their health. The correlation between these examples and children of climate migrants is high: allowing the cumulative health impacts of climate migrants to develop and escalate will not only negatively impact their own health, but will likely be detrimental to the health of their children as well.

While not having a specific focus on climate migrants, the California Environmental Protection Agency is in the process of examining the cumulative, physiological effects of air pollution based on the rationale that the negative health of vulnerable populations may be exacerbated by degraded air quality (Alexeeff et al., 2012). The US Environmental Protection Agency's 2003 *Framework for Cumulative Risk Assessment* also argues that cumulative environmental effects should be taken into greater consideration within the public health realm (Alexeeff et al., 2012). In addition to the physical environment, Morello-Frosch et al. (2011) support the view that cumulative health impacts also include psychosocial factors. Morello-Frosch et al. (2011) further argue that cumulative impacts must be included in scientific conclusions regarding health risks, as cumulative social health impacts play major roles in amplifying health conditions which may have been initially caused by biological/environmental stressors. Recognizing that the health inequities faced by of climate migrants are cumulative, and products of past and present mental, social, physical, and environmental factors is an important step to ensuring appropriate health prevention strategies are exercised.

7.0 Discussions and Conclusions

A stronger focus on the plight of climate migrants is needed to compassionately and adequately address the health of climate migrants after they have resettled in their destination country. Mental and social health issues should clearly be of primary concern; these issues can be addressed by helping them build social networks and better their English language skills post-migration (Goodkind, Jess, Isakson, LaNoue, Githinji, Roche, Vadnais, & Parker, 2014). In particular, facilitating social and community connections between fellow migrants, and those of similar cultural and ethnic backgrounds are deemed the most helpful interventions for improving social health (Goodkind et al., 2014). Migrant families often learn cultural customs and language skills from their own children (Kopinak, 1999); therefore, it is essential for young migrants not to be overlooked by health practitioners either, as argued by Francis et al. (2012).

Meanwhile, addressing the acute, physical health, and social needs of migrants and refugees often holds a two-fold benefit: not only are the physical issues remedied, but the patients are then able to feel like valued, independent, equal, and contributing members of society (Goodkind et al., 2014). The case of providing reading glasses to refugees from Burundi, Rwanda, and the Democratic Republic of Congo was provided as an example (Goodkind et al., 2014). After receiving the prescription lenses, the refugees were able to further their English literacy skills, search for employment, as well as gain additional independence as part of their daily lifestyles (Goodkind et al., 2014).

Undoubtedly amendments to international legislation concerning refugees must be made to climate migrants as refugees; however, Dickson, Webber, & Takaro (2014) further suggest that in order for the health needs of climate migrants to be met following resettlement in Canada, it is necessary for “Climate migrants to be granted permanent residency on humanitarian and compassionate grounds” (p.6). Doing so would remove many of the barriers surrounding access to healthcare, as well as remove external stressors imposed on climate migrants post-resettlement. Dickson et al. (2014) also highlight mental health, employment, and English language courses as target areas for providing specific support programs to climate migrants immediately following migration to their destination nation.

Rather than considering refugee populations to be deficient in some way to workplaces and employers, they should be acknowledged as having a wide array of competencies and skillsets to contribute to the workforce (Kopinak, 1999). They typically possess strong resiliency, determination, and problem-solving skills that would be transferrable to many workplaces (Kopinak, 1999). Reducing barriers for climate migrants regarding employment consequently ensures an adequate level of health is maintained following migration.

Climate migration is an extremely complex issue which we as society have only recently begun to pay heed to. It has already begun to affect the entire globe, and this issue will only increase in magnitude

and severity as climate change induced events grow more severe and frequent in the future. Twenty million environmentally displaced persons were estimated in 2008, while sea level rise in Bangladesh alone is expected to displace over 15 million people by 2030 (Environmental Justice Foundation, 2012; Laczko & Aghazarm, 2009). The physical loss of significant portions of land to sea level rise, and changing climatic conditions rendering other regions uninhabitable are major concerns which will drive people to pursue cross border migration, simply to find available land to live on. Climate migrants can no longer be ignored by the developed world; they are an inevitable outcome of climate change, and developed nations must be prepared to accept increasing numbers of climate migrants in the coming decades. Identifying climate migrants as distinct from political refugees and other types of immigrants is key in developing appropriate healthcare policies targeting climate migrants.

