

Essai

Edited by The Hugo Observatory of the University of Liège, this volume is the ninth in the annual series and the fourth of its kind published with the Presses Universitaires de Liège. *The State of Environmental Migration* aims to provide its readership with the most updated assessments on recent events and evolving dynamics of environmental migration throughout the world. Each year, the editors select the best graduate student work from the course "Environment and Migration" taught by Caroline Zickgraf at the Paris School of International Affairs (PSIA) of Sciences Po. In this edition, the effects on migration and displacement of some of the most dramatic disasters of 2018 are studied, including the Sulawesi earthquake and tsunami in Indonesia, Hurricane Florence and Camp Fire (which was the deadliest and most destructive wildfire in California's history) in the United States, and the Volcán de Fuego eruption in Guatemala. The relationship between progressive environmental changes and migration in the Nepalese Hindu Kush Himalayas, and the effects of armed conflicts on the prevention and management of disaster-induced displacement in Afghanistan are also analysed and discussed.

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C. Zickgraf, T. Castillo Betancourt, E. Hut (eds.) - The State of Environmental Migration 2019

The State of Environmental Migration 2019

A review of 2018



C. Zickgraf, T. Castillo Betancourt, E. Hut (eds.)



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Caroline ZICKGRAF,
Tatiana CASTILLO BETANCOURT
Elodie HUT (EDS.)

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Introduction

Caroline Zickgraf, Tatiana Castillo Betancourt and Elodie Hut

The year 2018 corresponded to the year with the highest number of people living in internal displacement on record: 28 million new displacements were documented, of which 17.2 million were attributed to disasters (IDMC, 2019). Weather-related hazards accounted for approximately 56% of internal displacement, with storms – cyclones, hurricanes and typhoons – and floods alone triggering 14.7 million new displacements. Furthermore, 11,804 lives were lost and 68.5 million people were affected due to natural disasters (CRED, 2019). Climate change poses additional challenges to populations located in regions prone to natural hazards as it alters the intensity and frequency of these hazards, and thus limits the reactive capacity of vulnerable populations. In addition to changing the patterns of sudden-onset disasters, climate change has also triggered progressive environmental changes, both of which have deeply transformed the relationship between environment and migration.

Edited by The Hugo Observatory of the University of Liège, *The State of Environmental Migration 2019: A review of 2018* is the ninth in the annual series and the fourth of its kind published with the Presses Universitaires de Liège. Year after year, students of the course “Environment and Migration” at the Paris School of International Affairs (PSIA) of Sciences Po have been exploring the diversity of human circumstances situated along the environment-migration nexus through conducting a wide range of case studies from all over the globe. The authors conducted key informant interviews, desk-research, qualitative and quantitative analyses to shed light on the various processes through which environmental change impacts migration and displacement patterns. For instance, Shealy examines how environmental changes exacerbate existing social vulnerabilities with the example of the Camp Fire in California while Bull explores the (im)mobility of persons with disabilities during the Sulawesi disaster in Indonesia. As for Wallinger, he analyses how armed conflicts in Afghanistan limit the capability of state and non-state actors to prevent, respond to, and manage disaster-induced displacement. The implementation of a seemingly effective and long-lasting solution to flood-induced displacement is questioned by Guermond, as she discusses the factors affecting the decision-making process of local governments and individuals to participate in property

buyouts in North Carolina after Hurricane Florence. In addition, Pavez Esbry considers an innovative approach that seeks to disrupt pre-existing structures of gender inequality in disaster-displacement settings. Lastly, the relationship between progressive environmental changes and migration is also analysed by Koirala as he examines the linkages between climate change, environmentally-driven migration and remittances in the Nepalese Hindu Kush Himalayas.

Regardless of the multiplicity of processes affecting the environment-migration nexus analysed in this latest edition of *The State of Environmental Migration*, the fundamental necessity to effectively implement inclusive adaptation strategies appears as a recurring theme throughout this volume. Climate change mitigation actions are not enough to safeguard vulnerable populations against the devastating effects of climate change: coordinated, long-term solutions that increase society's resilience to climate change must be set in place sooner rather than later if we aim to reduce future human, economic and social costs of environmental degradation.

Americas

Reframing the Humanitarian Challenge

The Eruption of the Fuego Volcano in Guatemala

Fernanda Pavez Esbry

On June 3rd, 2018, the Fuego Volcano in Guatemala erupted. The disaster affected 1,714,387 Guatemalans: 201 died, 12,823 were evacuated, over 4,500 were displaced and 229 people remained missing according to the latest official report published in February 2019 (Coordinadora Nacional para la Reducción de Desastres (CONRED), 2019; Secretaría de Obras Sociales de la Esposa del Presidente (SOSEP), 2018-2019). The eruption also left significant damages in roads, bridges, schools and energy infrastructure, mainly in the departments of Escuintla, Sacatepéquez and Chimaltenango (CONRED, 2019). The displaced population living in official shelters was recorded at around 3,650 in June 2018, and remained relatively stable until November of that year when it jumped to 4,879 due to renewed volcanic activity. As of February 2019, 2,003 displaced people continued to live in shelters (SOSEP, 2018-2019; CONRED, 2019).

The situation of women displaced due to the eruption of Fuego Volcano is particularly delicate as displacement has been shown to aggravate the legal, socio-economic, and additional inequalities women are already subjected to in their societies (IDMC, 2019). While an analysis of the detrimental effects of displacement on women is crucial to explore the dynamics of gender inequality, this paper seeks to contribute to the debate from a different perspective. In particular, this paper will assess whether disaster displacement in the case of the Fuego Volcano eruption in Guatemala generated the necessary conditions to amplify the empowerment of women and the transformation of gender relations through affirmative actions in shelters, or whether this disaster further aggravated existing inequalities.

In order to do so, the paper will begin by examining the vulnerabilities that were intensified by displacement after the eruption of the Fuego Volcano. Secondly, the paper will study the particular structures and gender dynamics present before the volcano erupted. Then, it will focus on how these structures and dynamics were reinforced—or disrupted—by displacement. Lastly, the paper will assess the potential

of disaster displacement to disrupt pre-existing structures of inequality and to generate incentives for interventions which are mindful of gender dynamics.

This research will focus on the portion of the displaced that went to official shelters as most displaced people took refuge in this type of shelters and information regarding those who chose other options, such as taking shelter with family or friends, is mostly unavailable (J. Peraza, personal communication, April 8, 2019). It would also be extremely difficult to establish the same assumptions for their experiences as those from our target group since living in temporary shelters constitutes an important element shaping the experience of disaster displacement.

The experience of living in official temporary shelters will be taken as a central constitutive element of the experience of displacement in the Guatemalan case. This experience is highly dependent on the intentions, planning, and capabilities of the entities providing and managing the shelters. For this reason, understanding the organisation and operation of official shelters is an essential element to characterize both the extent of the population's vulnerabilities as well as the possibilities for intervention that include a gender perspective.¹ Official shelters are managed by the Secretary of Social Work of the President's Wife (SOSEP) and the relevant municipal authorities, with support from the National Coordinator for Disaster Reduction (CONRED) and other governmental, international and non-governmental entities such as the national police, IOM Guatemala and TECHO Guatemala (a local NGO). One official shelter, "ATU Papa Francisco", is managed by the Catholic Church in coordination with other private and non-governmental entities (De la Roca, personal communication, April 30, 2019).

The experience of displacement will be reconstructed from personal interviews and available resources—such as studies, surveys, reports, databases, and protocols—showing the perspectives of governmental institutions, international organisations and non-governmental organisations involved in the management of official shelters. Testimonies from those displaced would certainly complement the research. However, as displacement is still ongoing in Guatemala and establishing communication with a displaced person presents important ethical and logistical impediments, this was not attempted. Instead, available surveys and

¹ The gender inequalities referred to in this research will include only the contrast between men and women. This is due to the research's scope and the available data and information for the case study.

consultations by different organisations working in temporary shelters will be used to include the perspectives of the displaced to the best extent possible. Some difficulties are to be expected when analysing demographic data as the publication of regular and trustworthy statistics has been categorised as challenging in Guatemala (M. Arévalo, personal communication, April 28, 2019). The latest available census dates from 2002 and although one was recently conducted between 2017 and 2018, its results have not yet been made public.

Finally, this research is framed within the discussion of migration as adaptation as it seeks to find the spaces within a context of disaster displacement where planned interventions can be introduced towards more sustainable and long-term results, as opposed to a more reactive approach of finding the best practices to cope with a situation of displacement. A valuable concept in this sense is that of “gender-transformative adaptation”, which aims to acknowledge and understand the differences in vulnerability amongst the population, to then deliver transformation through tackling this differential (CARE, 2019). Although this concept was born to address vulnerability to climate change, its logic of including gender-transformative interventions that address the differentials of vulnerability between men and women could prove very useful to design policies in contexts of disaster displacement.

Who are the Displaced?

The Fuego Volcano is located in the southern region of Guatemala, between the departments of Escuintla, Sacatepéquez and Chimaltenango (see image 1.1.). Escuintla and Sacatepéquez were the departments most affected by the eruption in terms of destruction and displacement (CONRED, 2018). Eight communities were particularly affected by displacement and suffered the biggest losses in terms of destruction of housing and livelihoods. These were declared as “affected communities” by CONRED: Don Pancho, La Trinidad, La Reina, El Rodeo, El Barrio, Santa Rosa, and San Miguel los Lotes, in the department of Escuintla, and the community of El Porvenir in Sacatepéquez (TECHO, 2018).

The characterisation of pre-displacement life for the affected communities reveals gender inequalities in level of education and workforce participation, and contributes to an initial understanding of the type of context and structures that were potentially disrupted by disaster and displacement.

Of those displaced, forty-three percent had attained primary education, with no significant gender difference. However, 22% of women never attended school compared to only 15% of men (TECHO, 2018). Furthermore, an initial report by IOM Guatemala revealed that 30% of women were illiterate in contrast to 10% of men (IOM, 2018). These statistics reveal that the level of education of the affected population is generally low and there is gender gap.

In terms of workforce occupation before the disaster, 85.2% of men participated in the workforce whereas only 41.5% of women did (IOM, 2018). The main occupations for men were centred around land and agricultural work (43.5%), and in the industry or service sector in urban centres close to their communities (TECHO, 2018).

The majority of women were in charge of reproductive and domestic work and did not receive an income (TECHO, 2018). Of those working, a large portion also participated in the industrial or service sector and a smaller portion performed informal and precarious work around the

Image 1.1. Map of Guatemala Highlighting Fuego Volcano and Surrounding Departments



Map elaborated by the author.

community (TECHO, October 2018). One important difference is that, although informal work in sales and small self-owned businesses occupied under 20% of the workforce, it was more common amongst women (IOM, 2018). A study conducted by IOM found that 33% of the women who were working prior to the eruption, were doing so in their own businesses, compared to 12.6% of men (2018). A likely explanation for this is that women often have lower access to traditional labour market activities (IOM, 2018) thus small and mostly informal entrepreneurial options are more common amongst them (J. Peraza, personal communication, April 30, 2019).

Overall, the displaced population's income relied heavily on land-related activities, be it agriculture or industries related to agriculture, and households were heavily dependent on men's incomes as they were often the heads of household or the sole breadwinners (TECHO, 2019).

It is hard to estimate an average income for the displaced population before the volcano eruption. A study by TECHO estimated that the majority of the displaced lived on Q4,600 a month on average (TECHO, October 2018). This amounts to roughly 530€, well above the minimal income in Guatemala which is just under Q3,000 or 350€ (Ministerio de Trabajo y Previsión Social, 2019). However, upon further revision of their database, it becomes clear that only 362 of the over 1,500 heads of household surveyed provided information about their weekly salary (TECHO, 2018).

Close to 50% of households declared that their main source of income had been "totally affected" by the eruption and around 25% declared it to be "partially affected" (TECHO, October 2018). 71% of households had livestock in their land, of which 41% declared their animals had not been able to escape and 8.7% were still unaware of the fate of their animals (TECHO, 2018). The substantial losses in land and livestock mean that the population working in agriculture will most likely have to find other work, be it in agriculture elsewhere or in other sectors, to continue to provide for their families while they are displaced and even after, as volcanic activity persists and land productivity may be affected for years to come (J. Peraza, personal communication, April 8, 2019).

Interviews revealed a link between the socio-economic vulnerabilities of the affected population and the fact that they lived in areas exposed to the dangers of volcanic activity. Personal interviews with members of international organisations, non-governmental organisations, and academic entities consistently evoked the question of land tenure and

Guatemala's economic model as important factors explaining the vulnerability of those affected by the eruption. Furthermore, consensus exists around the idea that those living in the affected communities were amongst the most socio-economically vulnerable groups in their departments, and that the fact that their communities were located in at-risk zones for volcanic activity was not coincidental (M. Arévalo, personal communication, April 20, 2019; A. de la Roca, personal communication, April 30, 2019).

Guatemala has one of the most unequal land distributions in the region, a situation which started during colonial times and which has not yet been successfully addressed (Reyes, 2017). Land inequality has also been aggravated by the Guatemalan agro-export economic model which has caused communities to be expelled from the land they once owned for the benefit of wealthy families or companies buying land to increase their agricultural production for exports (Guareña, 2016). These land market dynamics have forced families to find new arable and affordable land, which is usually located in at-risk zones for natural disasters (M. Arévalo, personal communication, April 28, 2019). A clear example is the community San Miguel los Lotes. A few decades ago, people settled in San Miguel because it was the only land they could afford. Since their arrival, their situation has been characterised by high poverty and vulnerability, and a very slow improvement in terms of access to basic services and infrastructure (TECHO, 2019). Other communities were relocated to these at-risk zones due to violence and/or disaster. This is the case of the community La Trinidad which has a long history of migration. Its inhabitants first had to flee their original settlement in Huehuetenango, close to the Mexican border, because of internal armed conflict in the country. They spent several years in Mexico before the peace treaties were signed in 1997 and their return was made possible. Then, they were relocated to the skirts of the Fuego Volcano by the government (TECHO, 2019). and tenure is thus essential for this discussion as the government made the decision to allocate high-risk land to an already vulnerable population, begging the question of why at-risk land is being distributed at all in the first place.

Beyond the overall characteristics of the affected communities in terms of land distribution, gender inequalities are visible in this area: women in Guatemala own only 8% of land dedicated to agriculture (Guareña, 2016). In a disaster displacement context, not owning land before the disaster can reduce women's probability of receiving new land or housing, especially if the male head of household or owner of the land

is separated from the family or perishes in the disaster. Existing gender structures such as this one add to the reinforcement of women's vulnerabilities in a context of displacement, as will be discussed next.

Disaster Displacement and Vulnerability

"Disaster displacement", understood as "situations where people are forced to leave their homes or places of habitual residence as a result of a disaster or in order to avoid the impact of an immediate and foreseeable natural hazard" (Platform on Disaster Displacement, n.d.), is seen by states and organisations as an important humanitarian challenge which can be partly addressed through disaster risk reduction frameworks such as the Sendai Framework for Disaster Risk Reduction (UNDRR, 2015; PDD, 2017). Principle 7 of the Guiding Principles on Internal Displacement declares the responsibility of authorities to ensure that all alternatives to displacement are explored before turning to displacement as an option (OCHA, 2001). When it comes to natural disasters, however, one could argue that natural phenomena sometimes do not leave room for other viable options and displacement can indeed be the only choice left to preserve life, especially when disaster risk reduction actions and policies are weak or absent (UNDRR, 2018).

A lot of effort is dedicated to tackling the causes of displacement and to prevent future displacement. Despite these efforts, there is little to celebrate (IDMC 2018: 1) as more than 30.6 million new displacements associated with conflict and disaster were recorded in 2017 and the persistence of new displacements has been generalised. This reveals a lack of implementation of appropriate measures to prevent and eliminate displacement, even in a context of more numerous normative frameworks and more capable national and international humanitarian systems (IMDC, 2018). At the same time, research on the importance of gender-sensitive disaster risk reduction strategies has emerged. This research shows that policies can considerably impact the results of the experience of disaster displacement for women (UNDRR, 2009; Chineka *et al.*, 2019). Reducing the risk of displacement is undoubtedly a crucial mission as countries work towards mitigating the social, economic, political, and developmental impacts of conflict and disaster in general, as well as in particular for women. However, as displacement continues to increase globally, it is relevant to go beyond the prevention of displacement and discuss what can be done once displacement has become a reality.

Disaster displacement can bring about increased vulnerability for the affected population. It disrupts life at the individual, household and communal level. It can destroy livelihoods and housing, interrupt education, create unemployment, compromise access to basic services, create or aggravate security issues, compromise property rights, and generate poverty, amongst other issues (UNDRR, 2018; IDMC, 2019). Not every person faces disaster displacement in the same way as lives and conditions are not equal prior to disaster. For example, men and boys suffer particularly through the loss of livelihoods as they are more likely to be the main breadwinners and to have a higher workforce participation (IDMC, 2019). As previously mentioned, this was the case among the displaced population from the Fuego Volcano. After the eruption, 86% lost their work and/or their source of income. Because of the impact on their livelihoods, men are at a higher risk of recruitment by armed groups as they may turn to dangerous strategies in order to continue to provide for their families (IDMC, 2019). This is particularly relevant in the case of Guatemala as conflict and violence have been historically present. Organised crime groups, which are mainly related to drug trafficking and tend to operate internationally, have a strong presence in the region (InSight Crime, 2017). These groups are highly active in departments at the country's borders or ocean shores as these represent strategic zones for trafficking (Ten, 2012). Escuintla, the department most affected by the volcano eruption, has the country's biggest coastline to the Pacific Ocean. In fact, "petty crime" and "organised crime" were stated as the main obstacles to the first official emergency response after the eruption of the Fuego Volcano. Security dispositions put in place by the police in order to combat crime included permanent posts in shelter entrances, patrolling of the interior and perimeter, and vehicular patrolling in the surrounding areas (Policía Nacional Civil, 2018).

Issues aggravating the situation for men, such as stress, unemployment, and possible substance or alcohol abuse can also lead to an increase in violence towards women (IDMC, 2019). The use of substances as a coping mechanism in the face of natural disasters and/or displacement contexts has been studied in various opportunities but no clear link has been established (Nordlokken *et al.*, 2016; Roberts *et al.*, 2011). However, there is a general agreement on the need to design targeted policies to address the potential risks of substance abuse in traumatic contexts such as displacement or forced migration (Horyniak *et al.*, 2016). The entities managing official shelters in Guatemala introduced a cohabitation rule-book for the displaced population. Breaking any of the rules established

would lead to expulsion from the shelters. This rulebook banned the consumption of any drugs or alcohol in shelters and in their perimeter. It also prohibited anyone from: entering the shelters while under the influence, disturbing the peace of the shelters and exhibiting violent or abusive conduct towards others. It also banned all weapons and explicitly prohibited all types of violence against women (SOSEP, 2018). These measures could contribute to mitigating some of the risks and vulnerabilities faced by both men and women and their impacts will be explored in the following sections of this paper.

If disaster displacement brought about risks for men, the situation is no different for women and girls. Throughout the world, women are generally in a disadvantaged position compared to men in relation to the law, and socio-economic and political conditions. Furthermore, it has been established that disaster displacement can amplify and reproduce some of these inequalities (IDMC, 2019; GFDRR, 2018). Women also tend to be more vulnerable to post-traumatic stress disorder and to violence, and their wages tend to decrease more than those of men in the aftermath of a disaster (IDMC, 2019). As previously mentioned, women from the displaced communities in Guatemala were indeed in a disadvantaged position compared to men in terms of education, workforce participation, and legal ownership of land.

Violence against women in Guatemala has a history of very high prevalence. There is also a high level of tolerance and normalisation of gender-based violence amongst the Guatemalan population and high impunity rates (ranging from 97% to 99%) for gender-based crimes against women, despite the existing legislation (Musalo & Bookey, 2013). In 2017, the departments of Escuintla and Sacatepéquez appeared amongst the five departments with the highest percentage of women having suffered acts of violence, as specified in the Guatemalan law on femicide and violence against women (INE, 2017). Moreover, during the first semester of 2018, Escuintla was the department with the second highest number of femicides, after Guatemala City (GGM, 2018). Given these numbers and historical trends, violence against women should be a primary concern in shelters as the increased vulnerability and hardships brought by displacement, added to the already important trauma of disaster and loss, could intensify a culture of violence against women.

In shelters, security and information sessions on possible risks have been provided to reduce women's vulnerability to violence and related crimes (such as trafficking) (M. Vega, personal communication, April 8, 2019).

However, no official document for the organisation and management of shelters (except for the cohabitation rulebook) mentions potential risks of violence against women. Furthermore, the design of shelters which was executed by the non-governmental organisation TECHO, did not initially include any gender considerations as the distribution of spaces and equipment was decided mostly by engineers from the army (A. De la Roca, personal communication, April 30, 2018). The lack of security concerns and adequate premises in temporary shelters, as well as the overall systemic negligence of women's specific needs can also affect their health and security, and further perpetuate their cycle of vulnerability (IDMC, 2019). This reveals that there is not a systematic gender-sensitive approach to shelter management and therefore opens opportunities for gender-transformative interventions to be incorporated in a context of displacement.

Reframing Displacement

Disaster displacement generates substantial impacts in the lives of those affected. These impacts range from trauma and loss, to increased vulnerabilities and new challenges presented by the context of displacement. This paper aims to go beyond this reality to identify potential gender structures and dynamics that are disrupted by disaster displacement, which could present potential opportunities for interventions with a gender perspective from governments and other organisations. It is important to highlight that finding spaces for interventions that may be brought forth by displacement does not imply that displacement is desired to foster gender equality. This perspective aims to find opportunities for action within a challenging context that became the reality for 28 million additional people across the world during 2018 alone (IDMC, 2019), a reality in which gender inequalities are increasingly present.

Four key elements will be highlighted as contributing to the creation of valuable opportunities for gender-sensitive action in the Guatemalan case. The first one is the disruption of existing structures of inequality as a result of the disaster. The second element is the window of time for action that is created as displacement situations become prolonged realities. Thirdly, another element lies in the creation of protocols and the setting-up of controlled environments in which to assist the affected, such as shelters which emerge from official or organised responses to displacement. Lastly, community dynamics are crucial in displacement contexts as shelters inevitably shorten the physical and practical distances

between people. It is then necessary to understand how these elements could contribute to design gender-transformative adaptation through the implementation of gender-sensitive interventions.

One of the inevitabilities of displacement is the level of disruption and instability it causes in the lives of those affected. People are forced to leave their homes, livelihoods, routines, and belongings in order to survive. Sometimes, however, these elements are precisely those upholding unequal and oppressive gender dynamics. Gender inequalities are deeply rooted in the traditional articulations of domestic life as women have been long assumed to belong in the domestic sphere. Evidence of the increased vulnerability women face during a crisis due to their relegation to the domestic sphere and the traditional division of labour in the household has been extensively documented (ILO, 2003; Enarson & Chakrabarti, 2009). A necessary and traditional response to this situation has been to urge decision makers to consider gender differences when designing disaster risk reduction strategies. However, it is not unreasonable to consider that the complete disruption of domestic structures built on traditional roles for men and women may break the dynamics that generate gender inequalities, or at least of the mechanisms that perpetuate them. In this context, attention could also be paid to designing adaptive strategies that benefit from the disruption of traditional domestic structures in order to generate transformative change that contributes to a more sustainable recovery.

In relation to the loss of livelihoods, which is undoubtedly a harmful impact of displacement, this can bring about unintended consequences that disrupt traditional gender dynamics. For example, in the face of loss of livelihoods by men heads of household working in agriculture, households with women who are generating income through small and informal ventures (such as by selling crafts or homemade food) will probably have higher possibilities of rebuilding their income sources in the immediate aftermath of disaster and displacement. Initial evidence from IOM Guatemala showed that less than a month after the disaster, during which 86% of displaced people lost their livelihood, 15.1% of women were working whereas only 12.8% of men were (IOM, 2018). Although the numbers are fairly similar, if one considers that women's workforce participation was less than half that of men before the disaster, data point towards a quicker immediate recovery for women. Moreover, micro-enterprises led by women started to expand in camps, and small markets started to become more common, which eventually required regulation by the shelter administration: "the nuns were trying to figure out how

to regulate the opening of these small businesses, (...) businesses that were mostly in the hands of women” (J. Peraza, personal communication, April 8, 2019). Even though their role as main household providers may have been temporary – until men could work –, this presents a step forward towards increased empowerment. Furthermore, this presents an opportunity for organisations to provide basic training to improve women’s business skills, encourage their economic empowerment, and improve their income possibilities. Women’s entrepreneurial activities are not only beneficial as a means to reactivate the economic activity of the household, but can also alleviate the burden that traditionally falls on male heads of household to provide for the family, which can sometimes lead, to dangerous decisions, harmful practices and even more violence against women. On the other hand, it is important to keep in mind the possibility of an increased burden on women as they may acquire new economic responsibilities while still having to fulfil their traditional roles as caregivers and community agents (Bradshaw & Linneker, 2014).