Many of the primary health challenges climate migrants face stem from inadequate international legislation which refuses to acknowledge climate migrants as refugees. The New Zealand court case in which climate migrants were denied refugee status exemplifies the lack of support provided for individuals displaced from their homes due to climate change induced events. This paper also highlighted Canadian legislation, specifically Bills C-31 and C-49 that have been criticized by healthcare professionals as hindering the progression of refugee and migrant health status following resettlement in Canada. These acts must be amended in order to better meet the health needs of migrants. However, in many instances, they would be considered irrelevant without creating a separate, internationally recognized class of refugees consisting of persons forced to relocate because of climate change induced events.

It is important to consider the long-term cumulative health impacts on climate migrants' experiences within their destination country post-migration. Immigrants, and particularly climate migrants, are not guaranteed better health post-migration simply because they have arrived in a nation which is not

plagued by the problems experienced in their home country. Instead, barriers to receiving healthcare, a lack of social networks, social isolation, lack of language skills and barriers to employment, and urban environmental health risks are examples of factors contributing to cumulative health impacts. Health inequities also influence cumulative health impacts, and are often experienced by climate migrants, acting as obstacles to attaining an optimal state of overall health and well-being. Recognizing the geographical areas where climate migrants are currently being displaced from, and expected to be displaced from in future decades, provides better insight into the primary health concerns the migrants have faced prior to leaving their home nation.

Cumulative health impacts are important factors to consider when designing health prevention strategies. In regards to best meeting the health needs of climate migrants post-migration, recognizing the types of the cumulative impacts which climate migrants experience should be considered the initial stage in planning health policies. Examples of these cumulative health impacts range from not being recognized as legal refugees, to being deprived of basic healthcare access, to losing important social and community ties, to contracting diseases and health conditions as a direct result of climate change induced events. Recognizing and addressing these challenges will ideally result in the existing health conditions of climate migrants being mitigated, as well as helping to prevent new health issues from emerging.

References

- Alexeeff, G. V., Faustk J. B., August, L. M., Milanes, C., Randles, K., Zeise, L., & Denton, J. (2012). A Screening Method for Assessing Cumulative Impacts. *International Journal of Environmental Research and Public Health*, 9(2), 648-659. Doi: 10.3390/ijerph9020648
- Amara, A. H., & Aljunid, S. M. (2014). Noncommunicable diseases among urban refugees and asylum-seekers in developing countries: a neglected health care need. *Globalization and Health*, 10 (24). Doi: 10.1186/1744-8603-10-24
- BC Healthy Living Alliance. Healthy Futures for BC Families: Policy Recommendations for Improving the Health of British Columbians. Vancouver, BC, CAN: BC Healthy Living Alliance, 2009. ProQuest ebrary. Web. 31 January 2016.
- Biermann, F., & Boas, I. (2008). Protecting Climate Refugees: The Case for a Global Protocol. *Environment*, 50(6), 8-17. Retrieved from EBSCOhostCurtis, (2010). *Space, Place, and Mental Health*. Retrieved from http://samples.sainsburysebooks.co.uk/9780754690405_sample_947373.pdf
- Boomgaard, P. (Ed.). (2007). *World of Water: Rain, rivers, and seas in Southeast Asian histories*. Netherlands: KITLV Press.
- Brod, L. & Brod, S. (2015, November). Icy reception. *The Economist*, 49.
- Burr, W. (2011). Refugee health. *CMAJ*, 183(1), E49-E52. Doi: 10.1503/cmaj.109-3753
- Dahlgren, G. & Whitehead, M. (2007). Policies and strategies to promote social equity in health, *Institute for Future Studies*, 2007:14. Retrieved from: http://s2.medicina.uady.mx/observatorio/docs/eg/li/Eg_2007_Li_Dahlgren.pdf
- Dastgheib, S. (2015, September 22). Kiribati climate change refugee told he must leave New Zealand. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2015/sep/22/kiribati-climate-change-refugee-told-he-must-leave-new-zealand>
- Dickson, S., Webber, S., & Takaro, T. K. (2014). Preparing BC for Climate Migration. *Climate Justice Project*. Retrieved February 29, 2016, from https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2014/11/cpa-bc_ClimateMigration_web.pdf
- Djoghlaif, A. & Dodds, F. (Eds.). (2011). *Biodiversity and Ecosystem Insecurity*. London, England: Earthscan.
- Dow, K., & Downing, T. E. (2011). *The Atlas of Climate Change*. Berkley California: University of California Press.
- Eggertson, L. (2015). Optimism for restoration of refugee health care. *CMAJ*, 188(1), E1-E2. Doi: 10.1503/cmaj.109-5196

- Environmental Justice Foundation. (2012). A nation under threat: The impacts of climate change on human rights and forced migration in Bangladesh. Retrieved Mar 6, 2015, from http://ejfoundation.org/sites/default/files/public/A_Nation_Under_Threat.pdf
- Francis, J., Mutch, R. C., Rutherford, D. M., & Cherian, S. (2012). Universal Paediatric Refugee Health Screening. *Journal of Paediatrics and Child Health, 48*, 1048-1049. Doi: 10.1111/j.1440-1754.2012.02598.x
- Goodkind, J. R., Jess, J. M., Isakson, B., LaNoue, M., Githinji, A., Roche, M., Vadnais, K., & Parker, D. P. (2014). Reducing refugee mental health disparities: A community-based intervention to address postmigration stressors with African adults. *Psychological Services, 11*(3), 333-346. Retrieved from <http://dx.doi.org.ezproxy.library.uvic.ca/10.1037/a0035081>
- Huynen, M., Martens, P., & Akin, S. (2013). Climate change : an amplifier of existing health risks in developing countries. *Environment, Development, and Sustainability, 15*(6), 1425-1442. Doi: 10.1007/s10668-013-9450-4
- International Organization for Migration. (2014). Retrieved February 8, 2016, from http://publications.iom.int/system/files/pdf/mecc_outlook.pdf
- Kopinak, J. K. (1999). The Health of Bosnian Refugees in Canada. *Ethnicity & Health, 4*(1-2), 65-82. Doi: 10.1080/13557859998209
- Kulkarni, V. S & Subramanian, S. V. (2009). Social Perspectives on Health Inequalities. *A Companion to Health and Medical Geography, 20*, 375-398. Doi: 10.1002/9781444314762.ch20
- Laczko, F. & Aghazarm, C. (Eds.) (2009). *Migration, Environment and Climate Change: Assessing the Evidence*. Geneva, Switzerland: International Organization for Migration.
- Marmot, M. & Allen, J. J. (2014). Social Determinants of Health Equity. *American Journal of Public Health, 104*(S4), S517-S519.
- McMichael, C., Barnett, J., & McMichael, A. J. (2012). An Ill Wind? Climate Change, Migration, and Health. *Environmental Health Perspectives, 120*(5), 646-654, doi: 10.1289/ehp.1104375
- Morello-Frosch, R., Zuk, M., Jerrett, M., Shamasunder, B., & Kyle, A. D. (2011). Understanding The Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy. *Health Affairs, 30*(5), doi: 10.1377/hlthaff.2011.0153
- Myers, N. (1993). Environmental Refugees in a Globally Warmed World. *American Institute of Biological Sciences, 43*(11), 752-761. Retrieved from <http://www.jstor.org/stable/1312319>
- Ng, E. (2015). *The healthy immigrant effect and mortality rates*. Retrieved March 13, 2016, from <http://www.statcan.gc.ca/pub/82-003-x/2011004/article/11588-eng.htm>
- Pashley, A. (2015, October 6). Climate change migrations is “genocide,” says Marshall Islands minister. *Climate Home*. Retrieved from <http://www.climatechangenews.com/2015/10/05/climate-change-migration-is-genocide-says-marshall-islands-minister/>

- Payton, L. (2014, July 4). Federal government to appeal ruling reversing “cruel” cuts to refugee health. *CBC News*. Retrieved from <http://www.cbc.ca/news/politics/federal-government-to-appeal-ruling-reversing-cruel-cuts-to-refugee-health-1.2696311>
- Siriwardhana, C. & Stewart, R. (2012). Forced migration and mental health: prolonged internal displacement, return migration and resilience. *International Health*, 5(1), 19-23. Doi: 10.1093/inthealth/ihs014
- Spector, J. (December 7, 2015). The Paris agreement won't do anything to protect climate refugees. *Grist Magazine*. Retrieved from, http://grist.org/climate-energy/the-paris-agreement-wont-do-anything-to-protect-climate-refugees/?utm_source=twitter&utm_medium=tweet&utm_campaign=socialflow
- Taylor, L. (2015). Designated inhospitality: the treatment of asylum seekers who arrive by boat in Canada and Australia. *McGill Law Journal*, 60(2), 333. Retrieved from <http://www.journal.law.mcgill.ca>
- Warner, K. (2010). Global environmental change and migration: Governance challenges. *Global Environmental Change*, 20(3), 402-413. doi:10.1016/j.gloenvcha.2009.12.001
- Webster, P. C. (2015). Canada criticised over refugee health-care restrictions. *The Lancet*, 386(10002), 1436. Doi: [10.1016/S0140-6736\(15\)00457-2](https://doi.org/10.1016/S0140-6736(15)00457-2)
- Working Group on Inequalities in Health. (1980). *Black Report*. London: England. U.K. Government Social Services