Another inevitability of displacement is that it can be a lengthy process. Once displacement occurs and shelters are set up, the transition back to a permanent housing solution may take a considerable amount of time. Figure 1.1. shows that the number of displaced people stayed relatively constant during the first five months after the disaster, with the number actually increasing during month six due to new volcanic activity. Only from the seventh month onwards did the number of displaced people start to decline. However, a significant number remained in temporary shelters in February 2019. The regional Head of Mission for the North

Figure 1.1. Monthly Evolution of Number of People Displaced and Available Shelters, June 2018 – February 2019

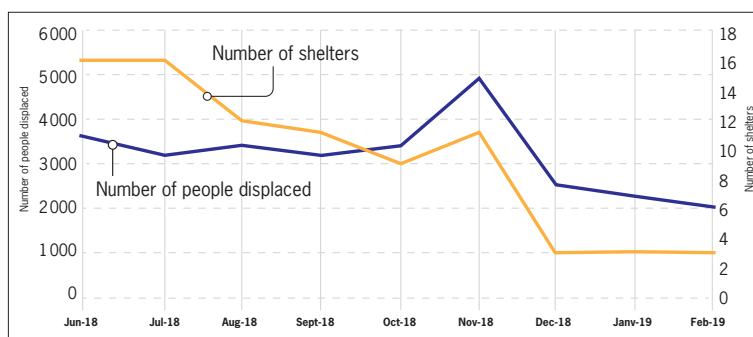


Chart elaborated by the author. Source: SOSEP monthly databases (June 2018 – February 2019)

Triangle, Jorge Peraza, predicts that the majority of people who remain in shelters today will still be displaced in a year's time (personal communication, April 8, 2019). If this were to happen, the government and collaborating organisations would need to keep funding and managing shelters for more than two years after the initial displacement. For the displaced, it would mean not having a permanent housing solution for over two years which would further impact their livelihoods and recovery possibilities. However, this situation could also present a good opportunity to include gender-transformative programming and initiatives for the affected population living in shelters.

Time in displacement may be an opportunity for governments and organisations to introduce effective interventions that may significantly impact the well-being and future prospects of the displaced population. Trying to generate impactful changes in the culture, skills, practices, and lives of the displaced in a very short period of time may be ineffective and could prove costly in terms of resources and time. If displacement lasts for longer periods of time, however, the potential impact of interventions and the incentives to invest in gender-transformative interventions is greater. Furthermore, small development projects are regularly planned and carried out in less than two years. For example, a \$0.2 million USD World Bank project to empower Guatemala's indigenous communities to cope with climate change was planned and completed within two years (World Bank, 2019). The length of displacement in the case of Guatemala could thus be perceived as being long enough for meaningful interventions. In the particular case of the people displaced by the Fuego Volcano, a key incentive arguably contributed to the constant presence of the displaced population in official shelters: the government had indeed conditioned families' access to permanent housing based on their actual presence in official shelters. This provided an incentive for the majority of families to stay in shelters as opposed to resorting to other options such as family or friend's accommodation or returning to their own at-risk homes (J. Peraza, personal communication, April 8, 2019).

The challenge for organisations and decision-makers would then be to move beyond a solely humanitarian perspective on projects, towards the inclusion of a development perspective through targeted development projects. This is the case of displacement, which is more commonly seen mostly seen as a humanitarian challenge (The Nansen Initiative, 2015) but could greatly benefit from the inclusion of a development perspective. Cohabitation rulebooks, police presence, and continuous monitoring of the situation of the displaced population in shelters contribute

to maintaining internal order and to avoiding situations of violence. In addition, these conditions also provide an environment where programs and policies can be designed with more certainty and evidence about the target population. For instance, between the eruption in June 2018 and March 2019, IOM had conducted four rounds of surveys, each one collecting information on different aspects of the displaced population's experiences, which have helped authorities form a more precise picture of the needs, desires, priorities, strengths and weaknesses of the displaced population. Having this information at hand could prove extremely valuable to create targeted interventions for the affected communities from a gender perspective. For example, IOM's third round of surveys identified that the displaced prioritised housing, work, land, other needs, and monetary aid, as their most to least important needs. More specifically, the gender breakdown showed that women saw a greater need for housing and monetary aid than men, whereas men identified a greater need for work and land (IOM, 2018). Such knowledge could be used to better target interventions.

A final characteristic of being displaced in official shelters identified in the Guatemalan case refers to the fact that in both collective and single-family shelters,² families, and especially women, are forced to share common areas and spend considerable time with others families facing a similar situation, a fact that has important impacts for them and the community. After an initial period of assimilation, men started to find economic activities outside the camps and once again surpassed women in terms of workforce participation. According to the last IOM consultation in March 2019, 30.5% of women were working in comparison to 74.3% of men (IOM, 2019). However, because communities were now living in shared spaces and closer together, an important portion of the women would stay together with the children in the shelters during the day as men went to work outside (J. Peraza, personal communication, April 8, 2019). This inevitably encouraged communication and exchanges between women. In fact, the small businesses that were developed by women were encouraged by other women in the community who joined with small economic initiatives themselves, which helped boost the small in-shelter economy that was forming (J. Peraza, personal communication, April 8, 2019).

² Collective shelters were set up at the initial stages of the response to quickly meet the need for shelter of the displaced. The sleeping quarters were big common rooms and there were essentially no private spaces for families. In single-family shelters, which are big complexes with multiple small units for single families, common areas are still shared but families can sleep together, separated from other families.

Women also proved to be very active in the organisation of responses and initiatives at the community level, being the visible face for authorities and organisations that visited the shelters during the day, although men were still more likely to occupy formal positions of power amongst the community (J. Peraza, personal communication, April 8, 2019). The importance of women in the process of rebuilding communities and their resilience capabilities should not come as a surprise as it has been consistently established in the literature (Thurairajah, Amaratunga & Haigh, 2008; Drolet *et al.*, 2015; UNDRR, 2015). Previous examples from women in Guatemala help support this claim. In 2012, a group of fisherwomen in the Guatemalan Caribbean carried out a project on reforestation and rainwater harvesting which was successful in enhancing community resilience to disaster and empowering women economically, politically, and socially (UNDRR, 2015). Indeed, one can agree that “organised grassroots women, without knowing it, already do work for community resilience. It is only their capacities and skills that need to be enhanced” (UNDRR, 2015:28). If this lesson were expanded from a framework of Disaster Risk Reduction to a context of disaster displacement, perhaps it would be possible to take advantage of the time and contextual reality of displacement to also build future resilience.

Nonetheless, it is important to note that the increased participation of women in the workforce could also create negative consequences for them. Women tend to see their workload increase with disaster as care work intensifies and community roles are initiated, which takes significant time (Thurairajah, Amaratunga & Haigh, 2008). A gender-adaptive transformation outlook is thus needed to reap the benefits of empowerment opportunities while avoiding the creation of a double burden for women.

Disaster displacement is evidently not a situation to encourage or to wish for, but reality has shown that it is a situation impossible to completely avoid or prevent. Disaster Risk Reduction strategies and the work carried out prior to disasters are crucial to minimise the occurrence and effects of displacement. This does not mean, however, that once disaster displacement occurs the only possible strategy is one of humanitarian aid and crisis response. This paper therefore argued that development opportunities open up during displacement because of the very nature and dynamics of disaster displacement, which can be used to implement gender-transformative initiatives to encourage a more sustainable recovery and increased gender equality. Identifying such opportunities can help all sectors design strategies seeking to rebuild a more equal environment.

Perceiving disaster displacement as an opportunity to encourage gender equality may sound counterintuitive. However, an interview with IOM's Chief of Mission in El Salvador, Guatemala and Honduras revealed that it is already being done, albeit more as a response to circumstances than as a structured intervention method:

After the children returned to the school system, they [management and organisations] were able to start capacity building and training sessions with women in, for example, the growth of particular crops for use in kitchens and small gardens. They were even able to start some initiatives related to education, most of it with a gender perspective because they started to identify that the priorities had to focus on the people that were present in the shelters and, during most of the day, it is the women who are there (J. Peraza, personal communication, April 8, 2019).

Conclusion

This paper adopted a new perspective on disaster displacement by shifting from a reactive view of coping with the important vulnerabilities generated by displacement, towards a more adaptive and transformative outlook. It aimed to interrogate whether displacement in the case of the Fuego Volcano eruption has caused a disruption of certain pre-existing gender dynamics and structures. In addition, it analysed how the creation of new circumstances for people living in official shelters presented additional incentives for authorities to incorporate targeted interventions to promote gender equality.

The aim was not to prove definitive causal chains or propose proven formulae for gender-sensitive interventions in displacement contexts. The intention was instead to explore whether it would be possible to adopt an additional outlook towards disaster displacement which opens up a window for development from a gender perspective, while addressing its nature as a humanitarian challenge.

Research on the Guatemalan case showed that the displaced women were indeed exposed to important vulnerabilities stemming both from their pre-existing realities, from the volcano eruption and from displacement. At the same time, it showed that displacement could conceivably disrupt oppressive structures and present reasonable incentives for transformative gender-based interventions. This due to the fact that

displaced population stayed in shelters for an extended period of time, creating routines encouraging community and resilience building under a controlled environment.

If the Guatemalan government and partner organisations had identified these possibilities and reinforced their planning for stronger interventions, more impactful initiatives could have been developed to strengthen women's skills for instance. However, this analysis is based on the particular characteristics of the Guatemalan case. Nothing could ensure that changes in management decisions regarding housing solutions, in the duration of displacement or other factors, would not considerably affect potential incentives in other contexts.

Finally, one must consider that disaster displacement often creates conditions that open opportunities to design gender-transformative adaptive strategies and initiatives that could contribute to a more sustainable recovery from displacement. In other words, more effort is needed to look at disaster displacement not only as a humanitarian challenge but also as a transformative opportunity. Paying more attention to this possibility could foster the creation of guidelines to be used in disaster displacement contexts from the very beginning, thus creating positive impacts in the lives of women, men, families, and communities facing undeniable vulnerability.

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³ Authorship is not explicitly stated in the document but has been temporarily attributed to SOSEP given the fact that they are the main institution in charge of managing the shelters. Its definitive authorship will be inquired about in the near future at an interview to be conducted on May 3rd, 2019 with members from SOSEP and CONRED.

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Paradise Lost

Examining Social Vulnerability and Displacement in the 2018 California Camp Fire

Trevor Shealy

When you go up to town it's like the old neutron bomb where buildings were gone, like a rectangle of ash... but all the trees are still there (D. Little, personal communication, March 12, 2019).

The day of the fire was the very worst day of my life... It was dark as night at 10 am. It sounded like bombs going off all around us (S. Tuter, personal communication, April 25, 2019).

Paradise (Butte County, California), so-named due to the pleasantness of its surrounding environment, is located on the edge of a ridge-top. Before the fire, the town of 26,000 people overlooked the forests that extended below and served as an affordable haven for its residents, many of whom fell below the poverty line and were older than the average American worker (D. Little, personal communication, March 12, 2019). All of this was to change at 6:30am on the morning of November 8th 2018, when a fire broke out on Camp Creek Road, in Butte County, about a 40-minute drive away (Haskins, 2018). Within two hours, the small fire had transformed into a roaring blaze, burning through thousands of acres and overtaking the little town of Paradise (D. Little, personal communication, March 12, 2019). What began as yet another small wildfire in a state where these occur frequently, soon became one of the deadliest and most destructive wildfires in California's modern history (Nicas & Fuller 2018).

Wildfires are a common natural phenomenon, and can in many ways be beneficial for the environment. The burns provided by these blazes are necessary to clear dead plants, revitalise soil emptied of nutrients, and help certain plants grow, such as the "lodgepole pine" which is common in California (Irfan, 2018b). Yet, despite these benefits, California and its residents are uniquely vulnerable to the damages resulting from wildfires, as evidenced by the disaster experienced by the town of Paradise.

Equally troubling is the fact that the destructive capacity of wildfires is growing alongside the extent of acres burned. In 2018, for example, fires throughout California were on average 30% larger than during the previous decade, in large part due to the changing climate (Irfan, 2018b). This alarming reality can be readily seen in the case study of Paradise. Pushed along by low humidity, strong winds, and lingering droughts, the embers from the initial wildfire quickly caught on to the dry forests, soon burning “at the rate of a football field every second” (D. Little, personal communication, March 12, 2019).

This paper will explore how existing social vulnerabilities can be exacerbated by the changing environmental realities of wildfires, and how this has affected, and will continue to affect, displacement patterns in California. In order to understand the nature of this case, the paper will first explore the historical context of wildfires in California and discuss what makes the state particularly susceptible to wildfires. Secondly, it will examine the issue of housing availability in California and analyse existing vulnerabilities in the community of Paradise. Following this, the paper will review the events of the Camp Fire, taking into account first-hand observations of both victims and relief workers. Finally, it will analyse the displacement patterns of the residents of Paradise, paying specific attention to the immobility-mobility nexus.

Historical Context

This is unprecedented in the history of the country, not just our area. There’s never been a town wiped off the face of the map, particularly a town this big... It’s unlike anything we’ve ever seen (D. Little, personal communication, March 12, 2019).

Although wildfires are considered sudden-onset disasters,¹ they are nevertheless deeply affected by slow-onset changes. Climatic conditions, such as reduced rainfall and warmer temperatures, are creating a drier environment that can cause sparks to easily turn into a quickly-spreading wildfire. Additionally, human impacts such as building homes in the wildland-urban interface and suppressing the spread of natural wildfires over time can also provide favourable conditions for these fires to spread.

¹ According to the UN Office for Disaster Risk Reduction, a sudden-onset disaster is defined as one that is triggered by a hazardous event that emerges and develops quickly, such as an earthquake, fire, or flash flood (UN Office for Disaster Risk Reduction, 2017).

These conditions also place human settlements directly in the path of the flames.

California is a state that best represents the combination of these two factors, making it the most-wildfire prone state in America, with 2 million homes in high or extreme risk of wildfire (Insurance Information Institute, 2019). The year 2018 proved to be California's worst in terms of destruction and damage caused by wildfires in its history. From January 1st to December 30th, 876,147 acres were burned by 6,284 unique fires, as recorded by the state's registry (California Department of Forestry & Fire Protection, 2018). In order to understand California's vulnerability to this type of disaster, and consequently the vulnerability of Paradise, the following section will explore how climate change has increased wildfire damage. It will also discuss how "deliberate decisions and unintended consequences of urban development over decades have turned many parts of the state into a tinderbox" (Irfan, 2018b).

Changing Climate

Climatic research has established that wildfires spread best when given access to dry land, high temperatures and fast-moving winds (State of California, 2019). These conditions have all been present in California, and particularly in 2018. In recent years, the state has experienced record-breaking temperatures, with the past five years being the hottest on record, which contributed to the six-year drought between 2011 and 2017 (Adolphe, 2018). In addition, the autumnal wildfire season, occurring from October to April, is characterised by the down-ward sloping Santa Ana and Diablo winds. These winds allow fires to spread up to three times faster and burn far closer to urban areas than under normal summer conditions (Pierre-Louis, 2018).

Late 2018 saw a combination of all of these factors. After the end of the drought, 2018 began with a cool, wet winter. Precipitations enabled a sharp increase in the amount of potentially combustible shrubs, grasses, and trees throughout the State (Irfan, 2018b).² Following the plant growth spurt at the beginning of 2018, vegetation slowly dried up as autumn rains came late, causing the relatively new vegetation to wither, adding to the available tinder. This land was then further parched by the dry nature of the Santa Ana and Diablo winds (Irfan, 2018b). Together, these conditions resulted in the most destructive fire in California's history, following

² As Keeley and Syphard (2018) have suggested, there appears to be a strong positive relationship between area burned and prior-year precipitation.

a pattern that, since 2003 has created nine of the state's ten most destructive fires. Furthermore, two of the most destructive fires in the state took place in 2018 alone, as seen in table 2.1. In fact, since 2002, the first year for which detailed wildfire records are available, California's wildfires have grown in size, lethality and cost (M. Moore, personal communication, March 21, 2019).

Table 2.1. The Ten Most Destructive Fires in California's History

Rank	Fire Name	Date	Acres	Structures	Deaths
1	Camp Fire	Nov. 2018	153,336	18,804	85
2	Tubbs	Oct. 2017	36,807	5,636	22
3	Tunnel	Oct. 1991	1,600	2,900	25
4	Cedar	Oct. 2003	273,246	2,820	15
5	Valley	Sept. 2015	76,067	1,955	4
6	Witch	Oct. 2007	197,990	1,650	2
7	Woolsey	Nov. 2018	96,949	1,643	3
8	Carr	July 2018	229,651	1,614	8
9	Nuns	Oct. 2017	54,382	1,355	3
10	Thomas	Dec. 2017	281,893	1,063	2

Table created by the author. Source: CalFire
(California Department of Forestry & Fire Protection, 2018)

Wildfire frequency in the state of California has remained relatively stable for the past two decades (see figure 2.1.). Rather, it is wildfire destruction that has increased (figure 2.2.). This could be partly explained as a consequence of climate change and increasingly warmer global temperatures. Abatzoglou & Williams (2016) examined the impact of climate change on forest wildlife and found that higher temperatures and vapour pressure deficits have caused increased aridity in the west of the United States. This has, in turn, caused an additional 4.2 million hectares of forest fires since 1984 and has contributed to 75% more forest areas experiencing high aridity (Abatzoglou & Williams, 2016). In essence, this means that climate change is causing forests in California to become drier, thus providing the tinder for sparks to turn into a fire in ever-expanding ranges.

Impact of Human Settlement

Human settlement within California has also had a dramatic impact on the frequency and destructiveness of wildfires in recent years. Radeloff *et al.* (2018) have shown that increased construction in the "wildland-urban

Figure 2.1. Annual Number of Wildfires in California, from 2000 to 2018

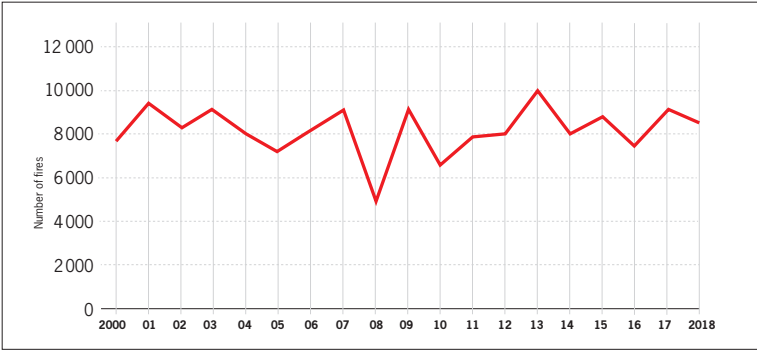


Chart created by the author. Source: Moore, M., personal communication, 2019

Figure 2.2. Number of Acres Burned in California from 2000 to 2018

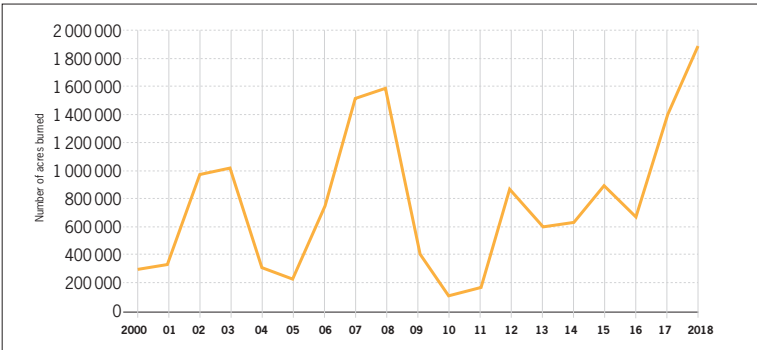


Chart created by the author. Source: Moore, M., personal communication, 2019

interface” (WUI), or the zone of transition where houses and wildland vegetation directly blend, contributes to greater wildfire destruction. Construction in the WUI has grown exponentially in the USA: within the past ten years, approximately 43% of all new homes have been built in the WUI. This means that 286,000 American homes are now situated within the transition zone. When compared to 1990, this represents a growth affecting 109,000 additional homes and at least a hundred thousand people (Radeloff *et al.*, 2018).

Settlement in this area is coveted for its cheap property value and its natural beauty (such as views of the surrounding forest). The median price of a home in Paradise, a city directly situated within the wildland-urban

interface, was around \$261,000 before the fire, in comparison with the Californian median price of \$572,000 (Zillow, 2019; Passy, 2018). This cost differential alone draws people to homes located within the interface. The fact that these homes are also surrounded by raw nature serves as an added bonus for residents. David Little from the North Valley Community Foundation elaborates further: “the trees are what attracted people to Paradise. It’s 110 degrees in the Valley all summer long, but if you go up to Paradise its 10 or 15 degrees cooler because of those trees” (D. Little, personal communication, March 12, 2019).

Image 2.1. Map of the Wildland-Urban Interaction in California in 2010

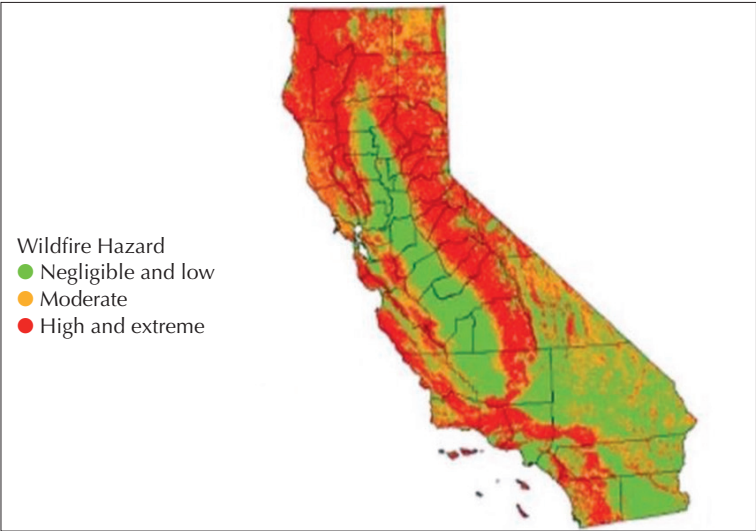


Courtesy of David P. Helmers and the SILVIS Lab at University of Wisconsin-Madison.
Source: SILVIS Lab, 2019

Despite the attractiveness of housing options located in the WUI, the direct proximity of human settlements to the forest puts them in the direct path of the wildfires that may arise. In California, the intermix of wildland and urban areas means that a quarter of the population lives in moderate or high-risk fire corridors (Adolphe, 2018). As evidenced by image 2.1., housing within both the intermix WUI and the interface WUI³ is common around major metropolises.

By building homes in wildlands that experience seasonal wildfires, people not only expose themselves to blazes, but can also provide the conditions to start and spread fires. In fact, people are responsible for igniting around 95% of all wildfires in California: increased settlement in the WUI means more initial sparks have been created by humans (Mann *et al.*, 2016). Furthermore, the composition of human settlements matters: buildings burn far longer than vegetation, so when these catch fire as blazes enter into urban areas from nearby wildlands, fires intensify

Image 2.2. California Wildfire Risk Areas



Source: SERVPRO, 2016.

³ Intermix WUI is defined by the USDA Forest Service as an area above a threshold of 6.17 housing units/km² that is dominated by wildland vegetation, whereas interface WUI is defined as developed areas in the vicinity of wildland vegetation. See USDA & USDI (2001)

and spread more easily (Radeloff *et al.*, 2018). Altogether, these factors can explain the country's recent dynamics regarding wildfires: human-started wildfires have increased by 84% and acres burned have increased by 44% since 1992 (Balch *et al.*, 2017).

As evidenced by images 2.1 and 2.2, nearly all settlements in the WUI fall into the category of high to extreme wildfire risk, demonstrating the vulnerability of such settlements to wildfires.

On the other hand, human settlement in the wildland-urban interface also impacts wildfires through programs aimed at subduing them. Unlike many other natural hazards, fire is perceived as a preventable risk, and financial and physical resources are directed at averting their outbreak. However, these programs have paradoxically increased the risk of wildfires. A lack of implementation of fire-fighting policies aiming at the prevention of this phenomenon, such as those set in place to clear forests of dead and dying vegetation, has "contributed to increased fuel loads and fire potential" (Abatzoglou & Williams, 2016: 1). In 2017, the USDA reported that the total number of dead trees in California amounted to 129 million in 8.9 million acres of the state's land (USDA, 2017). This number represents an immense accumulation of available tinder that is rarely cleared by state authorities. For example, within the past ten years, the State's Forest Service managed to clear only 1.3 million trees, an evidently insufficient number (Adolphe, 2018). Moreover, without fires to clear this dead material regularly, it slowly builds up and creates a mounting threat. Ultimately, the trees were a major cause of the fires, according to David Little:

[Paradise residents] were really protective of their trees. They didn't want them to be cut down because that gave them shade, that gave them the nice yard, that gave them everything they desired (...) and that ultimately is what caused [the fires] (...) these pine trees and pine needles on the ground and pine needles on roofs that helped fires ignite (D. Little, personal communication, March 12, 2019).

As discussed in this section, a combination of impacts related to human settlement contributed to increasing the destructiveness and spread of wildfires throughout the region that experienced the Camp Fire. Paradise was unfortunately located at the confluence of all of these risks and exemplifies how environmental disasters can have a direct effect on human settlement, and vice versa.

Events of 8 November, 2018

The morning of November 8th was characterised by low humidity, strong winds, and lingering drought, following weeks of similar attributes (Johnson, 2018). In some areas surrounding Paradise, forests were bone-dry as more than 200 days had passed without any significant precipitation (Johnson, 2018). According to David Little, “from the area that it started all the way to Paradise there is nothing but fuel. It’s nothing but trees, a lot of them dead and dying” (D. Little, personal communication, March 12, 2019). This mass of dry tinder burned 80 acres per minute, at a speed which allowed the fire to reach Paradise in a mere two hours after destroying Camp Fire (Pierre-Louis, 2018). The moment it reached the town of Paradise, Butte County Fire Department relayed evacuation orders to all the people in Paradise. However, the fire spread so quickly that there were no firefighters in the town at the time these orders were received (Cassidy, Palomino & Fimrite, 2019). The slow pace of the communication meant that when people did receive the information, they all attempted to leave the town at the same time, which caused severe congestion in the few roads down to the valley. In the words of Shannon Scott Tuter, a life-long resident of Paradise:

We drove bumper to bumper for hours. In all, it took almost five hours to get to Chico [located 24 kilometers from Paradise]. We, at one point, didn’t move for over 30 minutes and by the time we started moving the fire was feet from my car (S. Tuter, personal communication, April 25, 2019).

The speed of the blaze and the inherent vulnerabilities of Paradise contributed to turning the Camp Fire into California’s deadliest and most destructive fire in state history (Insurance Information Institute, 2019). Paradise, a town of around 26,000 people, was entirely incinerated. By the time the fire was contained on November 25th, 17 days later, 88 people had perished, 153,000 acres had burned, and 18,800 structures, of which 14,000 were residences, had been completely destroyed (Insurance Information Institute, 2019). Along with the residents of Paradise, 26,000 residents of nearby towns were also evacuated, bringing the total to 52,000 displaced people within the span of one day (Irfan, 2018a).

Analysis of Displacement Vulnerabilities

The displacement situation following the total destruction of Paradise serves as a particularly interesting example of the complications surrounding reactive mobility. Necessarily intertwined with these complications are the social vulnerabilities of the residents of Paradise. With nearly a quarter of the population of Butte County displaced, many people were forced to seek shelter wherever they could. For some, this meant building a “refugee camp” in a Walmart parking lot in Chico, the closest city to Paradise (Haskins, 2018). For others, this meant moving to states outside of California. Altogether, these responses revealed the evolution of the wildfire from a natural *hazard* into a natural *disaster*.⁴ As defined by Crnčević and Lovren (2018), “a “natural hazard” (such as an approaching storm) only becomes a “natural disaster” if a community is particularly *vulnerable* to its impact”, and the displaced residents of Butte County were clearly vulnerable to the Camp Fire (Crnčević and Lovren, 2018: 107). Delving further into this idea, Adger, Safra de Campos, and Mortreux (2018) perceive “vulnerability” as a creation of the interactions between one’s exposure, sensitivity, and adaptive capacity. According to their definition, greater exposure and sensitivity result in greater vulnerability, while greater adaptive capacity reduces vulnerability. An analysis incorporating these factors is necessary to understand the vulnerabilities enhanced by the displacement which followed the Camp Fire.

First and foremost, the demographic make-up of Paradise reveals the inherent sensitivity of its residents to the risk of displacement as the town was known as a haven for the elderly and retired. Most residents were around 50 years old, compared to the state’s average of 36 years of age (Irfan, 2018a). Furthermore, Paradise residents received an average income of \$47,000 per year, which represents \$16,000 less than the rest of the state (Irfan, 2018a). As Chico resident and organiser of Camp Fire Long Term Recovery Group, Adam Pearce observed, many people lived in Paradise because “it was slightly more affordable than Chico, which is the next closest big town. And many of them were elderly...many of them would fall under what we would call a “pay check away” from being homeless” (A. Pearce, personal communication, March 12, 2019).

An older, poorer, and in many cases, less healthy population means that those living in Paradise at the time of the Camp Fire were more

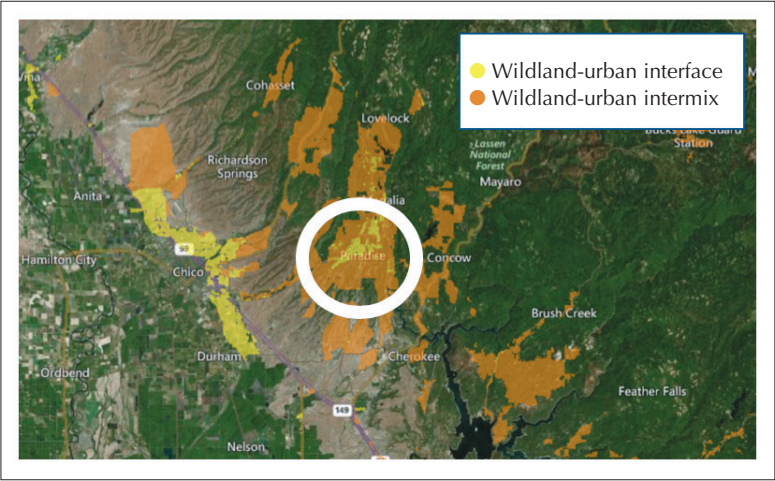
⁴ A natural hazard is defined as a natural phenomenon that threatens to have a negative effect on humans, while a natural disaster is defined as the negative result of that natural hazard (Nelson, 2018).

vulnerable in comparison to other California residents, especially when in need of new housing. As Davies, Haugo, Robertson and Levin (2018) show, while 29 million Americans live in wildfire risk zones, among this population are “12 million socially vulnerable Americans for whom a wildfire event could be devastating” (Davies, Haugo, Robertson, and Levin, 2018: 1). The residents of Paradise fell within this segment due to both their economic status and age. As Jacob Peterson, Development Director of United Way of Northern California noted:

One of the reasons Camp Fire was so devastating was because it impacted a population of people who didn’t have a lot of resources to begin with, and on top of that they’re estimating the Camp Fire created \$16 billion in damage, and \$4 billion of that was uninsured (J. Peterson, personal communication, March 13, 2019).

Furthermore, the socio-economic vulnerability of Paradise residents to displacement was exacerbated by the exposure to wildfires created by Paradise’s location within the WUI. As evidenced by image 2.3, Paradise (which is located within the white circle) is located in an area exposed to a high risk of wildfires. While Paradise perfectly matched the needs of Californians seeking more affordable housing, it exposed them to a greater risk.

Image 2.3. Map of the Wildland-Urban Interaction in Paradise and its surrounding areas



Courtesy of David P. Helmers and the SILVIS Lab at the University of Wisconsin-Madison.
Source: SILVIS Lab, 2019

Taking into account the exposure to risk and socio-economic sensitivity of Paradise residents reveals the high vulnerability of the town. Recognizing the social vulnerabilities of the population that was forced to migrate due to the Camp Fire is crucial to understand how displacement and mobility are “embedded in wider socio-economic, political and demographic processes” (Black *et al.*, 2013: S33).

Impacts

The total destruction of Paradise and the burning of surrounding areas resulted in the immediate displacement of every town resident, in addition to those included in the initial evacuation notice from surrounding areas. After leaving the area, the most immediate need for the displaced was shelter. However, even before the fire, Butte County was “already a minimal vacancy region” (J. Peterson, personal communication, March 13, 2019). At the time of the fire, the vacancy rate in Butte County was considered to be in a “crisis state”, at 2%, meaning that there was essentially no available housing in the county (Sabalow *et al.*, 2018). Overall, California ranks 49th in the US in available housing units per capita.

Furthermore, there was a lack of affordable housing. California has 7 out of the 10 most expensive real estate markets in the country (Irfan, 2018a). This means that without the option of cheaper housing offered in Paradise, those displaced had few affordable options to turn to.

This presents a two-fold issue for those fleeing the fire. Firstly, it means that when evacuees moved down to the valley, they had few shelter options to turn to. In the words of Jeanine Marie, a survivor of the Camp Fire and former resident of Paradise, once she and her family made it to safety “we found a hotel about an hour away...On November 9th (a day after the fire), the hotel was overcome with families so we checked out” (J. Marie, personal communication, April 26, 2019). Even the surrounding region was unequipped to deal with the influx of people. As Jacob Peterson observed, “housing in Chico was really all taken up in the first two weeks” (J. Peterson, personal communication, March 13, 2019). Thus, displaced residents were forced to move farther and farther away from their town to find a place to sleep for the night. Secondly, this also means that there were no options to turn to for the long-term. Adam Pearce describes the situation:

We, in the city of Chico, which is the largest town or city closest to Paradise, absorbed about 20,000 residents

overnight. And we built 283 homes last year. If we were to build a house a day, it would take us 40 years to rebuild the housing stock that was lost in Paradise (A. Pearce, personal communication, March 12, 2019).

Therefore, Chico and the less-affected areas surrounding Paradise could not accommodate an immediate influx the size of those evacuated by the fire. The destruction of “cheap” housing further exacerbated the “crisis state” of Butte County’s real estate market. Furthermore, due to fire damage in existing structures, in the days following the blaze, displaced Paradise residents found 45% fewer housing options available on the market in Butte County (Passy, 2018). This restricted supply meant that those selling their homes could charge far more than before the fire. This is evidenced by the quick buy-up of all rental properties and the skyrocketing of home prices, ranging from \$30,000 to \$100,000 above their initial asking price (Kendall, 2018). As has been established, many of the former residents of Paradise were significantly less wealthy than other Californians. According to Jacob Peterson, most “were spending almost something like 50% of their income on housing [...] working often times two or three jobs” to keep up with the cost of living in Butte in the first place (J. Peterson, personal communication, March 13, 2019).

Thus, in a market with fewer and more expensive houses, those immediately displaced from Paradise soon found themselves priced out of living in the area surrounding their previous home in the short and long-term. As a result, many had to decide between moving away or staying behind, moving somewhere along the mobility-immobility spectrum.

Displacement in the Mobility-Immobility Nexus

Although all residents of Paradise survived the same event, their reactions reveal multiple pathways within the mobility-immobility nexus. The mobility-immobility nexus was first highlighted by Bauman (1998) and refers to the fact that mobility for some can create immobility for others, and that mobility outcomes are influenced by a number of factors affecting an individual’s desire and ability to move or remain in one place. Following environmental disasters, the outcomes of migration, displacement, and immobility “interact and respond to multiple drivers” (Black *et al.*, 2013: S32). The paper now turns to discussing the impact of the social vulnerabilities of Paradise residents on their mobility outcomes.

An “Uninhabitable” Paradise

While the Camp Fire is said to have destroyed the town of Paradise, it did not in fact burn down all houses. As some community organisers noted, about 10% of homes were still standing by the year’s end (D. Little, personal communication, March 12, 2019). However, these homes were rendered essentially uninhabitable. In the words of Jeanine Marie, a long-time resident of Paradise whose home survive the fire:

We lost our homes either to the fire, or the aftermath of weeks long evacuations which caused terrible smoke damage to every single item we each owned. Our refrigerators were without power for weeks, our food rotted, oozed out of the refrigerators and freezers, affected our flooring, air quality... The homes that survived smell like death (J. Marie, personal communication, April 26, 2019).

Consequently, virtually every former resident of Paradise had to migrate to a new area after the wildfire. As Adam Pearce indicates, after a natural disaster, local communities can be expected to follow a rule of thirds: one third will leave the area altogether, one third will stay relocate to a new town in the vicinity, and one third will rebuild in the original town (A. Pearce, personal communication, March 12, 2019). However, community relief organisers predict survivors of the Camp Fire to react as follows: 45% of people will leave Butte County, 45% of people will stay within the county but in a different town, and just 10% of people will return to Paradise to rebuild their homes, exhibiting the exceptional nature of the Camp Fire disaster (A. Pearce, personal communication, March 12, 2019).

This classification of three distinct groups (those remaining, those moving short distances, and those moving long distances) can be readily seen in the displacement patterns of former Paradise residents. Analysing the differences among these groups is necessary, because as Davies *et al.* (2018) observe, “even within countries that are more affluent and experience fewer disasters, the impacts of those disasters that do occur can be strikingly unequal” (Davies *et al.*, 2018: 1). The existing socio-economic vulnerabilities and an oversaturated housing market have reinforced the impact of displacement. In the words of Jacob Peterson:

When people are strapped for resources, they’re going to go to the closest place they can to find a home. Chico has been that central location. On the one hand, you want people to

stay local because that's where all of the [emergency] resources are. But on the other hand, the reality of the situation is that you cannot expect people to wait around 2-3 years until there are places to move into (J. Peterson, personal communication, March 13, 2019).

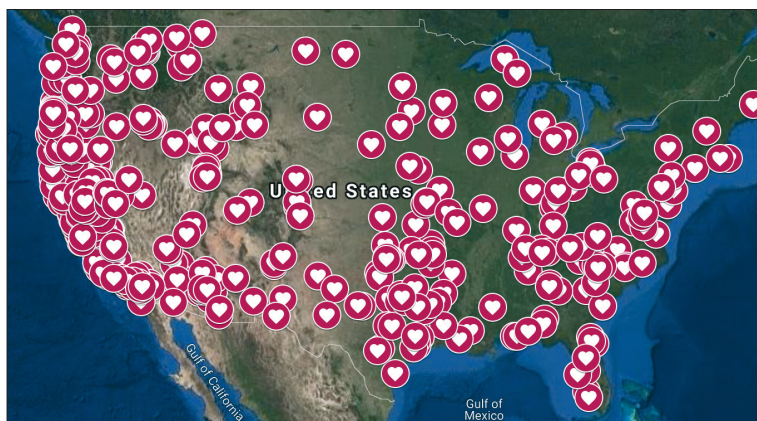
This quote summarises some of the risks evident in displacement. At one end of the nexus, those who move away from the area will no longer have access to local emergency assistance and funds raised for survivors of the wildfires. On the other, those who stay in the area are subject to housing shortages and will have to resort to settling in the expensive housing solutions currently available. Jacob Peterson emphasised the latter, noting that even 6 months after the fire, about 1,700 individuals still did not have housing despite the many national aid programs set up to assist them (J. Peterson, personal communication, March 13, 2019). Recognising this reality serves as a backdrop to understanding some of the inherent risks for both the population moving away from the area and for those staying behind.

Long-Distance Displacements

While most people displaced by the Camp Fire stayed within California, about a quarter has moved to other areas: there are now former residents of Paradise living in all 50 states of the country, in over 561 cities (McGough, 2019). Image 2.4. illustrates the long-distance displacement of former Paradise residents. While concentrating mostly in California, a significant number of residents spread across the United States, finding housing in far way states such as Hawaii or Arkansas.

Initial emergency assistance was aimed at housing displaced evacuees, whether through short-term rentals or mobile housing units donated by the Federal Emergency Management Agency (FEMA), and was meant to be temporary (Fuller, Johnson and Dougherty, 2018). However, residents soon understood that they could not easily return to their normal lives in Paradise. In fact, a previous study of homes lost to wildfires revealed that fewer than 50% were rebuilt within six years after their destruction (Roberts, 2018). Realising this, many residents chose to leave the region in search of available affordable housing and work opportunities that would allow them to rebuild their lives and livelihoods elsewhere.

**Image 2.4. *Where Are They Now?* –
Map Showing Where Former Paradise Residents are Now Living**



Source: Administrator of *Paradise Fire Adopt a Family* Facebook Page, personal communication, April 22, 2019.

The lack of available housing in the area surrounding Paradise in the days following the fire forced some people to move to other regions. For some, this was due to a lack of necessary resources to rebuild or to the existence of a personal network in other areas (J. Peterson, personal communication, March 13, 2019). As illustrated by David Little:

A lot of people are moving anywhere they can find housing and work. If you are living on the fringe and you have a place in Paradise that is going to take 2-3 years to get your land ready to rebuild on again and you just got some insurance money, or...you have an aunt in North Carolina who says “come live with me” you are going to take advantage of whatever opportunity you can to get out of this dreadful situation you’re in now (D. Little, personal communication, March 12, 2019).

For others who were living “pay check to pay check”, this response came from an immediate need to find work. The existing socio-economic vulnerabilities of the residents of Paradise thus had a strong impact on their displacement patterns. Having spoken with many displaced residents, David Little furthers this observation, stating:

For example, if you’re a carpenter or a cook at a restaurant, and you can make \$15 or \$20 an hour, you can do that in

any city in the United States. But in this city if you are living in an RV or you are living in a tent or whatever... you would naturally go to a place where you can find housing. But by now there's not enough housing in our community for the extra 20,000 people who want to live here. So, they are moving to places like other parts of California, or Oregon, or Idaho or other states...almost literally every other state in the country (D. Little, personal communication, March 12, 2019).

Displacement patterns are the result of existing personal networks, as well as the relatively open nature of certain locations, with greater affordable housing options and well-paying jobs. In many cases, these factors converge as migrants use their social networks to obtain employment (Poros, 2011). Those who have since moved farther away from Paradise, especially those who are now settling in other states, can be perceived as being more flexible than those who remained in the area (the former having connections outside of California as well as the financial capability to move, whether that be in terms of flexible labour capacities or in terms of financial resources, such as insurance pay-outs).

The population staying immobile or in the general vicinity of the existent risk in many cases remains more vulnerable than those who have moved away, for reasons of continued sensitivity and exposure to risk. The following section will examine the relatively immobile population as well as those who have moved within the area surrounding Paradise.

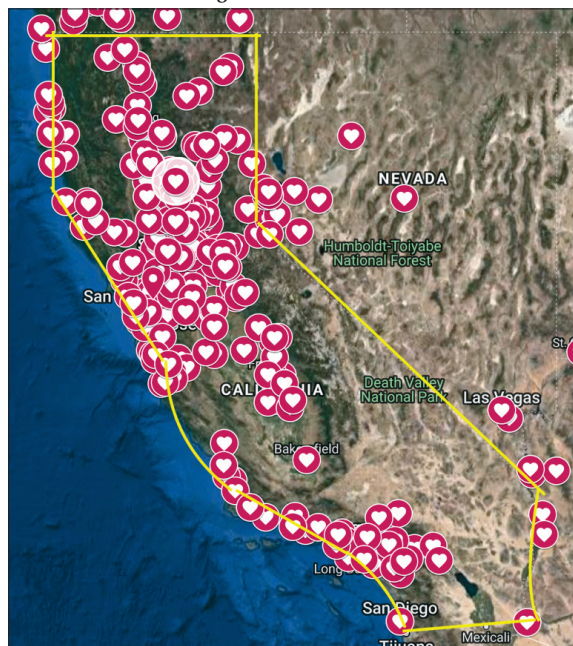
Relative Immobility and Short-Distance Displacement

Most of those evacuated from Paradise as a result of the Camp Fire remained in the areas surrounding Paradise, whether within the immediate vicinity of Paradise, or in larger towns nearby (A. Pearce, personal communication, March 12, 2019).

Image 2.5. reveals a highly concentrated cluster of displaced people settling close to Paradise and within Butte County, demonstrating that although people have moved to states across America, the vast majority stayed within California, especially within the immediate vicinity of the destroyed town.

The people that remained in the same general area of Paradise presumably lacked the widespread connections, the transferable skill set, or the financial capacity to move away of those who moved to other regions.

Image 2.5. *Where Are They Now?* – Map Showing Where Former Paradise Residents are Now Living in the State of California*



Source: Administrator of Paradise Fire Adopt a Family, Facebook Page, personal communication, April 22, 2019. *The heart within the white circle shows the location of Paradise, while the other hearts show other cities where people have resettled.

Regarding the last factor, Zickgraf (2018) notes that “by far, the most commonly cited constraint on the ability to migrate is a lack of financial resources” (Zickgraf, 2018: 76).

For example, some residents like Shannon Scott Tuter had spent their entire life in Paradise and knew few people outside of the local community. She describes her situation as follows: “Pretty much everyone and everything I loved resided in Paradise” (S. Tuter, personal communication, April 25, 2019). Consequently, when Mrs. Tuter fled Paradise, she did so along with nearly her entire social network and she did not have relatives in other areas who could offer her recovery assistance. Others like Jeanine Marie lacked the financial resources to move away from the local community, and were soon immersed in mounting medical bills as a result of the trauma inflicted by the fire (J. Marie, personal communication, April 26, 2019).

Such barriers, both socio-economic and relational, which have prevented people from moving out of the area have also in some ways extended the negative impact caused by the environmental disaster. In Mrs. Marie's experience, being continuously confronted with the trauma inflicted upon her community by the Camp Fire has had disastrous effects upon her mental health. The costs of treatment have prevented her from accumulating enough financial resources to move out of the area:

We cry. We say our brains no longer work, we call it AF [After Fire] brain, we are sick physically from the stress and worry. Many of us will never recover. We can't sleep at night. Marriages have fallen apart. People are dying from broken hearts. Suicides will come next. We don't have enough mental health providers to help us. I can no longer afford to see a therapist for my PTSD and neither can my husband (J. Marie, personal communication, April 26, 2019).

Immobility can thus be seen as a trap for people like Jeanine who were unable to initially move away and are now stuck in a place of high risk. Altogether, the absence of "migration infrastructure" in terms of household factors such as financial resources, social networks, or human capital, follows what Zickgraf (2018) posited as "contributors to immobility".

Another strong factor influencing immobility or short-distance displacement outcomes is that of "place attachment", or one's emotional relationship to a particular location. In Carling's (2012) conception of the mobility-immobility framework, aside from one's ability to move exists one's aspirations to do so. Many who chose to stay in the area around Paradise following the Camp Fire did so because they continued to view it as their home. As Shannon Scott Tuter presents it: "I have lived in Paradise most of my life (...) it never ever crossed my mind to leave" (S. Tuter, personal communication, April 25, 2019). Although she is currently living in a mobile trailer just south of Butte County, Mrs. Tuter intends to be a part of the 10% expected to return to Paradise and rebuild their property. Despite the inherent risks of returning to a vulnerable community, this view reflects place attachment. In the words of Mary Robinson, President of the Mary Robinson Foundation for Climate Justice, "the land one comes from is often deeply embedded within an understanding of self. It can act as the social fabric that binds communities together and from it stems culture and identity" (Robinson, 2018).

Recognising that socio-economic factors and place attachment can affect people's abilities and aspirations to migrate allows to better understand

why the majority of those displaced by the Camp Fire stayed in the immediate vicinity. In some cases, there were no other available options, but in others, the decision to stay was a definite choice.

Conclusion

This paper provided a case study of displacement following the 2018 Camp Fire in Northern California, in the United States. This wildfire evidenced many of the existing socio-economic vulnerabilities of the residents of Paradise.

In search for affordable housing and natural beauty in a state lacking inexpensive housing options, people gradually settled in towns and areas highly exposed to wildfire risk. Consequently, after the Camp Fire, many Paradise residents found themselves facing the same issues regarding financial resources, skill set and social networks that made them vulnerable in the first place. Some people chose to migrate and start over in regions far from Paradise, while others decided to, or were forced to, remain in the area and rebuild.

Westerling *et al.* (2011) predict that future wildfires will only become more intense as a result of climate change, with the expectation of a 100% increase of burned areas in Northern California by 2085. Therefore, it will be increasingly important to understand how the vulnerabilities of impacted communities can in turn affect the displacement patterns of their residents when fire strikes. Doing so may enhance preparedness before fire strikes and increase the capacity ability, and potentially the mobility aspirations of a population that is increasingly at risk.

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“I Can’t Live Through This Again”

Decision-Making in Property Buyout Process in Eastern North Carolina after Hurricane Florence

Marie Guermond

On September 14, 2018, Hurricane Florence made landfall in North Carolina on the Eastern Coast of the United States. The storm had been downgraded to a Category 1 hurricane by the time it hit the coast, and it inflicted its damage through floods rather than heavy winds. In a similar manner to Harvey the year before, the storm stagnated over Eastern North Carolina with constant heavy rainfalls. The governor quickly declared a state of disaster for several of the affected counties. Over five thousand people were evacuated in this rural part of the state, in addition to more than one thousand animals. The storm claimed 45 human lives and left more than \$17 billion in damages, according to the official governor’s report (Cooper, 2018). This is around three times the combined impact of Hurricane Matthew in North Carolina in 2016.

Despite these record-breaking losses, Hurricane Florence blends in well with North Carolina’s growing history of flooding from natural disasters. As a coastal state, North Carolina has been increasingly impacted by storms in the past thirty years. According to records from the Federal Emergency Management Agency (FEMA), Hurricanes Fran (1996) and Floyd (1999) caused significant damage in the state (OpenFEMA, 2019). A decade later, Hurricane Irene (2011) inflicted severe damage. The most recent significant hurricane before Florence was Matthew in 2016, just two years earlier.

Flooding from Hurricane Matthew was severe in many towns in the eastern part of the state. While sudden-onset disasters such as floods inflict damage in an extremely short time period, the recovery process is much longer and can take up to several years. This was certainly the case for Hurricane Matthew in 2016. Many affected communities barely had the time to go through a phase of reconstruction before Florence hit. While immediate relief efforts are essential, the proximity in timing of these two storms in the area opened the discussion to include more permanent and effective flood measures. Rather than trying to prevent

future floods, officials placed more emphasis on mitigation planning, or on the control and management of moving floodwaters. While mitigation measures such as the elevation of properties in affected areas have been present for almost 30 years in North Carolina (OpenFEMA, 2019), there is a growing interest in disaster resilience due to the increased frequency of devastating hurricanes.

One of the most effective and long-lasting responses to frequent flooding available for vulnerable communities is property buyout. With this tool, federal funding enables local governments to purchase a property in a repeatedly flooded area. The property is then demolished and replaced by a green space that can absorb future floodwaters (Galloway and Brody, 2016). Completing a buyout is currently a long and difficult process that can take up to several years and involves a large set of actors. Therefore, for each major disaster, only a very small portion of people successfully use the property buyout tool to sell their home (D. Holland, personal communication, April 25, 2019). In the case of North Carolina after Florence, the buyout process was beginning at the time of the research (April 2019) and the process was nearing its end for Hurricane Matthew.

Selling (and buying) a flood-damaged property is a complex decision to make for homeowners (and local governments). This paper will discuss the different factors that affect the decision-making process of local governments and individuals in their participation in property buyouts as a flood mitigation measure. After introducing the buyout program and its current impact in North Carolina, the first section of the paper will discuss how property buyouts can be perceived as an example of a mobility response to an environmental threat. The second section will address the (im) mobility spectrum in the case of the buyouts and explores the key reasons why a majority of residents do not participate or complete the program.

Methodology

In order to provide an academic context for this case study, the methodology includes a literature review on migration as adaptation and the (im)mobility spectrum. Grey literature on flood mitigation policy and on the implementation of federal hazard mitigation funds provided a technical understanding of the issues at hand. This was complemented by five semi-structured interviews.

Given that the funding application process is strongly linked to local governments, it was decided that mostly people working at the county

level on flood mitigation will be interviewed. The author was able to contact three counties offering different conditions for project to be eligible for federal funding. Interviews were conducted with the flood-plain administrator for Pender County (Craig Harris), the planning director for Dare County (Donna Creef), the planning director for Pitt County (James Rhodes) and the principal at Holland Consulting Planners¹ (Dale Holland). In addition, one interview was conducted with a former North Carolina resident (Ryann Giorgi), who spent time working in disaster relief in Lumberton (North Carolina) after Hurricane Florence. All interviews followed the same format of open-ended questions on the factors that influenced the choice to engage in the buyout program after Hurricane Florence.

Background

In order to understand the factors that influence the decision-making process for engaging in the buyout program after Hurricane Florence, it is important to link this event with Hurricane Matthew as the 2016 storm had severely impacted the same area just two years earlier. Therefore, it would be a mistake to analyse the policy responses to Florence without taking into account the severe damages inflicted by Matthew in the same area. It appears that for this case study, the perception of severe, long-lasting, and repetitive flood risk in North Carolina was an important factor influencing certain residents to seriously consider the possibility of a buyout.

Initiating storm damage and recovery activities is a complex, expensive, and time-consuming process for most communities. This is particularly the case for areas facing disasters such as repetitive flooding in a short period of time (Cigler, 2017). In those cases, there is a growing need for a long-term mitigation strategy in order to reduce risks in low-lying areas.

Flooding is a recurrent problem at the national level in the United States and local governments are uniquely equipped to address these challenges as flood risks differ according to variance in geophysical conditions and urban development. According to a landmark report on urban flooding in the United States, the challenges of flood mitigation may merit federal guidance and support when needed, but the responsibilities must

¹ Holland Consulting Planners is a firm specializing in land use planning, urban design, and community development. The firm is active in many counties and municipalities across southeastern North Carolina.

rest at the local level (Galloway and Brody, 2018). This is the case as local governments control “land use, local transportation, and economic development policies [which are the] policy tools best equipped to reduce flood hazards” (Cigler, 2017: 132). With a better understanding of the local specificities in the natural and built environment, city and county governments have a better grasp of which policies best respond to the current environmental threats faced by the local community.

For communities with an older housing stock at risk of flooding, renovations can be complex and expensive. However, two common options exist to reduce the impact of floods in this case. The first measure is the elevation of properties above the expected flood level, the so-called “base flood elevation”.² Although residents are still often displaced during a flood, raising a house to this level decreases the risk of damage inside the property. The elevation of a home “does not guarantee its safety, but when the height of elevation is carefully considered, it can significantly reduce the threat to the property” (Galloway and Brody, 2018: 33). The second tool available at the local level is more drastic. When a property is judged to be at risk of repetitive flooding, it can be considered more cost-effective for local authorities to “buy-out” the house and convert the plot of land to green space. Building on the property will no longer be allowed and the site can thus regain its function as a floodplain. This allows water to spread during floods and reduces damage to nearby homes. “By removing a property from a flood-prone area, buyouts eliminate future losses” (Galloway and Brody, 2018: 33) for the household and the community. Instead, the land can be used for green spaces and recreation.

The Federal Emergency Management Agency (FEMA) has developed a funding program for both of these solutions: the federal Hazard Mitigation Grant Program (HMGP). After a federally declared disaster, Congress will approve funding for this program in affected communities. The federal government grants 75% of the money and the remaining 25% comes from the state (Property Acquisition Handbook, 1998). The process from the allocation by Congress to the final use of the funds is long and tedious. In the case of Florence, a total of \$1.4 billion have been allocated, but as of the time of writing, none of this money has been received by local governments in North Carolina (D. Holland, personal communication, April 25, 2019).

² According to the Federal Emergency Management Agency, the base flood elevation “is the computed elevation to which floodwater is anticipated to rise during the base flood”. It is also the regulatory requirement for the elevation or floodproofing of structures. (FEMA, n.d.)

In order to be eligible to apply for a buyout under HMGP funding, the applicant must own the property, which must also serve as a primary residence. In addition, to ensure that the funds go to residences facing the highest risks of flooding, properties must also be within the regulated 100-year floodplain. The 100-year floodplain is defined as an "area where there is a 1% annual chance that a flood will occur" (Galloway and Brody, 2016: 9). Once applications for HMGP are open after a significant flooding event, residents must submit an application including photos of the damages on the property to the county administrator or HMGP contact point. One of the various approval stages includes a visit by a professional to assess the value of the property. Only once the county has approved the cost and the property owner has accepted the offer, can the property transaction occur (Property Acquisition Handbook, 1998). At this point, the property is razed, and the land is converted into a green space capable of absorbing future floodwaters. From that moment onwards, the local government should not allow new development in this newly regained floodplain.

During the assessment phase, the availability of funding for a particular disaster will determine the necessary criteria for a buyout. Generally, the properties that score the highest, which means they are the riskiest and oldest, are selected in order to make the best use of limited funding (C. Harris, personal communication, April 2, 2019). FEMA creates a cost-benefit analysis of the buyout of each property, which largely depends on its pre-damage value. However, there is a lack of transparency in the decision-making and approval process. For example, there have been cases of applications being submitted for similar houses in the same flood zone, where one was granted funding and the other was not (D. Creef, personal communication, April 9, 2019). Thus, the coherency of the criteria is not always clear. Despite this, buyouts are an increasingly popular option in North Carolina as a legitimate way to reduce flood risks.

Property Buyouts in North Carolina

Buyouts have been a part of policy responses to hurricane flooding in North Carolina for many years. In the past 25 years, FEMA has funded buyouts for more than 55,000 flood-damaged properties across the US, including over 5,600 homes in North Carolina (Salvesen *et al.*, 2018). In the case of Hurricane Matthew, 140 properties received funding for acquisition, and a further 100 received HMGP funds for elevation or reconstruction (OpenFEMA, 2019). Until now, Hurricanes Fran and Floyd

have resulted in the greatest amounts of property acquisitions in the state (OpenFEMA, 2019).

Dealing with the aftermath of Hurricane Fran in 1996 proved to be a turning point for Holland Consulting Planners (HCP), a firm specializing in land use planning, urban design, and community development. Before then, HCP had no experience working with local governments on disaster mitigation nor with storm and flood recovery. However, the state of North Carolina had limited experience in the subject and clients across the eastern part of the state requested help from HCP after Hurricane Fran (D. Holland, personal communication, April 25, 2019). Since then, HCP has included flood mitigation and storm recovery in its services, which have become a core part of its activities today.

According to James Rhodes, Planning Director for Pitt County, Hurricane Floyd in 1999 was the “real educational process” for managing property buyouts and generally communicating the risks of living in a floodplain (J. Rhodes, personal communication, April 16, 2019). As a result of Floyd, the county acquired over 100 properties, and most residents moved to higher ground within the county limits. Furthermore, Dare County has used FEMA funds for the elevation of 72 homes since 1992, after Hurricane Irene hit (D. Creef, personal communication, April 9, 2019).

Although Hurricane Matthew occurred in the fall of 2016, the buyout process for damaged properties is just now ending. Compared to previous events, federal funds were particularly slow to arrive: almost three years after the storm, only a third of applications were accepted in Pender County (C. Harris, personal communication, April 2, 2019). A total of 12 properties benefitted from the buyout, half of which were located on the coast (C. Harris, personal communication, April 2, 2019). Pitt County only received funding for 11 properties, despite having sent a total of 88 applications. This shows the complexities of successfully navigating the process to completion. Only 6 properties have been acquired as of the time of writing (J. Rhodes, personal communication, April 16, 2019).

Dale Holland of HCP echoed the difficulties of completing the HMGP process, using the town of Windsor in Bertie County as an example. Since 1999, this town has been substantially flooded four times, including during Hurricane Matthew. Buyout offers were made for 34 houses, all of which have been accepted. A total of 30 homes have been scheduled for closing, but the remaining four properties are still missing approval from the historic preservation authorities. Overall, Holland feels that a property buyout is a “painfully slow bureaucratic process”, (D. Holland,

personal communication, April 25, 2019) even in the case of Windsor when there is such a clear need for flood mitigation measures.

Due to the lengthy approval process, buyout applications for Hurricane Florence started before the final acquisitions for Matthew had ended. While several officials interviewed were relatively optimistic about receiving funds for Florence earlier than for Matthew, the amounts and the exact end dates of the process were still uncertain. In addition, there are few published statistics with regards to buyouts for Hurricane Florence. For the communities affected by both disasters, local administrations are simultaneously dealing with the aftermath of these two storms. For these reasons, this paper includes an analysis of the decision-making process in the case of both hurricanes, in order to include the factors at play during the different stages of a buyout.

The number of property buyout requests varied among the different affected counties. The residents of Pender County submitted a total of 292 applications for HMGP funds after Florence: 176 for buyouts and 116 for property elevation. According to Craig Harris, the county's floodplain administrator, not a single application came from a property on the county's exposed coastline. This is probably due to Florence's disproportionate impact on riverside and inland communities. At the time of the interview, residents had just recently submitted their application. Considering that the first step of the approval process takes around 90 days, applicants are expected to receive the first response by June 2019 (C. Harris, personal communication, April 2, 2019).

In Pitt County, the planning director indicated having submitted at least 23 applications for buyouts and elevations for the severely impacted town of Grifton, in the southern part of the county (J. Rhodes, personal communication, April 16, 2019). These were being reviewed as of April 2019 for approval by the state of North Carolina and FEMA. Dare County had less severe damages from Hurricane Florence than the other counties. Nonetheless, residents submitted 24 applications to fund the elevation of their primary homes as property buyouts are not an option in the county (D. Creef, personal communication, April 9, 2019).

Factors influencing Decision-Making for Buyouts

The Structural Decision-Making Power of Local Governments

The decision-making process that allows the use of FEMA funds for buyouts generally occurs at the county level and the different interviews revealed the differences in the use of HMGP funds in each county. Elected officials such as county commissioners, chairmen, mayors, town/city council members decide which options of the HMGP are available for their community. A cost-benefit analysis of the different solutions for each local context is often a key element for the elected officials to make a decision. This decision is essentially “rooted in dollars” as local governments cannot afford to have all residents leave with no replacement for their fiscal base (C. Harris, personal communication, April 2, 2019). In other words, the possibility of homeowners to sell their flood-damaged property to move to safer grounds “all comes down to money” (J. Rhodes, personal communication, April 16, 2019). Without the approval of the local government, residents will have limited choices of available flood mitigation options.

One of the biggest fears for many officials for the implementation of buyouts is the loss of tax revenue. A report on the assessment of floodplain buyouts as a smart investment for local governments in North Carolina addresses this question. On the one hand, the potential benefits of the buyouts are to reduce the “emotional and financial toll of future flooding, [...] disaster-related costs for evacuation, sheltering and debris removal” (Salvesen *et al.*, 2018: 31) and to create green spaces for the community and flood management. However, the potential loss of tax revenue was almost always the most important worry for communities considering the implementation of a buyout program (Salvesen *et al.*, 2018; C. Harris, personal communication, April 2, 2019; J. Rhodes, personal communication, April 16, 2019).

Among the local governments represented in the interviews, Pender County was the only one to allow buyouts, elevations, and mitigation reconstruction. On the other hand, Dare County was the only country which did not offer buyouts as an option. Pitt County alone defended buyouts as the “ultimate solution” for flood mitigation. Since the elevation of homes in a floodplain could still be costly and could also endanger rescue personnel, local policymakers have decided to firmly support the buyout option (J. Rhodes, personal communication, April 16, 2019).

The potential loss of tax revenue is particularly relevant in Dare County due to the high percentage of the territory that is used as public land, and is therefore unbuilt. As a result, the marginal loss of revenue from each property is much higher. In addition, the relatively high value of the beach properties makes it more financially interesting to fund elevations as opposed to buyouts (D. Creef, personal communication, April 9, 2019). Smaller towns also face a similar challenge in addressing flood risks without compromising their tax base as when a smaller town offers buyouts, people will easily relocate outside of the official city limits. This is a smaller concern for county governments as they have a larger and more stable tax base.

Framing Buyouts as "Migration as Adaptation"

The interviews suggest that there are two main factors that influence a person's choice to sell their flood-damaged property. First, county governments' decision on which mitigation measures will be offered to affected communities. This decision is based on a range of factors such as disaster-related costs and loss of tax revenue. Secondly, the frequency and intensity of severe flooding. An increase in the intensity or severity of flooding can encourage people to choose a property buyout as a more drastic and definitive solution. In this case, moving out of the affected area can be seen as a form of adaptation to a changing environment.

Within a single county, homeowners respond differently to the possibility of selling their flood-damaged property to the local government. It can thus be helpful to turn to the field of environmental migration to understand how and why people move in response to changes in their natural environment. The term "migration" typically refers to a movement across international borders. However, as the field of environment and migration develops, the term now includes different kinds of mobility occurring in a smaller geographical region. For example, McLeman and Hunter (2010) use the term "climate-related population redistribution" to refer to the movement of people within a local area due to environmental reasons. These authors also include intraregional migration as climate-related movements. North Carolina residents moving across the county from one property to another due to flooding fit within this pattern.

The concept of migration as adaptation highlights the potential of migration as a possible response for a community faced with the impacts of climate change (Barnett and Weber, 2010). In this framework, the migration of one or more household members is seen as an adaptation strategy

to an environmental threat. This seems to be the case in a recent study on the perceptions of the buyout process by a community affected by Hurricane Sandy in New York. In this study, participants explained how the buyout was “providing them with a way out of an area that they considered too dangerous to live in and away from the seemingly impossible task of rebuilding” (Baker *et al.*, 2018). In other words, a buyout allowed them to adapt to flooding in the long-term.

Barnett and Weber (2010) argue that migration can increase the “adaptive capacity” of a community, whether through remittances, an expanded social network, or the contribution of the diaspora to social infrastructure. However, they also differentiate between different types of mobility. They have a much more critical view of community resettlement programs, on the basis that it increases impoverishment. According to these authors, the relocation of a community should be “a strategy of last resort” (Barnett and Weber, 2010). While the buyout process has its fair share of flaws, it appears to serve as an adequate adaptive solution to at least some members of the affected communities.

In the case of North Carolina, the buyout process appears to have been a relatively successful adaptation strategy for a select number of residents. With regards to the total population in the analysed counties, only a very small number of people applied for HMGP funds. The interviews conducted showed a variety of reasons that impacted residents’ willingness and ability to participate in buyout processes. According to respondents, motivation for participation differed little between counties, whereas barriers to participating were more varied. The most common motivator was the perception of increased risks after experiencing multiple floods in a short period of time. This was especially the case for buyout applications in the aftermath of Hurricane Florence. Overall, people who had been severely affected by both Hurricanes Matthew and Florence were much more likely to turn to the property buyouts as an adaptation solution.

Craig Harris reported that the most commonly cited reason for residents of Pender County to apply for the buyout program was repeated flooding from Matthew and Florence. People who have suffered twice through the harrowing events of a flood shared their sentiments with the floodplain coordinator: “I can’t take it again, I don’t want to have that feeling again” was a common response from them (C. Harris, personal communication, April 2, 2019). People in Grifton, Pitt County, shared similar feelings: one resident who had just built a new home was “ready to get out” after the last flood (J. Rhodes, personal communication, April 16, 2019).

After multiple storms, fatigue sets in and makes leaving more desirable than having to face another round of renovations. Other members of the community also mentioned how they just "can't live through another flood event" especially once they have reached an older age (J. Rhodes, personal communication, April 16, 2019).

In addition, several residents mentioned their concern at being hit by another hurricane so soon after Matthew, given the confusing terms associated with floodplain risks. For many people, living through a flood in a 100-year floodplain meant that they would not encounter a similar event in their lifetime. They believed that such a flood would happen only once in a century. However, a 100-year floodplain rather indicates that an area has a 1% chance of heavy flooding each year, regardless of past flooding (Galloway and Brody, 2016: 9). This means that properties in such a floodplain can be severely affected multiple times by floods in a few years. As county officials work to clear this misunderstanding about real flood risks, conversations with the community on the importance of flood mitigation have sparked. Despite the relatively rural and socially conservative setting of the area, a conversation on the increasing environmental risks has successfully occurred since it addresses visible sudden-onset disasters such as floods and hurricanes, as opposed to climate change or sea-level rise (C. Harris, personal communication, April 2, 2019).

Variations in Immobility

A relatively small number of people in Eastern North Carolina participated in buyout programs in the cases these are available. For them, this program was a way to adapt to the increasing flood risks in their neighbourhood. However, this threat exists for the whole community, leading to a variety of responses.

In order to better understand the decision-making process that leads people to leave in the face of environmental threats, it is also increasingly important to look at those who stayed. The study of immobility in environmental migration emerged as a response to the lack of attention given to the majority of the population who stays in an affected area after a shock. Generally, immobility can refer to the "array of reasons and relative agency categorising the people who do not move" (Zickgraf, 2018: 75). One advantage of the term is that it is broader than non-migration since "it applies to other forms of movement, besides international border crossing, of varying geographical scale" (Johnsson, 2011: 7). This can

then encompass those who did not participate in, or complete, the North Carolina buyout program.

Initially, immobility formed a simple binary to migration, with one or the other seen and encouraged as the positive outcome. People “defined by immobility during natural disasters” (usually due to a lack of resources) were categorised as trapped populations, which denied them a sense of agency (Adams, 2016). However, the concept has since evolved into a spectrum to better match the complex realities of the populations in question. By integrating both immobility aspirations and abilities in her analysis, Zickgraf (2018) developed an “(im) mobility spectrum able to encompass agency and mobility potential” (Zickgraf, 2018: 75). This spectrum can broaden immobility studies to capture the differences in the decision-making process of people with the same immobility outcome. This, in turn, steers the conversation away from “trapped” populations or those “left behind” to increasing the agency of immobile populations. Furthermore, an expanded immobility continuum can include “socio-psychological barriers consistent with migration decision-making processes and ideas of place attachment” (Adams, 2016: 444) that explain the decision to remain rooted in a place even after a natural disaster.

Place Attachment in Eastern North Carolina

The very strong urge to remain rooted in a place despite the potential threats of flooding can be explored through the concept of place attachment. In this case study and according to the different administrators interviewed, the immobility outcomes in the studied communities resulted from the choice of people to stay where they had grown up.

In Eastern North Carolina, the strong ties of people to the land appeared as a strong motivating factor to not participate in the buyout process. This explanation was present in all the interviews, and it was even mentioned several times throughout some conversations. Donna Creef of Dare County described how the “resilient crowd” was more likely to live in older housing which are potentially eligible for the buyout program. However, they were also more likely to weather the short and long-term impacts of storm damage without leaving. She also explained how “generational ties to the land are hard to break” for the members of this community (D. Creef, personal communication, April 9, 2019). Craig Harris in Pender County used similar language, referring to the “entrenched communities” near the Black and the northeast Cape Fear Rivers, who have been there

for generations (C. Harris, personal communication, April 2, 2019). James Rhodes explains this feeling in more detail, referring to the people who would not consider leaving Pitt County:

They grew up here, they have been in the community for years. Maybe they have decided to move into town, so why would they not want to leave? This is all they have ever known; their kids are in school [...] and there isn't a lot of mobility or opportunity for mobility. [When you have been here] 25, 30, 40 years, from an emotional standpoint, it's hard to leave that place [and people] can't bear to see their home torn down (J. Rhodes, personal communication, April 16, 2019).

For Ryann Giorgi, a former North Carolina resident who came to Lumberton as a disaster relief volunteer in the aftermath of Florence, many people who were still in flood zones "hadn't even thought about leaving" (R. Giorgi, personal communication, April 24, 2019). Even after the massive flooding, it felt like it was not an option for them to leave the place where they grew up. An elderly woman even shared with Ryann her memories of the old tobacco field that used to be across her lot, showing the strength of memories and attachment to places that exist even in a disaster setting (R. Giorgi, personal communication, April 24, 2019).

Finally, Dale Holland (personal communication, April 25, 2019) explained how people who live in "property that has been in their family for several generations" just do not want to leave. They are so attached and connected to their property that they may prefer to elevate their home instead of a buyout. While they may be displaced during future floods, they anticipate that the rest of the structure will not be flooded (D. Holland, personal communication, April 25, 2019).

The Challenges of a Lengthy and Complex Procedure

As with many other FEMA procedures, the application process for HMGP funds is far from straight-forward. As previously mentioned in the case of Matthew, it can take over three years to finalise the sale of a flood-damaged property. The approval process is complex and includes a variety of actors that do not always communicate well. As described by Dale Holland (personal communication, April 25, 2019), "recovery is a slow, tedious, painful, irritating, aggravating process" that can leave many people behind.

In general, people want to return to normalcy as soon as possible after a devastating hurricane. People are looking to “return to normalcy, get the kids back in the home, [...] make living arrangements [...] even though they are carrying a big burden” (J. Rhodes, personal communication, April 16, 2019). Therefore, some people will prefer to repair their house, rather than wait for a decision from FEMA. Almost all interviewees presented this explanation in a similar fashion. Donna Creef (personal communication, April 9, 2019) mentioned how people “cannot wait to repair their houses” and do not want to “put up with all the paperwork”. In a very similar turn of phrase, Craig Harris (personal communication, April 2, 2019) stated that people “do not want to put up with it” since the buyout process often places “life on hold”. In addition, the uncertainty of not only whether the application will be accepted, but at what price, is often a barrier for participants.

For James Rhodes (personal communication, April 16, 2019), during the two or three years that it takes to complete the buyout program, most people will have already fixed their house. Dale Holland (personal communication, April 25, 2019) notes that the system moves so slowly that “some people just get fed up with it” and instead repair the house hoping to avoid another flood. For most of these people, while there may have been an initial willingness to participate in the buyout, it disappeared when they realised the actual cost of the procedure in terms of time, effort, and uncertainty. By then, most people pursue alternate options, choosing to rebuild the house and hope for the best, instead of dealing with lengthy administrative paperwork and an uncertain outcome.

There were two additional hurdles mentioned related to the length and complexity of the buyout procedure. First, the financial costs of maintaining two simultaneous home payments after the disaster can discourage many families from selling their houses instead of repairing it. The fact that a house has been flooded will not halt due payments on a mortgage, yet families also have to pay for a second home as long as the first is unsafe to live in. In addition, there is often a disconnect between the many administrators tied to the HMGP process and the people affected by the storm. On one hand, people affected by the hurricanes “cannot understand why it takes so long” (D. Holland, personal communication, April 25, 2019), while state-level administrators will often discuss the different agencies involved in the process. This information is usually not easily comprehensible or even relevant to the people who expect help from the agencies. This seems to be typical for HMGP funds nationally as was shown by a study of the buyout process in New York after Hurricane Sandy. This study

found that the lack of information often adds uncertainty to an already challenging process (Baker *et al.*, 2018).

Differentiated Vulnerability

Finally, a key element in this case study is the overall lower socio-economic levels of the populations affected by hurricanes Florence and Matthew in Eastern North Carolina. The impacted communities tend to be more rural and have much higher rates of poverty than the national levels (SAIPE, 2018). Furthermore, people with lower socio-economic status are usually more vulnerable to natural disasters such as flooding (Adams, 2016). In addition, they also usually have limited resources and abilities to effectively face or adapt to the impacts of environmental shocks.

The geographic and demographic context of the territories impacted by Hurricane Florence was raised in several interviews. As explained by Adams (2016), the lack of socio-economic can drive migration decision-making, in addition to the direct responses to climate change and variability. James Rhodes (personal communication, April 16, 2019) used the town of Grifton to illustrate the disparities present within Pitt County. A rural community located in the coastal plain area at the south of Pitt County, Grifton is a town of around 1,500 people. Around half of the town is African American and the other half is Caucasian. Education levels are much lower than in Greenville, the county seat and the "hub in Eastern North Carolina", and much more similar to other rural and poorer counties in the south-eastern portion of the state (J. Rhodes, personal communication, April 16, 2019).

Ryann Giorgi (personal communication, April 24, 2019) discusses Lumberton, located in Robeson County. This is one of the most impoverished counties in North Carolina, with a poverty rate twice above the national average. Around 29.2% of residents of Robeson County live below the poverty line, compared to 13.4% for the whole country (SAIPE, 2018). In addition, Robeson is also one of the most diverse counties in the state, with a large portion of indigenous people and African Americans, which typically coincides with higher rates of poverty (R. Giorgi, personal communication, April 24, 2019).

The low cost of land in floodplains usually attracts poorer and more marginalised communities, despite the high flood risks (J. Rhodes, personal communication, April 16, 2019). Because the cheaper land is often

located in low-lying areas next to rivers, in the case of both Matthew and Florence “people with the most needs overall were also the people who were damaged in the flood event” (J. Rhodes, personal communication, April 16, 2019). Many properties of families of former emancipated slaves, which have been kept in the family for generations, were built in plots of land deemed dangerous because of their location in the floodplains (R. Giorgi, personal communication, April 24, 2019). Because of this, poorer communities are at a disadvantage of facing environmental disasters such as floods or hurricanes compared to other socio-economic groups. This imbalance can be captured through the term “differentiated vulnerability”, which refers to how “even in the same communities, not everyone suffers equally from environmental changes” (Zickgraf, 2018: 79). More specifically, the degree of vulnerability depend on several factors including the nature of the impacts, the level of exposure, the sensitivity of human systems, and the capacity of the impacted population to adapt (McLeman and Hunter, 2010). Even before participating in the buyout process, the poorer and more vulnerable communities are usually more affected, and therefore face a higher long-term risk in case of staying in place.

Once affected by disasters, more vulnerable groups usually have decreased abilities to move or to adapt. A study on immobility and displacement following disasters shows how vulnerability to environmental shocks is generally inversely correlated with wealth creating a double burden for poorer populations (Black *et al.*, 2013). These populations are generally less able to move away from disasters after being more vulnerable to them in the first place. In other words, there are “trapped populations”, vulnerable to the disaster but unable to move (Black *et al.*, 2013). In this case study, the latter could also refer to the inability to complete the buyout process. For example, a hurdle mentioned for disadvantaged communities was the lack of social capital necessary to successfully navigate the federal administration system for several years. As an example, Ryann Giorgi explained how their mother successfully received funding from FEMA after flooding from Hurricane Sandy in New Jersey. However, she had worked thirty years in a commercial law firm as a secretary, which helped her receive funds to elevate her home (R. Giorgi, personal communication, April 24, 2019). This kind of social capital is less common in the poorest counties of North Carolina.

This finding is similar to the one provided by Black *et al.* (2013) according to which the ability of an individual or a household to move is “broadly correlated with wealth, level of capital (financial, human, social), the availability of places to move to, and fear of what would happen

to property and assets left behind" (Black *et al.*, 2013: S36). Generally speaking, poorer people have fewer options to migrate even if they would like to. This can be reflected in the cases mentioned by James Rhodes (personal communication, April 16, 2019) regarding common legal hurdles in lower-income communities. In order to be eligible for HMGP, residents must have a clear title to their property. This can be an issue in cases of incomplete divorces, houses handed down through generations or even multiple mortgages taken on a single property (J. Rhodes, personal communication, April 16, 2019).

The concepts of "increased vulnerability" and "trapped populations" with limited resources provide an additional level of understanding to decision-making processes after a flood. However, they can also be a limiting framework. This is particularly the case for the definition of "trapped populations", as it does not sufficiently leave the option for human agency. Furthermore, the earlier section on place attachment shows how the same population that is most vulnerable can also be strongly attached to a place.

Conclusion

This paper discussed the main factors that influenced decision-making for households and local governments in the property buyout process. In the case of North Carolina, the most recent applications were for Hurricane Matthew and Florence in the eastern part of the state. The first part of the paper discussed how the property buyout process can be analysed as a form of mobility in response to an environmental shock. This was then placed within the migration as adaptation framework. The interviews with county officials closely involved in the HMGP funding application process revealed that the repetitive nature of the flooding during Florence so quickly after Matthew was a key factor in encouraging people to apply for the buyout. Therefore, it can be argued that the buyouts can be seen as a form of adaptation to increasing flood risks.

However, the interviews also show that many factors discourage people from applying to this program. First of all, place attachment in Eastern North Carolina is very strong, and many people would not consider moving outside of their community, despite the current environmental threats they may be facing. In addition, the length and the complexity of the procedure spanning several years was a factor that kept people from starting or completing the process. Finally, there are complex questions regarding the

socio-economic inequalities of many people in the region. This seems to have resulted in increased vulnerabilities in addition to a decrease in the ability of these populations to participate in the buyout process.

In order to better understand the key themes introduced in this paper, it would be interesting to discuss housing affordability inside and outside of floodplains as a way to better understanding the context in which these buyouts take place. In addition, further research should study how to combine property buyouts within an urban planning framework in order to prevent further development in floodplains. Considering the low rates of completion of the buyout process despite the growing interest in the program, future work in this area should examine initiatives from local governments to simplify and accelerate the federal procedure.

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Asia

Drought-Induced Displacements in a Context of Armed Conflicts

The Case of Afghanistan, 2018

Daniel Wallinger

Worldwide, 56,500 events of organized political violence occurred in 2018 (Kishi and Pavlik, 2019). In addition to these, 281 extreme weather events affected about 61.7 million people and claimed 10,733 lives during the same year (Yaghmaei, 2019). It is important to note that many conflicts and disasters have occurred at the same time and in the same place (Walch, 2016), thus contributing to complex emergency situations (Kovács and Spens, 2009). While existing research has mainly focused on the influence of natural hazards on man-made conflicts (Brzoska, 2018; Buhaug, 2016; Fjelde and von Uexkull, 2012; Kelman, 2012; Kreutz, 2012; Slettebak, 2012; Nelson, 2010; Nel and Righarts, 2008; Brancati, 2007; Homer-Dixon, 1999), there is little literature on how armed conflicts in turn affect the ability to prevent and manage disasters. Understanding how armed conflicts affect the prevention and management of humanitarian crises caused by natural hazards could help national authorities and humanitarian or development aid actors to provide quick and effective assistance despite additionally challenging circumstances.

The Islamic Republic of Afghanistan is one of the most prominent cases in which ongoing armed conflicts coincide with recurring natural hazards, causing complex emergencies. One recent example is the extreme drought that reached its peak in 2018 and displaced approximately 371,000 people within the country (IDMC, 2019). This paper examines how the context of armed conflicts affected the capability of state and non-state actors in Afghanistan to prevent and manage drought-induced displacements in 2018. To do this, the paper will focus on displacements in the north-western provinces of Badghis and Herat. The main hypothesis made here is that past and present armed conflicts have impaired the provision of assistance to the drought-affected population along all phases of disaster management and have thus exacerbated the crisis. The findings of the paper stem from a qualitative study of

existing scientific literature, recent reports and interviews with the international humanitarian aid community working in Afghanistan.¹

In order to provide the necessary foundation to examine the central hypothesis of the paper, the first section will introduce the political and environmental context of Afghanistan which has been marked by numerous shocks. The second section will examine how past and present armed conflicts have directly or indirectly influenced all phases of disaster management, exacerbated the effects of the drought and may have caused a protracted crisis. Finally, the third section will underline the need for a stronger integration of humanitarian and development actors in order to mitigate the risk for disaster-induced displacements in the future.

Stuck Between Armed and Natural Forces

The Political Context

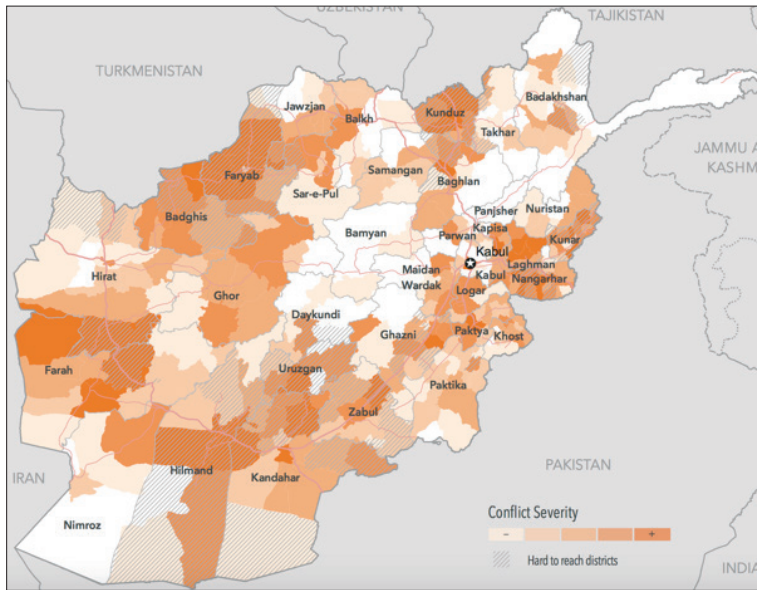
Afghanistan is an Islamic republic headed by a democratically elected president, Mr. Ashraf Ghani. In the past, the state was characterised by frequent changes in power and political instability (Qassem, 2016). The instability is rooted in a long history of armed conflicts, which have basically lasted since the invasion of the Soviet Union in 1979. The US-led NATO intervention in October 2001 marked the start of another long period of armed conflicts that continues to this day. Key to the intervention were the terrorist attacks of 11 September 2001 in the United States of America, which killed more than 3,000 people. Since the Islamist Taliban in power at the time supported the terrorist network al-Qaeda, which was responsible for the attacks, NATO declared war on the Taliban.

However, almost 20 years later, Non-State Armed Groups (NSAGs) such as the Taliban have not yet been defeated and the country has not been pacified (see image 4.1.). According to estimations, 147,000 people have been killed due to war since 2001 (WIIPA, 2018) and further 2.5 million people have been displaced within the country since 2012 (OCHA, 2019). Although today only 51 of the 398 provincial districts in Afghanistan are under NSAG-control, the majority of districts (205) remain contested between the Afghan National Security Forces and NSAGs (Gutowski and Roggio, 2019). This represents 17.1 million people, almost half of the

¹ Considering the ongoing humanitarian distress of displaced persons in April 2019, the author explicitly refrained from conducting qualitative interviews with the affected population.

population of the country. Whereas the Afghan government has been able to retain most of the provincial capitals, groups such as the Taliban control rural areas in particular.

Image 4.1. Conflict Severity in the Districts of Afghanistan in December 2018



© UN Office for the Coordination of Humanitarian Affairs (OCHA)

The Environmental Context

Afghanistan poses not only a challenging political context but also an environmental one. An important characteristic of the country is the high proportion of mountainous terrain: half of its area lies at an altitude of more than 2,000m (Embassy of the Islamic Republic of Afghanistan, 2019). The lowlands of the country are in a semi-arid and desert climate. Despite these inhospitable conditions, over 75% of the population live in rural areas and 85% of households rely on agriculture for their livelihoods (FAO, 2015).

Its geographical location and climate make Afghanistan susceptible to natural hazards that pose an existential threat to the nature-dependent livelihoods of its population. Since 1980, repeated and extreme earthquakes, floods, landslides, avalanches and droughts have impacted the lives of 9 million Afghans and claimed more than 20,000 deaths

(World Bank, 2017). Extreme droughts exerted a particular threat during the last two decades: four major incidents in 2000, 2006, 2008 and 2011 impacted the lives of 6.5 million people and caused an average economic loss of \$280 million per year (World Bank, 2017).

Management of Drought-Induced Displacements in 2018

In 2018, Afghanistan experienced an exceptionally severe drought, which forced 371,000 people to leave their homes (IDMC, 2019). This section will examine the influence of armed conflicts on the ability of state and non-state actors to prevent and manage displacements induced by this drought. To provide a comprehensive analysis, this section will follow the four phases of the disaster management cycle: prevention, preparedness, response and recovery (Cronstedt, 2002; Carter, 1992). Since the natural hazard had particularly devastating effects in the north-western province of Badghis, a majority of people displaced within the country moved to the provincial capital of Badghis (Qala-i-Naw) or to the adjacent province of Herat. Therefore, these two provinces serve as case studies for the analysis.

Prevention

Since the occurrence of climatological hazards such as droughts are beyond the control of individuals, an important way for countries to cope with natural hazards is to prevent them from causing a humanitarian disaster. Disaster risk (DR) can be reduced by decreasing the vulnerability of populations (V) to natural hazards (H). Ideally, the influence of vulnerability on overall disaster risk is countered by protective capacities at the individual level (C) or by assistance to mitigate disaster risk from institutional actors (M) such as the government or development actors. This relationship has been described by Wisner, Gaillard, and Kelman (2012: 24) in the following simplified formula:

$$DR = H \times [(V/C) - M]$$

The following paragraphs will examine how past and present armed conflicts influenced vulnerability (V), institutional assistance (M) and individual protective capacity (C) with emphasis on the population of Badghis.

Vulnerability

Wisner, Blaikie, Cannon, and Davis (2004) describe the concept of vulnerability as follows:

It involves a combination of factors that determine the degree to which someone's life, livelihood, property and other assets are put at risk by a discrete and identifiable event (or series or "cascade" of such events) in nature and in society (Wisner *et al.*, 2004: 11).

Wisner *et al.* (2012) distinguish between six different factors that are crucial to retaining sustainable livelihoods: political, physical, human, natural, economic and social. In Afghanistan, the greatest pressures that compromise the population's endowment with these factors are ongoing conflicts and climate change.

Even if the conflicts between the Afghan government and NSAGs imply political instability, districts or communities under the control of groups such as the Taliban are—with regards to some livelihood indicators—not necessarily worse off than others, reports Jan Sindelar, Drought Response Focal Point at UNDP (personal communication, April 2, 2019). Dwain Hindriksen, Response and Operations Director (personal communication, April 19, 2019) at the international relief and development agency World Vision Afghanistan (WVA), highlights that the relationship between NSAGs and the local population, as well as their legitimacy, varies greatly from community to community. Whereas in some communities NSAGs are accepted as new political administrators, in other communities they impose taxes on the local population or threaten their security (Freedom in the World, 2019).

The implications of conflicts on security and physical infrastructure, especially in areas contested by pro-government forces and NSAGs, are particularly devastating. Monthly changing front lines increase the danger for the local population to be caught in crossfire. In addition, these may also destroy infrastructure for the provision of critical goods and services as well as private assets. Louise Chadwick,² advisor at an international NGO in Afghanistan, points out that due to armed clashes, military operations and airstrikes in the decades following the Soviet intervention, large parts of the irrigation infrastructure have been destroyed (personal communication, April 17, 2019).

² The interview with Louise Chadwick (Alias given by the author as respondent prefers to stay anonymous.), advisor at an international NGO, was conducted via Skype on April 17, 2019.

Ongoing conflict also affects economic endowments of the population. According to an IPC analysis, the average household income in provinces with ongoing fights such as Kandahar was 44% lower than in years without acute fighting (IPC, 2018). Furthermore, the fragile security situation in contested areas strongly impairs the endowment of communities with human factors such as health care and education: between March and May 2018, 29% of communities in hard-to-reach districts lacked access to healthcare infrastructure and only 36% of school-age children attended school, of whom only 21% were girls (REACH, 2018).

Climate change brings additional pressure on Afghan livelihoods. Natural resources such as drinking water are becoming increasingly scarce and extreme natural events such as droughts, floods and landslides repeatedly cause emergency situations (World Bank, 2017). These circumstances have led to increased economic vulnerability, especially given that 80% of the population depended on rain-fed agriculture and livestock breeding in 2016 (UNDP, 2016). Moreover, crop failures due to high temperatures or extreme weather events push the rural population to the limit of their livelihood.

Institutional Assistance

In order to reduce disaster risk, institutions could counteract vulnerability by providing basic services to the population. However, this has been limited by the government's weak capacities and lack of resources, as well as by development actors' limited access to NSAG-controlled areas.

Raquel Santiago (personal communication, March 26, 2019),³ project development officer at an international NGO, describes that the government has difficulties to provide stable and basic services to the citizens. Besides a lack of capabilities, this could also be due to a lack of resources: although the government has annual revenues of \$2 billion, half of these are lost as a result of corruption and are therefore not available for the delivery of basic services (Afzali and Timory, 2017). At the same time, due to the armed conflicts, the government incurs high security costs, which accounted for almost half of total expenditures in the planned national budget for 2018. Expenditure on agriculture and rural development, health, education and social security, on the other hand, accounted for only 33% of the budget (Afzali and Timory, 2017).

³ Alias given by the author as respondent prefers to stay anonymous.

In addition to these general difficulties, the government and many development actors have limited access to vulnerable communities in NSAG-controlled areas, and thus very little information available on the situation on the ground (J. Sindelar, personal communication, April 2, 2019). Two particular factors prevented development actors from accessing these areas: firstly, due to ongoing fighting, the security situation in many vulnerable communities was so critical that the lives of employees of international NGOs would be at risk. While in 2018 a total of 3,804 civilians were killed in armed conflicts in Afghanistan, the number of targeted attacks on employees of international NGOs rose from 11 to 38 civilian casualties compared to 2017 (UNAMA, 2019). Secondly, according to Louise Chadwick, the Ministry of Agriculture and Rural Development refrained from supporting communities in NSAG-controlled areas because the local population did not support the central government (L. Chadwick, personal communication, April 17, 2019). Since development actors typically work closely with partners from the national government, political motives may have also hampered access to NSAG-controlled areas. As a result of both security-related and political-access constraints, preventive measures to strengthen local livelihoods in NSAG-controlled areas were either not in place or had failed (J. Bowman, personal communication, April 11, 2019).

While most development actors were therefore working in government-controlled areas only, World Vision Afghanistan was one of the few agencies able to provide assistance in health, education, water, sanitation, hygiene and sustainable livelihoods projects in both government and NSAG-controlled areas. According to Dwain Hindriksen (personal communication, April 19, 2019), the fact that WVA had established close relationships and trust at the local level in many communities of Badghis since 2001 enabled them to continue to implement development programs even in NSAG-controlled districts.

Individual Protective Capacity

The previous section argues that institutional assistance was not able to reduce the vulnerability of parts of the population due to a lack of governmental capacities and limited access to NSAG-controlled areas from development actors (R. Santiago, personal communication, March 26, 2019). As a result, the affected population was forced to deal individually with material deprivation, which led in some cases to negative coping behaviours. Negative coping behaviours are signs of great

desperation and can be described as “a retreat to the defence of needs that are lower in the hierarchy [which] implies the temporary denial of those needs higher up” (Wisner *et al.*, 2004: 114). Experts from international organisations in Afghanistan interviewed for the purpose of this paper reported negative coping behaviours ranging from eating seeds and selling livestock under-value to child labour, child marriages, and the sale of organs amongst the affected population (R. Santiago, personal communication, March 26, 2019 and J. Bowman, personal communication, April 11, 2019).

Preparedness

Preparedness describes the capacity of actors to effectively anticipate and prepare response mechanisms to imminent disasters (Wisner *et al.*, 2012). An important element of disaster preparedness is long-term development of awareness and capacities of local populations, so that in the case of disasters, affected communities can effectively protect themselves. However, these activities also faced political and security-related access constraints. To ensure disaster preparedness among aid-providing institutions, such as the government or humanitarian actors, the following elements are particularly crucial: regular need assessments, resource mobilisation and delivery planning (Haile, 2005).

During the third UN World Conference on Disaster Risk Reduction in 2015, Afghanistan adopted the Sendai Framework. This framework builds on the Hyogo Framework for Action Monitor system, and further highlights the importance for national and local governments to “invest in, develop, maintain and strengthen people-centred multi-hazard, multisectoral forecasting and early warning systems, disaster risk and emergency communications mechanisms, social technologies and hazard-monitoring telecommunications systems” (UNDRR, 2015). However, even if the Famine Early Warning Systems Network identified early signs of an approaching drought in late 2017 (FEWS NET, 2017), the Afghan government did not officially declare a drought until mid-April 2018, when almost 6.6 million Afghans were already in a state of emergency (OCHA, 2018c). According to Dwain Hindriksen (personal communication, April 19, 2019), this could in part be due to the fact that the government had other political priorities, such as dealing with the widespread conflict in the country. Therefore, preparing for a possibly unfolding drought might have been perceived as a secondary task. Moreover, Jan Sindelar (personal communication, April 2, 2019) highlights that due to the limited access to NSAG-controlled areas, neither the

government nor many development actors were informed of the magnitude of food shortages and the actual needs of affected populations, and thus had a limited understanding of the kind of response that was appropriate on the ground.

In contrast, WVA benefited once again from its embeddedness in rural districts of Badghis and Herat. Due to a long history of development work, especially in Taliban-controlled communities, WVA was able to detect signs of an approaching drought as early as June 2017, and had information on how livelihoods deteriorated over time (D. Hindriksen, personal communication, April 19, 2019). Therefore, WVA was able to present projections on reduced rain-fed cereal crop yields to donors and was able to acquire funding from the Afghanistan Humanitarian Fund in November 2017. According to Jan Sindelar (personal communication, April 2, 2019), other organisations without community-based access to NGAG-controlled areas experienced difficulties mobilising resources for response because they could not immediately provide donors with detailed information on how much funding nor the kind of assistance that was needed.

Besides a lack of information on vulnerable livelihoods, two additional factors slowed down the mobilisation of resources for response in the preparedness phase. First, at the time the drought exacerbated, the international aid community in Afghanistan was involved in ongoing programs addressing life-saving needs of conflict-impaired populations, amongst others. The existing programs were mostly applicable to conflict-affected populations, and therefore the humanitarian community took considerable time to shift gears, cope with the additional workload and apply for funds to support drought-affected populations (J. Bowman, personal communication, April 11, 2019). Second, donor interest in funding preparedness programs was missing, which also slowed down resource mobilisation. According to Louise Chadwick (personal communication, April 17, 2019), “there is limited donor appetite to put money into communities before displacements have happened”. This may be due to the fact that preparedness programs often do not provide donors with as much visibility as emergency programs do, and thus support for the latter is typically prioritised in the case of tight budgets.

Planning delivery of humanitarian assistance is another important step to elevate disaster preparedness: it is important to coordinate capabilities and resources of the various humanitarian actors in order to deliver rapid and comprehensive support. According to local observers, preparedness

for drought-response has been further slowed down because the UN Office for the Coordination of Humanitarian Affairs (OCHA) had difficulties to coordinate the humanitarian community. In a statement by the Agency Coordinating Body for Afghan Relief and Development, 146 national and international NGOs claim that OCHA had failed to prepare an effective, orchestrated response and therefore caused avoidable damage (Glinski, 2018).

The Natural Hazard

The first signs of an upcoming natural disaster were visible well in advance: the four preceding years had already been marked by low rainfall levels and above average temperatures, so that observers from on the ground speak of a three-year drought whose impacts culminated in 2018 (IFRC, 2018). The already ongoing drought had worsened since October 2017, resulting in significantly reduced snow levels, river flows, water levels in dams, water tables and soil moisture (IFRC, 2018). These conditions not only led to a shortage of water for the rural population and their livestock, but also to consecutive harvest failures for many of the particularly sensitive rain-fed cereals and irrigated crops (FEWS NET, 2018). As a result, between August and October 2018, 27 of all 34 Afghan provinces were in a state of crisis and three, including Badghis, in a state of emergency with regards to food insecurity (IPC, 2018).

Afghan communities are remarkably resilient in general and to the impacts of natural disasters, to conflict, and to displacements in particular—however, after 40 years of conflict and disaster events, resilience has been stretched significantly and last year's drought has pushed communities to the point where coping mechanisms to shocks are exhausted (D. Hindriksen, personal communication, April 19, 2019).

Dwain Hindriksen's observation underlines what the previous sections have argued: neither prevention nor preparedness measures by the government or development community were sufficient to protect the population from material deprivation as a result of the drought in 2018. Consequently, large parts of the population left their homes to seek assistance in other regions of the country. Over the course of 2018, around 371,000 people had been internally displaced by the drought (IDMC, 2019). However, some inhabitants living in contested areas were unable to leave their homes to seek support due to security risks and were stuck in immobility. For those who were able to move, displacements

were mostly from rural, often NSAG-controlled areas, to urban, government-controlled areas. Badghis and Herat received 74% of all Afghan drought-induced IDPs in 2018 (OCHA, 2018a). Due to the high levels of food insecurity and the large displaced population in Badghis and Herat, the analysis of drought response will focus on these two provinces.

Image 4.2. IDP Settlement with Thousands of Makeshift Homes on the Outskirts of Qala-i-Naw, Badghis



© Norwegian Refugee Council/Enayatullah Azad

Image 4.3. Informal Settlement of IDPs from Badghis, Ghor and Faryab on the Outskirts of Herat



© Norwegian Refugee Council/Enayatullah Azad

Response

Emergency response entails live-saving support to affected populations immediately before, during or directly after a disaster (UNDRR, 2017). Since it is the responsibility of the government to ensure the security and well-being of its population, the first part of this section will assess the general capacity of the Afghan government to respond to internal displacements. The subsequent parts will shed light on the response provided with the support of the humanitarian community in both areas of origin and areas of destination of displaced populations, especially in Badghis and Herat.

The Afghan IDP Policy

To protect the rights and well-being of its large IDP population, the government of Afghanistan adopted a National Policy on IDPs in 2014 (MoRR, 2013). It was internationally praised as one of the most comprehensive instruments to serve the needs of IDPs (Hall, 2018). The policy affirms IDPs' rights to adequate housing, an adequate standard of living, access to basic health services, job search assistance and education. Amnesty International (2016) acknowledges that the policy grants those rights even to people displaced by slow-onset disasters, who were often underprivileged as economic refugees before. A further achievement is that sustainable solutions for displaced persons include not only return to their community of origin, but also integration at the place of displacement or resettlement (Wiseberg, 2014).

However, five years after its adoption, the implementation of the IDP policy remains rudimentary, which may be due to political, institutional and security-related barriers. Firstly, the development of the IDP policy was one of the last actions of the government under former President Hamid Karzai, leaving its actual implementation to current President Ghani. So far, the latter has not been able to accelerate the process of developing action plans on the provincial level (Amnesty International, 2016), and thus there are still provinces that are not aware of the IDP policy (J. Bowman, personal communication, April 11, 2019). Secondly, the Ministry of Refugees and Repatriation (MoRR), which is responsible for IDP policy, seems to lack the necessary capabilities to effectively assume its responsibilities and, according to Dani Peralta (personal communication, April 12, 2019), completely depends on the humanitarian community for providing relief to IDPs. In addition, the Ministry has been repeatedly

affected by incidents of corruption, which in turn has led international donors to cut funds for capacity building (Amnesty International, 2016). Thirdly, the development of measures for the long-term support of IDPs may have lost political importance in the face of acute security-related challenges in contested areas (D. Hindriksen, personal communication, April 19, 2019).

As a result of these barriers, the government and its IDP policy did not significantly contribute to meet the essential needs of the population displaced due to the drought in 2018 (R. Santiago, personal communication, March 26, 2019). Even though the government itself was involved in some cash or food distribution activities, observers have mentioned that these were preferably distributed amongst the friends and family of decision-makers.

Response in Areas of Origin

Addressing life-saving needs during response should ideally take place in the respective communities in which the affected populations reside, because:

Providing people with safe drinking water, food rations and livelihood support so that they are not displaced from their homes in the first place is far more effective than being ambulance to the bottom of the cliff and giving people cash when they have already arrived in IDP sites (D. Hindriksen, personal communication, April 19, 2019).

Nevertheless, after the drought the vast majority of humanitarian actors provided support to IDPs at the places of destination, such as Herat and Badghis, as emergency response in the areas of origin was particularly difficult to implement in contested or NSAG-controlled communities (J. Bowman, personal communication, April 11, 2019). In communities with ongoing fights between the government and NSAGs, it may be too dangerous for humanitarian actors to provide emergency response, especially because employees of international NGOs are considered prime kidnap targets. And in NSAG-controlled communities, emergency response may not be funded by some donors because there is a risk that a portion of the money ends up in the pockets of armed groups such as the Taliban (D. Hindriksen, personal communication, April 19, 2019).

Despite these circumstances, some humanitarian actors managed to provide emergency response in NSAG-controlled areas of origin,

although it was provided, with a certain delay. This may be mainly due to two reasons. Firstly, access to these communities has to be negotiated with the respective NSAG. A central point of these negotiations is assuring safety for employees of NGOs. In some cases, NSAGs require humanitarian actors to pay taxes or other charges (OCHA, 2018b), which violate humanitarian principles and may lead to the suspension of foreseen support programs. Secondly, even after access has been granted, emergency response can be delayed if NGOs do not have local strategies and relationships in place to reach the most vulnerable people on the ground (D. Hindriksen, personal communication, April 19, 2019).

Due to its long-standing community presence in rural parts of Badghis and Herat, WVA did not experience these difficulties and was able to provide emergency response to over 700,000 people (D. Hindriksen, personal communication, April 19, 2019). In villages such as Zingar and Qapchiq (both located in the west of Badghis province), WVA installed solar-powered water purification systems, which supplied the population with water even during the drought and thus prevented displacements (Glinski, 2018).

Response in Areas of Destination

As previously mentioned, 74% of Afghan IDPs were displaced to the provinces of Badghis and Herat in 2018 (OCHA, 2018a). There, they received cash transfers or food, water, shelter, sanitation services and healthcare to meet their immediate needs. Given that both of these provinces were under the control of the government in 2018, the emergency response was not *directly* influenced by armed conflicts, explains Nojus Milner,⁴ programme manager at an international NGO (personal communication, April 22, 2019).

However, emergency response might have been *indirectly* influenced by armed conflicts. Louise Chadwick (personal communication, April 17, 2019) describes the local government of Herat as an essential factor that hampered rapid and sufficient support. Similarly, Julia Bowman (personal communication, April 11, 2019) reports that during discussions with experts from on the ground, the government had repeatedly been called a “systematic block” for the delivery of timely assistance. According to Dwain Hindriksen (personal communication, April 19, 2019), the provision of emergency response in areas of displacement was highly

⁴ Alias given by the author as respondent prefers to stay anonymous.

Image 4.4. Water Distribution from a Water Tank Provided by UNICEF in Herat



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Image 4.5. NRC-Team Assisting with Unloading 735 Tents for Displaced Families in Qala-i-Naw



© Norwegian Refugee Council/Enayatullah Azad

controversial. The government, on the one hand, tried to limit support for IDPs on the outskirts of Herat in order to prevent a pull factor that would attract even more IDPs to the city (Action Against Hunger, 2019). Aid organisations, on the other hand, committed themselves to the humanitarian principles and therefore wanted to react quickly to the emergency situation.

The government's position was mainly driven by two fears. Firstly, the city of Herat has experienced strong urbanisation with a population that tripled between 2005 and 2015 (Islamic Republic of Afghanistan, 2015), reaching 500,000 inhabitants by 2019. The conflicts and disasters of the last decades have forced the relocation of more and more people into the city due to its comparatively good security situation and the availability of job opportunities. When, in the first nine months of 2018 alone, more than 84,000 drought-displaced people arrived in the city, the local government might have been afraid that the already dysfunctional basic services would get overburdened, and the number of available jobs, schools, clinics and land would further decline (IFRC, 2019). Secondly, the government feared that additional displacements to Herat would carry conflicts from contested or NSAG-controlled districts into the city, reports Dani Peralta⁵ (personal communication, April 12, 2019), who works as programme coordinator for an international NGO in Afghanistan. He explains that conflicts may arise between the Tajiks, an ethnic group traditionally strong in Herat, and the arriving IDPs, mostly Pashtuns. An additional fear could be that IDPs originally coming from districts that oppose the government and sympathize with NSAGs might infiltrate the local population with their political beliefs.

Due to the government's tactic to avoid further displacements to the cities, for a long period humanitarian actors could not offer sufficient and integrated support to the displaced persons on the outskirts of Herat. Therefore, in April 2019, more than 35,000 drought-induced IDPs still lived in make-shift shelters on informal settlements in Herat and Qala-i-Naw, which impedes their ability to recover (IOM, 2019b).

Recovery

The last phase of the disaster management cycle describes the recovery of affected populations from consequences of the disaster, such as displacement. Recovery is not only about restoring livelihoods, but also

⁵ Alias given by the author as respondent prefers to stay anonymous.

about developing capacities to protect affected populations from the negative consequences of future disasters (UNDRR, 2017). In this sense, the recovery phase closes the cycle and overlaps with the initial prevention phase. In the following sections, the challenges for facilitating the recovery of affected populations will be analysed based on the three durable solutions described in the national IDP policy: return to community of origin, integration at place of initial displacement and resettlement.

Return to Community of Origin:

The return of the displaced population to their area of origin is the preferred solution for the Afghan central government, but also for the cities of Herat and Qala-i-Naw (D. Peralta, personal communication, April 12, 2019). With this alternative, the overstretched social services can be relieved and ethnic, political or property-related conflicts with the incumbent population avoided. The results of the IOM Displacement Tracking Matrix from February 2019 show that 63% of people having been displaced to Qala-i-Naw considered returning to their area of origin, whereas only 20% did so in Herat (IOM, 2019a).

**Image 4.6. Family on the Way Back from Qala-i-Naw to Their Village
After the Rain has Started in Fall 2018**



© Norwegian Refugee Council/Enayatullah Azad

To help IDPs rebuild a sustainable livelihood after returning to their home communities, humanitarian actors started to offer early local recovery programs. The Norwegian Refugee Council, for example, runs a cash-for-work program in rural parts of Badghis under which inhabitants are paid

for their labour to construct water management infrastructure in the short term, which improves the entire community's access to water in the long term. However, here too the impact of projects will depend on gaining access to NSAG-controlled or contested areas, which will require complicated negotiations at the village level (L. Chadwick, personal communication, April 17, 2019).

Integration at Place of Initial Displacement

As of April 2019, more than 35,000 displaced families were still residing on the outskirts of Herat and Qala-i-Naw (IOM, 2019b). In Herat, most of them lived in informal settlements on private properties and were constantly exposed to the risk of being displaced once again by property owners (D. Peralta, personal communication, April 12, 2019). In addition, families in make-shift shelters are very vulnerable to the frequently recurring natural hazards in Afghanistan. At the beginning of 2019, for example, an extreme flood forced large a large portion of the drought-induced IDPs to move again, making them fall into in protracted displacement (IFRC, 2019).

So far, the government has promised that it will provide resources for IDPs in Herat as soon as land is available (J. Sindelar, personal communication, April 2, 2019). However, avoiding to improve the conditions in informal settlements could also be a strategy to prompt more people to return to their areas of origin. If so, this tactic might not be working as of February 2019, more than 70% of the IDPs in Herat reported that they did not wish to return to their home communities, even if they were to receive support to do so (IOM, 2019a), mainly because of security concerns. While some are afraid of taxation or extortion by NGAGs in their communities (Freedom House, 2019), others cannot return because their villages are in current combat zones (N. Milner, personal communication, April 22, 2019). The second reason was the difficult climatic conditions, together with a lack of seeds, crops or livestock, which makes sustainable livelihoods in their villages virtually impossible in the long term, reports Sarah Craggs (personal communication, April 21, 2019), Senior Program Coordinator at the International Organisation for Migration (IOM).

Resettlement

Dani Peralta (personal communication, April 12, 2019) stresses that the allocation of land for formal settlements is a prerequisite for longer-term

solutions to displacement. However, contrary to government announcements, as of April 2019 only around 500 families in Herat had been relocated from informal settlements on private land to available areas where formal settlements are possible (J. Sindelar, personal communication, April 2, 2019). The difficulty of allocating land for long-term settlement stems from two particular reasons. First, according to Julia Broska (personal communication, February 27, 2019) from the German NGO Welthungerhilfe, there is a scarcity of available public land in Afghanistan, because in the course of the past years of conflict, warlords and other influential individuals have appropriated large amounts of land. The messy documentation of property rights further complicates the search for suitable land for formal settlements (D. Peralta, personal communication, April 12, 2019). Furthermore, there is political reluctance to make land available for formal settlements, because in the long term these could automatically become part of the city of Herat and thus further put pressure on its already strained capacities (D. Hindriksen, personal communication, April 19, 2019).

As has been elaborated, all three so-called durable solutions are facing major difficulties in their implementation. Without support for sustainable livelihoods in their areas of origin or formal settlement in their areas of displacement, people displaced by the 2018 drought have entered a protracted crisis and face increased vulnerability to future disasters.

The Way Forward: Reinventing the Nexus?

For decades, billions of US dollars have been spent on humanitarian and development aid to support the fragile state of Afghanistan to cope with the consequences of disasters, and to promote sustainable development (Swedish Committee for Afghanistan & Oxfam, 2018). In 2016, international donors promised a total amount of \$15.2 billion in support of these tasks until 2020 (BBC, 2016). However, despite these investments, the country continues to suffer from chronic underdevelopment, food insecurity and displacements. Although it would be easy to blame the recurrent disasters and conflicts, experts from the region also hold the work of the international aid sector in Afghanistan responsible for why assistance has not been as effective as hoped. Sarah Craggs (personal communication, April 21, 2019) describes the nexus between humanitarian and development actors in Afghanistan as a “black hole”, referring to the poor coordination of efforts, while Louise Chadwick (personal communication, April 17, 2019) stresses that it is “a failure of the nexus”.

According to the Nordic Consulting Group (2018), the nexus refers to the integrated and simultaneous application of assistance providing instruments by both humanitarian aid and development actors. These statements convey that the prevailing disconnection between the work of development and humanitarian actors also contributed to the devastating effects of the 2018 drought. Therefore, in order to break the long-standing vicious circle of conflict, natural, protracted displacement and material deprivation in Afghanistan, it may be necessary to reinvent the nexus. Two elements could be particularly important to improve its efficiency: the prioritisation of preventative measures and the adoption of needs-based (rather than status-based) funding.

Prioritisation of Preventive Measures

According to Raquel Santiago (personal communication, March 26, 2019), the drought was “the last drop” that finally caused large-scale displacements in 2018. However, even before the drought, many Afghan families were in deep material deprivation due to a combination of factors such as climate change, resource depletion, conflict and a lack of access to markets. Early action and the prioritizing of displacement prevention through strengthening vulnerable livelihoods might have decreased the need for a humanitarian emergency response. Therefore, development actors should expand their assistance to all parts of Afghanistan in the future. This may, however, require a change of mindset in two regards. First, development actors need to abandon the widespread assumption that they cannot carry out development work in complex environments such as the one in Afghanistan, as the work of WVA in NSAG-controlled communities in Badghis demonstrates that this is in fact possible (D. Hindriksen, personal communication, April 19, 2019). Secondly, since development actors typically work closely with government partners, the former would need to convince the latter that NSAG-controlled areas also need long-term support to find durable solutions to protracted displacement.

Needs- Rather than Status-Based Funding

Typically, humanitarian actors provide emergency aid, whereas development actors provide long-term support to create sustainable livelihoods. This distinction, however, creates a funding gap for early recovery or resilience work (D. Hindriksen, personal communication, April 19, 2019) and may foster protracted displacement. Whereas on the one hand humanitarian actors argue that protracted IDPs need long-term livelihood

support, development actors claim that IDPs have been affected by an emergency situation. In Afghanistan, too, categorising IDPs by status may cause a protracted crisis. Funding for providing humanitarian aid to the drought-affected population was originally planned to expire in June 2019 and without subsequent long-term recovery programmes, IDPs may not be able to establish sustainable livelihoods on their own (D. Peralta, personal communication, April 12, 2019). Dani Peralta further emphasises the importance of a whole response cycle that is not based on the status of IDPs but on their actual needs in order to close the gap. This would require closer cooperation between humanitarian and development actors, who could jointly plan, finance and implement relief operations in the future on the basis of complementary capabilities.

In Afghanistan, an additional distinction, based on status, was made between people displaced by conflict and rapid-onset disasters on the one hand, and people displaced by slow-onset disasters on the other. The Emergency Response Mechanism (ERM) provided fast and effortless funding in the event of conflicts or rapid-onset disasters, whereas those affected by slow-onset disasters were not eligible until the ERM was adapted in July 2018 (D. Peralta, personal communication, April 12, 2019). This example shows the importance of flexible funding mechanisms especially in regions of complex emergencies such as Afghanistan, where humanitarian actors are forced to quickly respond to constantly changing crisis situations. This would require a shift in the mindset of donors, who would have to provide a larger non-earmarked budget to adapt to the evolving needs of the population (J. Bowman, personal communication, April 11, 2019).

Conclusion

People's decision to leave their homes and seek refuge elsewhere after a disaster is usually their last resort (J. Bowman, personal communication, April 11, 2019). Nevertheless, the underlying sociological and psychological factors that determine the reasons, timing, destination and duration of individual displacements need further investigation. Therefore, the findings of the present study should also be examined with caution. While a variety of factors may have caused and influenced drought-induced displacement in Afghanistan in 2018, this paper has solely focused on armed conflict as a determining variable.

The present case study has shown that past and present armed conflicts can affect the prevention and management of disaster-induced

displacements in many different ways along the entire disaster management cycle. In the case of Afghanistan, armed conflicts of the past decades have increased socio-economic vulnerability, impaired the resilience of the population, and thus contributed to a considerable disaster risk. In addition to political interests and capacity weaknesses from the government, limited access to contested and NSAG-controlled areas in particular have prevented long-term livelihood support to effectively reach all parts of the country. Limited access and information about contested or NSAG-controlled areas were also two of the factors that contributed to the insufficient preparedness of state and non-state actors for the 2018 drought. Furthermore, the international aid sector and the Afghan government also failed to prepare a rapid and coordinated response. Even though the response to the drought-induced displacements as such was not directly influenced by the conflicts, it was still strongly shaped by the political interests of the central government which interfered with emergency aid for both communities in NSAG-controlled areas and IDPs on the outskirts of cities such as Herat, making it difficult for humanitarian actors to secure the humanitarian space. Finally, early recovery from drought-induced displacement was hampered by ongoing fights and lack of livelihood options in areas of origin, as well as by the lack of political will of authorities to provide durable solutions for IDPs in displacement sites.

It is evident that peace between government forces and NSAGs will be crucial to overcome many of the chronic challenges in Afghanistan. Nevertheless, especially in complex emergencies in which conflicts and disasters coincide, it is also the responsibility of humanitarian and development actors to reinvent the nexus in order to increase the effectiveness of international aid. Experiences from Afghanistan could influence the discussions around the new nexus, which has come back into focus since the World Humanitarian Summit in 2016.

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The (Im)Mobility of Persons with Disabilities and the 2018 Sulawesi Disasters

Towards Disability-Inclusive Disaster Risk Reduction

Jonas Bull

During 2018, over 68 million people were affected by 315 natural disaster events worldwide, which costed the lives of 11,804 people and over \$131.7 billion in economic losses (CRED, 2019). In addition, climate change has altered the intensity and frequency of hazards which poses additional challenges to countries prone to natural disasters. Next to economic losses due to large-scale destruction, these disasters continue to cause human losses in spite of strengthened efforts to mitigate the risks, with the majority of fatalities occurring due to geophysical events such as earthquakes and tsunamis (UNDRR, 2017). Indonesia, with its multiple islands, is located in the Pacific “ring of fire”, facing a constant threat of hazards, ranging from volcanoes and earthquakes to floods and tsunamis (ICRF, 2015).

This paper seeks to understand how policies and activities of stakeholders in the context of the Sulawesi earthquake and tsunami in Indonesia in September 2018 affected the ability of persons with disabilities to relocate or remain. It will also try to investigate whether these activities have effectively met the desires of persons with disabilities with respect to relocation during evacuation programs. By bridging theory and practice, making use of academic and grey literature as well as the views of experts and researchers in the field of Disaster Risk Reduction, this paper will explore questions of mobility with respect to persons with disabilities affected by sudden-onset disasters. It will also outline additional ideas to further improve the situation of persons with disabilities so their rights can be fully fulfilled.

By comparing the theoretical framework on disability-inclusive DRR and its practical implementation in the Sulawesi context, this paper analyses what activities and steps humanitarian agencies (both governmental and NGOs) undertook to improve the mobility of persons with disabilities. It further outlines findings from the Sulawesi case study that underline the contested mobility options for persons with disabilities.

Following desktop research, academic and grey literature review as well as policies and humanitarian guidelines analysis, four semi-structured key informant interviews (KIIs) were conducted. For the analysis, interviewees are classified as follows (pseudonyms were used to guarantee interviewees' anonymity):

1. Spencer H., DiDRR researcher;
2. John A, programme manager from an international organisation working in Sulawesi;
3. Steven V., programme officer from a development and humanitarian international NGO based in Palu;
4. Randall M., project coordinator from a second development and humanitarian international NGO.

Notably, the two international NGOs have a specific focus on disability and are often considered as experts with regard to disability-inclusive humanitarian action in situations of disasters.

Highlighting an Invisible Group in Disasters

Disasters can have different impacts for a population, depending on the characteristics of different groups: socio-economic backgrounds, gender, or disability play an important role in influencing the effects of a disaster. Persons with disabilities, a group that is often overlooked despite making up to 15% of the global population (WHO, 2011), are disproportionately affected by disasters (Twigg, Kett & Lovell, 2018). Generally, 80% of persons with disabilities live in the poorest countries and the prevalence of disabilities is increasing in low-income countries (WHO, 2011).

Rather than defining disability in a strict sense, the United Nations Convention on the Rights of Persons with Disabilities reaffirms in its preamble that "disability is an evolving concept and [that] disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others" (UNCRPD, 2008).

Empirical research in disaster settings underlines that persons with disabilities are at higher risk of death (Aldrich and Benson, 2008), more prone to injury (Wisner, 2002), more likely to be affected by loss of property (van Willigen, *et al.*, 2002) and to encounter challenges during sheltering (Twigg, Kett, *et al.*, 2011) than persons without disabilities. These findings

imply that persons with disabilities are a vulnerable group in need of more intensive disaster case management (Stough and Kang, 2015) and targeted actions. Fittingly, the United Nations Office for Disaster Risk Reduction published its first (and only) global survey on “Living with Disability and Disasters” in 2014. The survey, in which 5,450 respondents with disabilities from 126 countries took part, illustrates that the disproportionate effects may be explained by the fact that persons with disabilities are rarely consulted about their needs in terms of preparedness, relief and recovery efforts. The survey further outlines that in the event of a sudden-onset disaster, only 20% of respondents could evacuate immediately without difficulties. Most had some level of difficulty or could not evacuate at all: 71% did not have a personal preparedness plan and only 31% received help to be evacuated (UNDRR, 2014; Stough and Kelman, 2017; Humanity & Inclusion, 2016). These numbers indicate that, in many respects, persons with disabilities are a hidden or invisible population with less options for mobility in the context of disasters.

Undoubtedly, everyone is vulnerable in situations of disasters, yet the outlined statistics makes it clear that people with disabilities indeed face a double challenge: they are more vulnerable to disasters as their needs are not adequately addressed by emergency actors and are less able to move away from disaster due to barriers in their surrounding environment. Black and Collyer (2014) conceptualise a state of “being trapped” by outlining the criteria of the need, the desire and the ability to move. Regardless of the desire and the need to move in the event of sudden-onset disasters, persons with disabilities often lack the ability to do so. As will be outlined in this paper, this is not necessarily linked to mobility impairments but to existing environmental, institutional and attitudinal barriers (Twigg *et al.*, 2018). The paper will argue that even though emergency response categorises populations in order to prioritize its actions, the inclusion of persons with disabilities, alongside pregnant women and children as vulnerable groups, does not always guarantee their full protection.

Disability-inclusive Disaster Risk Reduction (DiDRR) and humanitarian efforts are directed towards alleviating the vulnerability of persons with disabilities through the preparation for disasters and an improved coordination for their evacuation (DiDRRN, n.d.). However, due to the informality and neglect towards persons with disabilities in disaster risk reduction and emergency response, it remains unclear how these activities have really led to an improvement. Evaluations on the effects of DiDRR have been carried out but these are mainly directed towards

specific programs and have not yet been conducted at an inter-agency level. That said, DiDDR remains a relatively new practice but is gaining increased attention within the field of disaster risk reduction. In addition, various humanitarian agencies focused on the protection of people with disabilities have called attention to several fields of action in order to improve the preparedness of persons with disabilities prior to disasters. These include the establishment of self-help groups to share common experiences, situations and problems, and governmental cooperation with such organizations for the incorporation of disability in local action plans (CBM, 2018; Humanity & Inclusion, 2016).

Leaving No One Behind – the Responsibility of Disability-Inclusive Response and DRR

Leaving No One Behind in the CRPD and the Sendai Framework

With the effective entry into force of the Convention on the Rights of Persons with Disabilities (CRPD) in 2008, legal frameworks and policies to ensure the protection of persons with disabilities in humanitarian emergencies were put in place. Notably, in its Article 11, the CRPD calls upon the 177 member states that have ratified the Convention to take “all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters” (CRPD, 2008). Furthermore, through Article 18, member states commit to respecting, protecting and fulfilling the right to movement of persons with disabilities.

In addition to the legal framework, the international community endorsed specific policies to address persons with disabilities in humanitarian situations. In 2016, the first World Humanitarian Congress took place, issuing a Charter on Inclusion of Persons with Disabilities in Humanitarian Action. Out of this Charter, an Inter-Agency Standing Committee (IASC) Task Team emerged to develop guidelines for humanitarian agencies. Therefore, inclusion is in line with the humanitarian principles of humanity and impartiality, as well as the human rights principle of inherent dignity, equality and non-discrimination (WHS Charter, 2016).

With regard to disasters, the Sendai Framework for Disaster Risk Reduction makes specific references to persons with disabilities (UNDRR, 2015). Being considered the most inclusive political framework, its development involved the participation of persons with disabilities. Moreover, the final document includes several references to accessibility, inclusion and universal design, working towards a disability-accessible and inclusive environment (Stough and Kang, 2015).

As a non-binding, 15-year agreement, the Sendai Framework recognises the state as the primary duty-bearer to reduce disaster risks, but it requires collaboration between local governments, the private sector and civil society organisations, including persons with disabilities (UNDRR, 2015). To have persons with disabilities taking part in designing and implementing policies, plans and standards “is not only an equity goal, it is a pragmatic goal. Input from people with disabilities (...) is grounded in their own experiences. Their knowledge is first-hand and thus able to propose strategies that appropriately address barriers” (Stough and Kang, 2015).

Inclusive Disaster Risk Reduction – Humanitarian Efforts Enabling Persons with Disabilities to Move

Over the past years, humanitarian and development organisations shifted their focus from mere emergency response during and after a disaster, to the process of preparing communities before sudden-onset disasters, an approach now acknowledged as Disaster Risk Reduction (DRR). DRR not only reduces economic costs in the face of a disaster, but this systematic approach before the event can also save lives and property (Humanity & Inclusion, 2016). In essence:

DRR is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of disaster risk reduction (UNDRR, n.d.).

Answering to the lack of attention that DRR stakeholders have paid to persons with disabilities, Disability-inclusive Disaster Risk Reduction (DiDRR) has been added as a key approach to safeguard this specific group in areas that are prone to disasters. In theory, a so-called “twin-track

approach” is applied (see figure 5.1). Through empowerment activities that specifically address persons with disabilities, this approach aims at increasing their resilience to disasters through individual and family support. It includes household assessments and contingency planning, and it empowers persons with disabilities and organisations to take part in DRR. Moreover, mainstreaming disability into existing programs is envisioned “to include the most at-risk groups in their own mitigation, prevention, preparedness and relief programming” (Humanity & Inclusion, 2016). This is done through awareness raising, training, information sharing, dissemination of good practices and development of inclusive policies.

Figure 5.1. The Twin-Track Approach to Disability Inclusion

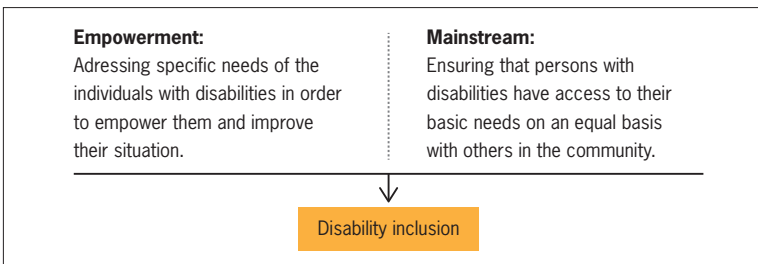


Figure created by the author using information from an internal document provided by Humanity & Inclusion (2018).

The DRR activities of humanitarian organisations will remain insufficient to protect affected population as long as they do not include nor address the specific needs of persons with disabilities. Furthermore, without measures of empowerment it is more likely that persons with disabilities have fewer opportunities to protect themselves and take agency in an emergency situation.

Participation as a Human-Rights Approach to Disability-Inclusive DRR

Including persons with disabilities in decision-making processes (for example during needs assessments) is a central pillar of disability-inclusive DRR. The CRPD General Comment No. 7 states that ““full and effective participation” in a democratic society refers to engaging with all persons, including persons with disabilities, to provide for a sense of belonging to and being part of society” (CRPD Committee, 2017). The CRPD also states that “persons with disabilities should have the opportunity to be actively involved in decision-making processes about policies

and programmes, including those directly involving them” (CRPD, 2008). The Charter on Inclusion of Persons with Disabilities in Humanitarian Action, launched at the 2016 World Humanitarian Summit,, reaffirms the importance of their participation in the humanitarian context, stating that humanitarian actors should “draw from their leadership, skills, experience and other capabilities to ensure their active participation in decision making and planning processes including in appropriate coordination mechanisms” (WHS Charter, 2016). Furthermore, the principle of participation is recognised as a pillar of disability rights and serves as an inspiration for other areas of human rights.

Disabled People’s Organisations (DPOs) have rightfully claimed space as experts on disability issues and their human right to participation. Generally, these organisations bring together expertise with their common slogan of “Nothing about us without us” (Coghlan and Brydon-Miller, 2014). In other words, the primary aims of DPOs are empowerment and the growth of self-advocacy of persons with disabilities (DRF, n.d.). To both scholars and professionals, DPOs can be a source of local expertise as they can direct humanitarian actors towards disability-specific services and even be responsible for delivering humanitarian aid (Buscher, 2018; Rohwerder 2017; Pearce, 2015).

How to Count the Invisible?

Despite the outlined efforts in drawing legal and political attention to the specific situations of persons with disabilities with regard to disasters, an often overlooked challenge persists: until now, there is no global and systematic assessment in place to identify persons with disabilities. Globally, different classification systems exist in parallel in disability definition, classification and data collection, but these systems largely diverge (Stough and Kelman, 2017). This may result in one person with a disability being considered as disabled in one country or region while not qualifying as such under another classification (Stough and Kelman, 2017).

Similarly, little data exists on the connection between disability and disasters, and even when data is present, incompatible methods of data collection are used. Moreover, existing studies do not derive evidence from quantitative data but rather from qualitative methods such as individual assessments and comparison groups. However, reliable data and information are critical for planners and policymakers to ensure that the right choices are made: the lack of information on the exact numbers of persons with disabilities already challenges the successful implementation of any DiDRR measure (Albuero-Canete, 2016).

The Washington Group Short Set of Questions on Disability (WG-SS) emerged as a response to the inconsistency of disability statistics. Established by the United Nations Statistical Commission City Group, its purpose is the “promotion and coordination of international cooperation in the area of health statistics focusing on disability measures suitable for censuses and national surveys” (Washington Group on Disability Statistics, 2016). Hence, this set of questions was not specifically designed for DRR, but is nevertheless applicable in humanitarian situations (CDRP, University of Sydney; ASB, 2015). The WG-SS consists of six questions that assess a persons’ difficulties in doing certain activities due to a health problem (see figure 5.2). Without specifically mentioning disability, the set aims at identifying persons who are at greater risk, when compared to the general population, of experiencing restrictions in performing tasks or participating in social life and in the work environment. These questions are currently being tested in humanitarian emergencies to better inform agencies about the groups at risk (Sloman and Margaretha, 2018). This set of questions thus bears the promising prospect of facilitating disability-inclusive DRR.

Figure 5.2. The Washington Group Short Set of Questions on Disability

1. Do you have difficulty seeing, even if wearing glasses?

2. Do you have difficulty hearing, even if using a hearing aid?

3. Do you have difficulty walking or climbing steps?

4. Do you have difficulty remembering or concentrating?

5. Do you have difficulty (with self-care such as) washing all over or dressing?

6. Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood?

a. No
no difficulty

b. Yes
some difficulty

c. Yes
a lot of difficulty

d. cannot do at all

Figure created by the author. Source: Washington Group on Disability Statistics (2016)

An understanding of the different groups of persons with disabilities is important during times of evacuation, as well as understanding how an individual’s ability to participate may change in a hazardous environment (ASB, n.d.). Furthermore, disaggregated data on persons with disabilities can complement risk mapping and early warning systems. For the implementation of evacuation procedures, DPOs again play a central role: these can support national agencies and NGOs in reaching out to persons with disabilities and constitute an element of mutual support (CDRP, University of Sydney and ASB, 2015; Twigg *et al.*, 2018).

Why Are Persons with Disabilities Still Excluded?

Beyond the current data gaps, further questions need to be addressed regarding the status of inclusive DRR. Despite the essential legal and political frameworks already in place, their implementation remains limited. This is especially striking since the majority of organisations take a human rights-based approach (Christoplos, 2015). Furthermore, these commitments are explicitly mentioned by bilateral and UN agencies as well as NGOs and national organisations “due to their acceptance of aid money that, when coming from certain countries and organizations, is intended to only be used within a rights-based perspective” (Christoplos, 2015).

Explanations for these shortcomings need to be found elsewhere, namely in the barriers highlighted in the CRPD. Referring to the social model of disability, the Inter-Agency Standing Committee (IASC) Task Team defines these barriers as environmental, institutional and attitudinal. Environmental barriers refer to inaccessible environments that create disability and hinder participation and inclusion. These can be physical barriers through the built environment, but also through inaccessible communication systems. On the other hand, institutional barriers refer to laws, policies, strategies or practices that discriminate against persons with disabilities. Discrimination may not be intended, but systems can indirectly exclude persons with disabilities by not taking their needs into account. Lastly, attitudinal barriers constitute a core element of discrimination and exclusion (IASC, 2018). These include attitudes and beliefs where persons with disabilities are feared or viewed negatively, and sometimes considered unable to self-advocate and participate. These three barriers can express themselves in various ways and can intersect creating further obstacles. For example, an agency providing support services that are not physically accessible (environmental barriers) can also exclude disability from their institutional policy (institutional barriers) (IASC, 2018). Furthermore, in DRR, inexperienced practitioners may perceive disability as merely a technical issue that prevents DRR actors from working with this population (Sloman and Margaretha, 2018) rather than working on incorporating a human rights approach to DRR, and recognising persons with disabilities as rights holders and thus including their opinions in DRR measures.

The outlined frameworks and policies at the international level show that persons with disabilities are indeed considered within DRR and in times of disasters. However, barriers present in institutions, the environment and

attitudes continue to hinder their effective implementation. The effects of this lack of implementation will be explored in the case study of Sulawesi.

The Case Study of the Sulawesi Earthquake and Tsunami From a Disability Perspective

Indonesia is considered one of the most disaster-prone countries in the world (UNDP, 2018). In September 2018, the island of Sulawesi was hit by a set of earthquakes and over 170 aftershocks, the strongest one reaching a magnitude of 7.5 with an epicentre close to the provincial capital. The earthquakes then triggered a tsunami reaching 6m of wave height and a speed of around 400km/h (AHA Centre, 2018). In addition to triggering a tsunami, the earthquake led to substantial destruction due to soil liquefaction and landslides (Randall M., personal communication, May 1, 2019). Immediate Search and Rescue (SAR) missions were first undertaken by individual villagers, then through external agencies such as the Indonesian Red Cross (PMI), the National Search and Rescue Agency (BASARNAS), the Indonesian National Armed Forces (TNI) and local government agencies (Nirody and Lacey-Hall, 2018).

Image 5.1. The Aftermath of the Disaster and its Environmental Barriers



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In the aftermath of the disaster, the agency for Meteorology, Climatology and Geophysics (BMKG) faced accusations for not having issued a timely tsunami warning (Reuters, 2018). The agency issued a tsunami warning 34 minutes after issuing one in response to the

earthquake. People were reported to have remained at the beach where a festival was taking place at the time the tsunami hit the coastline. The agency indicates that it followed standard operating procedure, but warnings sent via text messages and sirens along the coast were not successful since the preceding earthquake brought down the area's power and communication lines. Furthermore, the warning underestimated the size of the waves (Reuters, 2018).

By October 1st, the Indonesian Government, the National Disaster Management Agency (BNPB) and the Ministry of Foreign Affairs officially welcomed international assistance (AHA Centre, 2018). The acceptance of international assistance was accompanied by the condition that international agencies should act to complement local activities, with their support being based on the needs indicated by the AHA Centre, as stipulated in Indonesia's policy to localize preparedness, prevention and response actions (AHA Centre, 2018; Nirody and Lacey-Hall, 2018). International NGOs also needed to employ Indonesian staff for all possible positions and follow the minimum requirements regarding expatriates' work duration (at least one year) and number (only up to three expatriates for each NGO) (Ministry of Foreign Affairs Republic of Indonesia, 2009). Under the lead of the BNPB, the various national and international organisations (such as UNICEF, the World Food Programme and other NGOs) joined clusters on specific sectors such as health and shelter. Furthermore, as requested by the Indonesian Government, the ASEAN Coordinating Centre for Humanitarian Assistance (the AHA Centre) was in charge of coordinating the provision of humanitarian assistance (Nirody and Lacey-Hall, 2018).

In January 2019, the Central Sulawesi Governor issued the result of the administration's count of victims which stated that the disaster claimed around 4,340 lives (including victims of soil liquefaction) (Sangadji, 2019). Furthermore around 130,000 people were estimated to have been displaced in Central Sulawesi, despite large numbers of people returning to their home communities. The UN Office for the Coordination of Humanitarian Affairs (UNOCHA) estimates the required funds for rehabilitation and reconstruction of the region at around \$1.6 billion (UNOCHA, 2019). Nonetheless, it still remains unclear how people with disabilities were affected.

Absence of Disability-Inclusive Disaster Risk Reduction Before the Sulawesi Disasters

As a country prone to natural hazards, Indonesia established in 2017 a legal framework preparing communities for disasters: it endorsed Law No. 24 regarding disaster management, aiming at providing policies concerning disaster risk, disaster prevention, emergency response and rehabilitation. Together with children, pregnant women and elderly people, persons with disabilities are categorised as a vulnerable group. According to this Law, these groups shall be prioritised and protected during rescue and evacuation operations, as well as during the provision of healthcare, and psychosocial services, which are coordinated by the BNPB as the national agency for disaster management (Republic of Indonesia, 2007). Disability-inclusive DRR is complemented by BNPB's regulation No. 14/2014 in which people's engagement and involvement are considered fundamental rights of freedom and dignity (UN Committee on the Rights of Persons with Disabilities, 2017).¹ In addition, in the case people became disabled through a disaster, the government commits itself to providing monetary compensation to be distributed through the BNPB.

Indeed, the general efforts undertaken by the Indonesian government on providing a disability-inclusive legal framework are considered positive. For example, in Yogyakarta a local disability regulation was endorsed in 2012 that included DRR and vice versa (Spencer H., personal communication, March 28, 2019). Furthermore, its support at a national and local level (with a strong civil society base in Jakarta), facilitated a fair representation of DPOs working at the international level (Spencer H., personal communication, March 28, 2019). Similarly, the Concluding Observations by the Committee on the CRPD state that the BNPB, in collaboration with DPOs, undertook capacity strengthening programs to educate, train and seek the contribution of persons with disabilities in disaster preparedness and management (UN Committee on the Rights of Persons with Disabilities, 2017). In October 2018, during the international day for disaster risk reduction, the Government of Indonesia organised a week of activities, in which people with disabilities were actively included. However, BNPB's initiatives on disability

¹ Furthermore, ratification of the CRPD in 2011 encouraged Indonesia to amend its original disability law from 1997, and to adopt Law No.8/2016. Having been entirely drafted by DPOs, Article 20 of this law addresses the right to protection from disaster, including the right to obtain easily accessible information about disasters and being prioritized in rescue and evacuation processes during the disaster (ASEAN Disability Forum, n.d.).

inclusion were regarded as scattered (Spencer H., personal communication, March 28, 2019).²

Nonetheless, every legal and political commitment to disability-inclusive DRR is rendered ineffective if not implemented. In Indonesia, DRR activities vary according to the region. What is implemented in centres such as Yogyakarta or specific regions with a history of disasters such as Sumatra is different to what is implemented in Sulawesi (Spencer H., personal communication, March 28, 2019). This is further explained by John A.: “I can say there was a lack of knowledge on prevention and preparedness, including evacuation skills among persons with disabilities in Central Sulawesi” (John A., personal communication, April 10, 2019). Similarly, the establishment of local BNPB offices (BPBDs) by the national agency for disaster prevention, preparedness and response remains scattered. Moreover, when these are established, weaknesses remain, such as insufficient staffing, training, and minimal budgets, undermining their effectiveness throughout the entire disaster management cycle (Harkey, 2014).

It is thus unlikely that disability-inclusive DRR took place in Sulawesi:

(...) from our observation, persons with disabilities in Sulawesi Tengah were not much involved in the mitigation process proven that when we conducted disability inclusive development workshops where members of DPOs participated, they were not really aware about the need of contributions from persons with disabilities to a DRR program. (...) Comparing to Java, DPOs in Sulawesi need to be involved more in DiDRR (Steven V., personal communication, May 1, 2019).

Public and Civil Society Actors Responding to the Disaster

At the beginning of the emergency response to the Sulawesi disaster, the Indonesian government adopted an approach promoting the non-interference from international organisations, favouring support from regional governments instead. In 2014, the Indonesian government signed the Agreement on Disaster Management and Emergency Response (AADMER) by the regional Association of South East Asian Nations (ASEAN) consisting of ten member states. By signing this agreement, ASEAN members commit

² The Committee also points out the lack of local data, particularly on the number and type of disability, in areas being at risk of disasters, posing challenges for BNPB at national and local levels (Committee CRPD, 2017).

to implementing joint responses to disasters through intensified regional and international cooperation (ASEAN, 2014). It also facilitated the establishment of the AHA centre based in Jakarta with a primary mandate on disaster monitoring and preparedness. In addition to the AHA providing disaster updates and coordinating the role of ASEAN members, the BNPB is in charge of the overall coordination of humanitarian activities following the Sulawesi Disasters (AHA Centre, 2019).

Understanding that disability is a cross-cutting issue that affects all parts of disaster response, it can be questioned how disability inclusion was considered. Most fundamentally, local DPOs appear not to have received peer-support from DPOs in other parts of Indonesia to identify people with disabilities. One respondent highlighted that DPOs in Sulawesi were not very much involved in the mitigation process due to a lack of knowledge about how they could contribute to a DRR program. He continued to emphasize that, besides the island of Java, DPOs in Sulawesi needed to be involved in future DiDRR (Randall M. & Steven V., personal communication, May 1, 2019).

Furthermore, international NGOs with disability expertise such as Humanity & Inclusion, CBM and the Arbeiter Samariter Bund (ASB) were not present in Sulawesi before the disasters. A respondent working for one of these organizations outlined that Sulawesi was not part of the working area at the time, however, when disaster struck at the end of September 2018, the Emergency Response Unit of the organisation decided to launch the humanitarian response in Palu (Randall M., personal communication, May 1, 2019). As disability expertise remains largely concentrated within specific organisations it is unclear how disability was included in DRR measures before the disasters.

On the other hand, national agencies did not exchange data on persons with disabilities in the area. In a non-disaster setting, usually the Ministry for Social Welfare (KEMENSOS) and its respective body at district level (DINSOS) has the mandate to address “day to day disability”, such as the provision of assistive devices (John A., personal communication, April 10, 2019). With BNPB in charge of the overall coordination, only limited exchange of information between the two ministries seems to have taken place.³ This lack of national coordination also reflects what was outlined before, namely that disability is a technical issue requiring

³ To further complicate information exchange, DINSOS is the lead agency for the protection and displacement cluster, and has co-chair status in several sub-clusters including persons with disabilities (Nirody and Lacey-Hall, 2018).

special expertise (Priestley and Hemingway, 2007). Despite the existing policies on disability in disaster settings, as the lead agency, BNPB seems not to have received any data on persons with disabilities when the Sulawesi disasters occurred.

Assumptions on Disability-Inclusive Warning Systems in Sulawesi

Following the earthquake, the Indonesian Meteorology, Climatology, and Geophysical Agency (BMKG) did issue a tsunami early warning with standby status, indicating high tsunami potential of 0.5 to 3 meters on the Western coast of Donggala and a potential tsunami of less than 0.5 meters on the Northern coast Donggala and Palu City (BNPB, 2018a). However, the warning was criticised for being terminated after only 34 minutes and for underestimating the waves. Furthermore, it did not reach people due to the breakdown of power and communication services (Reuters, 2018).

The dissemination and communication of warnings should have been delivered in various formats. These should have included audio, visual, print and electronic formats as well as through Community Early Warning Systems (CEWS), which are essential. CEWS aim at permitting individuals and communities, including persons with disabilities, to react to a hazard and reduce the resulting loss or harm (Humanity & Inclusion, 2012). Volunteers are recruited and trained on DiDRR to be part of CEWS: they then make regular home visits where people with disabilities live, thus allowing rapid activation of volunteers to alert identified people (Humanity & Inclusion, 2012). The successful implementation of a CEWS would have reduced the dependence on electronic communication systems benefiting the entire population. The failed implementation of disability-inclusive DRR and disaster response reinforced the immobility of persons with disabilities as well as of the entire affected population, as the example of Sulawesi demonstrates that disability-inclusive warning systems would have been beneficial to everyone.

Image 5.2. A Bridge Destroyed by the Disaster



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The Challenge of Accessible Shelters After Evacuation

Different disasters require different forms of evacuation measures. Emergency responses to the Sulawesi earthquake and tsunami took place in the form of evacuation as it is typical for sudden-onset disasters, for

which there is little to no warning. Generally, under these circumstances, after people take immediate shelter to seek protection, humanitarian agencies would try to access the region and evacuate the affected population (Spencer H., personal communication, March 28, 2019). However, evacuation activities appear not to have included specific consideration for persons with disabilities in the case of the 2018 Sulawesi disasters: “BNPB with the district military authority took the lead of emergency response operation. However, I did not see any disability inclusion during the beginning of the operation” (Steven V., personal communication, May 1, 2019).

BNPB stated that evacuations were concluded by October 11 and people were brought to collective temporary shelters called “huntara” (BNPB, 2018b). However, people with disabilities faced challenges in accessing these shelters due to faulty construction. Despite settlement standards being set by the government, these were not followed by subcontractors responsible for the construction of the “huntara” and no consultations with disability groups took place:

When the “huntara” were built on the ground, at the first round there were many complaints by persons with disabilities regarding the accessibility of huntara. The design is very small, and also the doors. (...) They don’t provide the ramp. (...) Up to January the DPO groups were making complaints but the government delayed the response until it came up with solutions (John A., personal communication, April 10, 2019).

Self-help groups made up of persons with disabilities took agency over their well-being by pointing out accessibility issues to the implementing organisation (John A., personal communication, April 10, 2019). During a follow-up conversation, the respondent provided an update on the issue, outlining that the government had tried to provide at least one collective shelter to accommodate persons with disabilities with specific arrangements for the doors, toilets, and the inclusion of ramps (John A., personal communication, August 15, 2019).

After leaving these temporary shelters, people were relocated to shelters ran by IOM. The good collaboration between IOM and organisations of persons with disabilities was pointed out by one respondent:

I noticed that disabilities of vulnerable groups is one of the most active sub-clusters in Central Sulawesi (...) whenever

I need a consultation meeting with that group (...) they are very welcoming with everything we need in terms of IOM, in terms of building the minimum standard surface or guidelines (...) they are very assertive (John A., personal communication, April 10, 2019).

Similarly, NGOs have taken up collaborations with local DPOs to map relevant actors in the concerned areas, identify persons with disabilities and ensure they are included in mainstream relief, recovery and reconstruction efforts (Steven V., personal communication, May 1, 2019).

Collaboration with the Survivors After the Disasters: the Question of Who Remains

However, it needs to be highlighted that this “good” collaboration only takes place after the disasters. In fact:

It’s all very well saying “we work with DPOs after a disaster” (...) but automatically that means we’re only dealing with the survivors: that is the nature of humanitarian response. The issue when you bring disability into the equation risk (...) There is enough data out there, we know that people with disabilities are more likely to die or be injured in disasters. So, I think we should really question when people say “we are working with DPOs” after the event (Spencer H., personal communication, March 28, 2019).

Here, “good” collaboration after the disaster is emphasized, but the lack of data persists (Randall M, personal communication, May 1, 2019). For example, the IOM database on established shelters includes some demographic data about their residents, such as age and gender, but does not cover disability (IOM 2018). This lack of data questions the extent of disability inclusion in Sulawesi after the disaster, especially in contrast to the considerable developments in disability assessment such as the establishment of the WG-SS.⁴

⁴ Disability organisations such as the Arbeiter Samariter Bund (ASB) have demonstrated the feasibility of using the WG-SS in disaster contexts, including collaborations with DPOs and local authorities creating a snowball effect (Randall M., personal communication, May 1, 2019).

Conclusion

With regard to the mobility of persons with disabilities, the 2018 Sulawesi disasters case study shows that although policies and awareness on disability-inclusive DRR existed, their implementation was scattered. As one respondent explains: “the main obstacle is, while on paper the planned actions include disability aspects, in reality the lack of funds and time (...) often resulted in the disability part being neglected” (John A., personal communication, April 10, 2019). In fact, Sulawesi seems to be a region where DiDRR was not addressed at all and the limited governmental and non-governmental presence prior to the disasters increased the vulnerability of people, including persons with disabilities. It is clear that both the earthquake and the tsunami required rapid evacuation, and it is unlikely that persons with disabilities were specifically protected. This case study also underlines that an inclusive emergency response with a warning system that uses different formats of dissemination, including the involvement of community volunteers, could have mitigated the effects of failed tsunami warnings. Indeed, the Sulawesi disasters showed how the non-existence of disability-inclusive DRR had effects on the entire population. The case study further demonstrates that the ability to move remained contested due to the absence of disability-inclusive DRR.

At this stage, it is necessary to highlight that meaningful participation of people with disabilities is not only essential in times of disasters, but in everyday life (Ton *et al.*, 2018). As formulated by Komardjaja (2015), an Indonesian woman with a disability, “the smallest obstacle, such as a raised floor of 3 cm, which I used to be able to ignore, is now a disaster (...) I do not have to wait for the killing disasters to strike me. Being in public spaces is already disastrous.” Black and Collyer (2014) argue that as long as there is limited information available on trapped populations, policy efforts should avoid creating conditions that stand against the will of the people to either move or not move in situations of disaster.

At the time of writing, no reliable data was available on the number of persons with disabilities affected by the disasters. Furthermore, it appears that at the governmental level, information was not exchanged between the ministries involved. Despite the existence of the Washington Group Short Set of Questions on Disability which opens an avenue for rapid assessments, there is no data on persons with disabilities in Sulawesi.

As demonstrated through the example with the “huntara” temporary shelters, there is a desire (and need) from persons with disabilities to

discuss the accessibility of infrastructure. However, previous advocacy that lead to changes in infrastructure could be endangered through disasters and reconstruction, due to institutional lost knowledge and lack of awareness. With disability-inclusive DRR in place, this conversation could be held before the disasters occur and disasters would not further jeopardize the rights of people with disabilities.

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Rising Temperatures, Retreating Glaciers, Roaring Remittances?

The Impact of Climate Change in the Hindu Kush Himalayas on Remittances in Nepal

Shashwat Koirala

An increased amount of research has studied the devastating impact of rising temperatures on the glaciers in the Hindu Kush Himalayas (HKH). The release of The Hindu Kush Himalaya Assessment by the International Centre for Integrated Mountain Development (ICIMOD) found that even if global warming was limited to 1.5 °C, over 35% of the glaciers in the Hindu Kush Himalayan region would disappear by 2100 (ICIMOD, 2019). A 2018 Ohio State University study further concluded that the Himalayan glaciers are melting at a more rapid rate than any time in history (Thompson *et al.*, 2018). In addition to causing avalanches and floods, this is expected to lead to water shortages in the region. Although the melting glaciers may initially increase water flow, the long-term result would be a decrease in the water supply for which these glaciers are a source (Arenschield, 2018). The expected consequences of these changes for the population are tremendous, as they are likely to intensify social, economic and environmental vulnerabilities and influence migration patterns (ICIMOD, 2019).

The Hindu Kush Himalayan region consists of eight countries: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Of this group, Nepal and Bhutan are the only two countries whose entire territory falls within the HKH. Furthermore, compared to the over 25 million people living in the HKH in Nepal, only 0.78 million live in the HKH in Bhutan (ICIMOD, 2019). Hence, Nepal is a crucial country of interest to study the impact of climate change on migration dynamics in the Hindu Kush Himalayas. Remittances in Nepal represent over 25% of national GDP and twice the country's export revenue (Karnik, 2015). This has been made possible by massive labour migration out of Nepal. For example, between 2009 and 2016, over 3 million labour

permits¹ for foreign employment were issued by Nepal's Department of Foreign Employment, which accounts for more than 10% of Nepal's total population (Department of Foreign Employment, Nepal, 2018).

This paper seeks to study the links between climate change in the HKH, migration influenced by environmental change, and Nepal's economic and societal relationship with remittances. This is an important link to study not only because each element is a significant policy issue, but also because the interplay between these can have fundamental policy implications. For example, while increased out-migration from mountainous regions has led to labour shortages and increased the burden on women, the resulting increase in remittances, if used effectively, can spur agricultural productivity and climate resilience in the region (ICIMOD, 2019).

Climate change is expected to influence remittances in two ways. First, climate change can incentivize (internal and international) migration by exacerbating socio-economic and environmental issues and, in turn, increase the number of migrants who send remittances home. Second, climate change can encourage previous migrants and diaspora members to send increased remittances to help their communities to adapt or cope with the consequences of climate change. The second channel is most evident in the context of disasters. For example, after the 2015 earthquake in Nepal, the country experienced a notable spike in remittances (Mohapatra, Joseph, & Ratha, 2009). Thus, a complete understanding of the link between climate change and remittances requires an understanding of the intermediate factors that govern their relationship. This paper seeks to answer to what extent and through which channels do the consequences of climate change in the Hindu Kush Himalayas influence remittance flows into and within Nepal.

First, an extensive literature review will be conducted to identify the specific mechanisms through which climate change affects remittances. Then, a quantitative analysis will be conducted to identify the correlation between indicators of climate change—such as temperature and precipitation—and remittance flows to Nepal. Observational data will be analysed using time-series and panel-data econometric techniques.

¹ Labour permits issued by the Nepalese Department of Foreign Employment (DFOE) have traditionally been used as the primary indicator of Nepalese migration trends (Department of Foreign Employment, Nepal, 2018). These permits are granted by the DFOE to prospective Nepalese migrants who have secured employment abroad through a recruitment agency or through their personal networks. This measure of migration patterns in Nepal excludes internal migration, people that have moved abroad through other visas (e.g. student visas), and immigration (Department of Foreign Employment, Nepal, 2014).

Major Facets of Climate Change in Nepal and the HKH

The goal of this section is to identify the impacts of climate change in the HKH that drive socio-economic and migration dynamics. The first, and arguably the most important observable impact of climate change in the HKH is the rapid temperature increase. Although precise estimates of the magnitude of the temperature increases vary between climate models,² there is consensus that temperature increases have taken place in the HKH.

One set of estimates suggest that between 1901 and 2014, the mean temperature, the mean maximum temperature, and the mean minimum temperature in the HKH have increased by 0.104°C, 0.077°C, and 0.176°C per decade respectively (Ren *et al.*, 2017). Furthermore, climate models predict this trend to continue in the future. In the short-term (2036-2065), expected warming in the HKH ranges between 1.7°C and 3.2°C whereas in the long-term (2066-2095) this range increases to 2.2°C-6.5°C (ICIMOD, 2019). There is also growing concern that even if countries were to meet the COP21 targets and limit global warming to 1.5°C, the temperature in the HKH would still increase by $1.80 \pm 0.40^\circ\text{C}$ (ICIMOD, 2019). Moreover, there is evidence—albeit not unanimous—that temperature rises are more pronounced at higher elevations. The high-lying Tibetan Plateau, which encompasses Northern Nepal, is an area particularly sensitive to the effects of climate change (Liu & Chen, 2000): in fact, HKH areas that experienced annual mean temperature increases larger than 0.2°C between 1901 and 2014 lie mostly in the Tibetan Plateau (Ren *et al.*, 2017).³ Climate change in the HKH is also evidenced by examining extreme temperature indices. From 1901 to 2014, the number of extreme cold days and nights has fallen by 0.85 and 2.40 days per decade respectively, whereas the number of extreme warm days and nights has jumped by 1.26 and 2.54 days per-decade respectively (ICIMOD, 2019).

An additional characteristic of climate change in the HKH are changing precipitation patterns. In fact, between 1961 and 2013, the region has experienced a rise in annual rainfall estimated at 5.28% per decade. (Ren *et al.*, 2017). Moreover, the rate of increase has accelerated since the mid-1980s (Ren *et al.*, 2017). The Hindu Kush Himalaya Assessment

² The lack of consensus across climate models is understandable given the varying and complex topography in the Hindu Kush Himalayas.

³ There are, nevertheless, exceptions to this. For example, low-lying areas in Southern Pakistan and western India have also experienced per-decade warmings over 0.2°C between 1901 and 2014 (ICIMOD, 2019).

Report indicates that not only has the intensity of precipitation increased since the 1960s but also the frequency of precipitation (i.e. the number of precipitation days) (ICIMOD, 2019).⁴ In this way, the trends in precipitation in the HKH follow a similar path than the trends in temperature. This similarity is further identified when considering that, as with temperature increases, precipitation increases are associated with terrain elevation. That is, higher altitude regions have experienced larger precipitation increases than lower altitude regions (Ren, et al., 2017). Moreover, projections of future precipitation indicate further increases in annual rainfall: for example, monsoon rain is expected to increase by 4-12% in the near future and by 4-25% in the long-term (ICIMOD, 2019). The intensification of precipitation intensification is extremely relevant to the specific case of Nepal: for example, during 2013, Nepal experienced extraordinarily heavy rainfall during its monsoon season, which lead to disastrous floods and landslides. This increase in rainfall was directly linked to an increase in greenhouse gases in the upper troposphere (Cho *et al.*, 2016).

Finally, climate change in the HKH has also resulted in glacier retreat. Glacier retreat is driven by both temperature increases and an alteration in precipitation patterns. Since climate change in the HKH has resulted in more rainfall – rather than snowfall – glacier accumulation has reduced, which has ultimately accelerated glacier retreat (Chaulagain, 2009). The extent and specific manifestation of glacier retreat varies by region in the HKH. For example, evidence suggests that glaciers in the eastern and central Himalayas—areas most relevant to Nepal—are retreating whereas glaciers in the western Himalayas appear more stable (National Research Council, 2012). Nonetheless, the retreat of glaciers still poses a major concern in the Hindu Kush Himalayas, especially given the accelerating rate of retreat. Between 1970 and 2000, the average rate of glacier mass loss in the HKH was -0.26 mwe/year,⁵ which was slower than in other mountain regions. Since then, however, there has been an acceleration in glacier retreat (-37 mwe/year), a trend which is expected to continue in the near future (ICIMOD, 2019). In fact, as shown in figure 6.1., 36% of HKH glaciers' volume will disappear by 2100 under the IPCC scenario of 1.5°C temperature increase whereas a continuation of current emission levels would decrease current HKH glacier volume by 64% (ICIMOD, 2019).⁶

⁴ Note, however, certain regions in the HKH, Southwest China and Myanmar, have seen a reduction in the number of precipitation days (Ren, et al., 2017).

⁵ MWE stands for meter water equivalent, an oft-used indicator of glacier mass balance. It is calculated by dividing the volume of water that would be obtained by melting the snow or ice by the area (Hock, 2010) .

⁶ Based on the IPCC's RCP 8.5 scenario.

Figure 6.1. Projected HKH Glacier Mass Loss by 2100

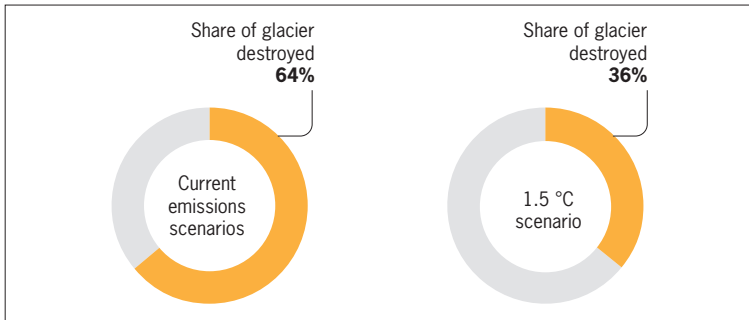


Figure created by the author. Source: ICIMOD (2019).

The identification of the effects of climate change in the HKH is relevant for our analysis for two main reasons. Firstly, these are the foundational effects that have led to some of the socio-economic implications discussed in the following sections. Secondly, temperature increases and precipitation changes will be used as indicators of climate change for the quantitative analysis. Indeed, the “extent” of climate change in Nepal will be measured using mean annual surface temperature and mean annual precipitation.

Mechanisms: From Environmental Changes to Socio-Economic Implications

This section seeks to connect temperature increases, precipitation alterations, and retreating glaciers in the HKH to well-being in Nepal. To do this, the section will analyse the expected impacts of three specific climate change risks to which Nepalese citizens are exposed to: natural hazards, water scarcity and food security.

Climate change is intensifying natural hazards and disasters in Nepal, both in terms of magnitude and intensity.⁷ There are two underlying causes for this. First, the amplification of precipitation in the HKH has increased flood and landslide risks in Nepal, a country already vulnerable to these hazards due to torrential rainfall during its monsoon season (Dhakal, 2013). Second, the increased rate of glacial melting in the HKH has amplified glacial lake formation in the region (Dhakal, 2013). Glacial

⁷ Though our focus is on climate change, there are numerous other reasons for the high risk of natural hazards in Nepal, which include: tectonic plate dynamics, deforestation, extensive topographical variation in a short distance, etc. (Dhakal, 2013).

lakes can be quite unstable and can cause catastrophic Glacial Lake Outburst Floods (GLOF) (Dhakal, 2013). In recent decades, about fourteen GLOF events have been identified in Nepal. Additional GLOF events in Tibet have also spilled over and caused significant damages in Nepal (ICIMOD, 2011). Whether caused by increased precipitation or by glacial lake formation, these natural hazards could potentially incur high human and socio-economic losses. Table 6.1. for example, summarizes the costs associated with the 2017 floods in Nepal.

Table 6.1. Impact of the 2017 Nepal Floods

Basin	Total Human Casualties	Completely Damaged Households	Partially Damaged Households	Loss of Agricultural Land (Hectare)	Total Estimated Damage (Million, NPR)
Karnali	0	7	234	17.8	1341.6
Babai	4	2273	16906	5543.3	2163.6
West Rapti	8	1071	15737	5622	N.A
Kankai	11	41	602	18.45	N.A

Table created by the author. Source: Bhandari *et al.*, 2018.

Water scarcity issues are rooted in climate change and pose a major threat to the socio-economic well-being of people in Nepal. The main mechanism driving water scarcity in the region are retreating glaciers. Glaciers are the source of 10 major rivers in the region, which collectively provide water for over two billion people (ICIMOD, 2019). Even though glacier-based water flows may increase initially because of heightened runoff from the melting of the glaciers, in the long run these water flows will decline below current levels due to the decreasing size of the glaciers and the diminishing volume of melted runoff (Chaulagain, 2009). Furthermore, the effect of glacier retreat will be larger for downstream flows. For example, 70% of dry season water flows in the Ganges River is effectively supplied by the Nepalese Himalayan glaciers, which would be heavily reduced by glacier retreat.

Studying the effects of climate change on water availability requires balancing the (positive) effects of increased precipitation and the effect of increased temperature on the water-holding capacity of the atmosphere with the (negative) effects of retreating glaciers. Due to these competing forces, the literature rarely agrees on the net and specific effects of climate change on water scarcity in Nepal. Some literature suggests that an increase of 0.06°C per year will entirely

eradicate the Nepalese Himalayas by 2070, which would reduce total water availability from 176.08km³ per year to 128.33km³ per year by 2200 (Chaulagain, 2009). However, more optimistic scenarios suggest the impact of climate change on water scarcity will not occur at a yearlong, full-basin scale but that it will rather be more pronounced in certain sub-basins and during certain seasons (Bharati *et al.*, 2014). This would mean that with proper infrastructure to store and transfer water, water scarcity could be alleviated. Nevertheless, lack of this infrastructure and general institutional weakness in Nepal still signify that climate change could induce water scarcity in the country, especially during certain times of the year (Bharati *et al.*, 2014). The impact of water-scarcity on well-being is self-evident as water is vital to human functioning. Moreover, water scarcity would also reduce the hydropower potential of Nepal and the HKH region. In Nepal, the hydropower potential is estimated at 43,000 megawatts, only 2% of which is developed (ICIMOD, 2019). Water scarcity would naturally stagnate any future development of hydropower and potentially reduce access to energy.

Food insecurity is an important consequence of climate change in the HKH. The link between food insecurity and climate change is especially relevant to Nepal, where more than 60% of the population depends on subsistence agriculture (FAO, 2019). Since agriculture is sensitive to climate variations, food access for many Nepalese citizens is dependent on climate trends. This becomes especially problematic in a context of water scarcity. Given the importance of water access for agricultural production, water scarcity has altered—and even reduced—agricultural production in the country (Bhandari, 2008). Survey results from the Chitwan District in Nepal show that over the past 15 years, the water table has decreased by approximately 1 meter, which has consequently decreased agricultural production and incentivized farmers to switch to less water-consuming modes of production (Mehta and Shah, 2012). In addition to water scarcity, food security is impacted through channels like increased temperature and altered precipitation patterns. Nevertheless, the effects of these forces on agricultural production in Nepal often vary by district, season, and crop (Malla, 2008).

Climate change has enabled certain farmers in the mountainous regions of Nepal to grow previously uncommon vegetables such as cauliflower, cabbage, tomato and cucumber (Poudel, Funakawa and Shinjo, 2017). At the same time, there is evidence of a negative impact of temperature increases on rice, maize, barley, wheat, and millet crop yields at a national level (Pant, 2013). A household survey of three mountainous regions in

Nepal reveals that residents link climate change to decreased dairy and crop production as well as increased household work (see table 6.2).

Table 6.2. Household Perceptions of the Impact of Climate Change on Food Security
(% of respondents)

	Kunchha Region		Khudi Region		Ilampokhari Region	
	Yes	No	Yes	No	Yes	No
Crop production decreased	71	29	100	0	100	0
Dairy production decreased	100	0	55	45	100	0
Other household burden increased	0	100	50	50	0	0

Table created by the author. Source: Poudel, Funakawa and Shinjo (2017)

The increased risk of natural hazards, water scarcity and food security could incentivize out-migration from affected regions in Nepal.

Outcomes: Migration Dynamics and Impacts

Having established the implications of climate change on populations' well-being in Nepal, this section will analyse how these implications interact with migration flows. In a context of climate change, migration can either be unplanned (coping mechanism as a response to sudden environmental impacts of climate change) or premeditated (migration as adaptation, stemming from increased socio-economic vulnerabilities caused by climate change) (Lackzo and Aghazarm, 2009). In the Nepalese case, both expressions of migration are possible: as floods and landslides may suddenly displace people, certain residents may plan to move away from the region as a response to increased vulnerabilities such as water scarcity and food insecurity. This section will review existing literature on these two pathways of migration for the case of Nepal, highlighting factors of particular relevance to remittance flows.

The most comprehensive study on the migration dynamics in climate change affected HKH areas was conducted by HI-AWARE, the Himalayan Adaptation, Water, and Resilience consortium led by the International Centre for Integrated Mountain Development (ICIMOD) (Maharjan *et al.*, 2018). This study analysed the migration patterns in four basins of the Hindu Kush Himalayan region: the Indus, the Upper Ganga, the Gandaki and the Teesta. For each basin, the study conducted household surveys for different stream regions: upstream, downstream and midstream. Of

these river basins, the Gandaki is the only one that falls within Nepalese boundaries. However, given the close historical and geographical proximity of the Teesta river basin to Nepal, results from this area may also be illustrative of the dynamics in place in Nepal.⁸

Survey results regarding the magnitude of migration in the region can be found in table 6.3. In Nepal—specifically, the Gandaki region of the HKH—the highest share of migration is displayed upstream: 56% of households upstream have at least one migrant compared to the basin-wide average of 47%. This is not surprising as these areas tend to be more mountainous and economically marginalized. Furthermore, the migration share is higher in Gandaki than in the other river basins, suggesting a higher propensity to migrate in Nepal than in some of the other HKH countries.

Table 6.3. Percent of Households with At Least One Migrant

	Gandaki	Indus	Teesta	Upper Ganga	Total
Upstream	56	59	31	24	44
Midstream	47	31	37	75	48
Downstream	37	26	34	7	28
Total	47	38	35	35	39

Table created by the author. Source: Maharjan *et al.* (2018).

Identifying the extent to which climate change dynamics encourage migration is difficult because climate change effects have diverse socio-economic impacts (Castelli, 2018). However, we can presume that not all migration in the Gandaki region can be characterised as labour migration as the share of households in the region with at least one labour migrant is consistently lower than the share of households with any type of migrant (Maharjan *et al.*, 2018). On average, 24% of households in the Gandaki region have at least one labour migrant compared to 47% with at least one migrant of any type (Maharjan *et al.*, 2018). This might be explained by environmental factors, although other motivations such as education opportunities (amongst many others) can also play an important role.

One way of isolating the impact of environmental changes on migration patterns is by analysing data on displacement due to natural hazards

⁸ Specifically, the Teesta river basin goes through the Indian region of Sikkim, which borders Nepal's eastern provinces.

and extreme environmental events. Findings from the HI-AWARE study suggest that migration due to natural hazards in the Nepalese river basin (Gandaki) is quite low (3%), especially when compared to the Teesta region (17%). Furthermore, migration appears to be more prevalent downstream. It is worth noting, however, that this data only captures temporary migration caused by natural hazards as permanent displacement was not included (Maharjan *et al.*, 2018). The implicit assumption for including this data in the analysis is that the occurrence of these extreme events is linked to climate change dynamics.

Table 6.4. Percent of Households Experiencing Temporary Displacement Due to Natural Hazards

	Gandaki	Indus	Teesta	Upper Ganga	Total
Upstream	1	22	1	4	7
Midstream	3	4	0	6	3
Downstream	5	22	35	1	17
Total	3	16	17	3	10

Table created by the author. Source: Maharjan *et al.* (2018).

An additional route to assess the role of environmental changes in migration dynamics in these river basins consists in comparing migration data with data on perceptions of climatic variables and climate change. An initial analysis of the survey reveals that households in the four river basins have experienced the climatic and socio-economic effects discussed above, such as food insecurity and water scarcity. With this information in mind, it can be conjectured that environmental factors have an influence in migration decisions in the region. However, it is important to keep in mind that migration processes are multifaceted and thus depend on a broad range of physical, economic, cultural, and social factors. This is why isolating the specific impact of environmental factors on migration remains a challenge.

International vs. Internal Migration

The paper turns now to analysing the destinations chosen by migrants who leave Nepal. This is particularly relevant to the question of remittances in Nepal given that remittances from international migrants tend to be larger in magnitude than those from internal migrants (Thapa and Acharya, 2017). Furthermore, data for international remittances is more easily available than internal remittances (McKay and Deshingkar, 2014).

The share of the type of migration (internal or international) is summarized in table 6.5.⁹ Here, it is evident that in three of the four basins studied, the most common type of migration is internal migration, which is in line with most literature on environmental-related migration (Brown, 2008). However, in the case of Gandaki, there is a higher percentage of international migration, mainly towards Gulf countries and Malaysia (Maharjan *et al.*, 2018). This is a further indication that the quantitative analysis of remittances should also include international remittances.

Table 6.5. Internal versus International Migration

River	Migration	Upstream	Midstream	Downstream	Overall
Gandaki	Internal	41	46	51	47
	International	58	54	49	53
Indus	Internal	94	89	66	86
	International	6	10	34	14
Teesta	Internal	100	100	99	99
	International	0	0	1	1
Upper Ganga	Internal	100	96	75	95
	International	0	4	25	4
Total	Internal	82	82	76	80
	International	18	18	24	20

Table created by the author. Source: Maharjan *et al.* (2018).

We turn now to the impact of both internal and international migration on remittances. Table 6.6. summarizes the average annual remittances per migrant for each stream region and basin. In the case of the Gandaki region, the results support the intuition that international remittances are much higher than internal remittances. This suggests that an increase in international environment-related migration likely yields a larger impact on remittances than internal migration. Furthermore, the study suggests that internal remittances are mostly aimed at meeting basic requirements rather than fuelling a household's capacity to adapt to climate change (Maharjan *et al.*, 2018).

⁹ Data from table 6.5. includes both seasonal and long-term migration.

Table 6.6. Average Household Remittances (USD per migrant) by Type of Migration

River	Migration	Upstream	Midstream	Downstream	Overall
Gandaki	Internal	502	730	477	548
	International	1,338	2,151	1,364	1,748
Indus	Internal	1,145	882	1,086	1,042
	International	391	491	1,990	1,509
Teesta	Internal	1,028	638	390	542
	International	N/A	N/A	48	48
Upper Ganga	Internal	261	122	336	144
	International	N/A	357	6,400	1,868
Total	Internal	965	409	504	543
	International	1,233	1,948	1,611	1,703

Table created by the author. Source: Maharjan *et al.* (2018).

However, despite this illustration between climate change, migration, and remittances, there is a lack of robust correlational evidence—let alone a causal one—between climate change in the HKH and remittance flows in Nepal. This will be the focus of the quantitative exercise in the following section.

National-Level Analysis: Remittances from International Migrants

In order to test whether there is a relationship between climate change (using temperature and precipitation data as proxies) and remittances, a quantitative analysis was conducted.¹⁰ The aim of this quantitative analysis was not to provide definitive evidence that climate change has affected remittances, but rather try to provide preliminary indication of this relationship based on the available data.

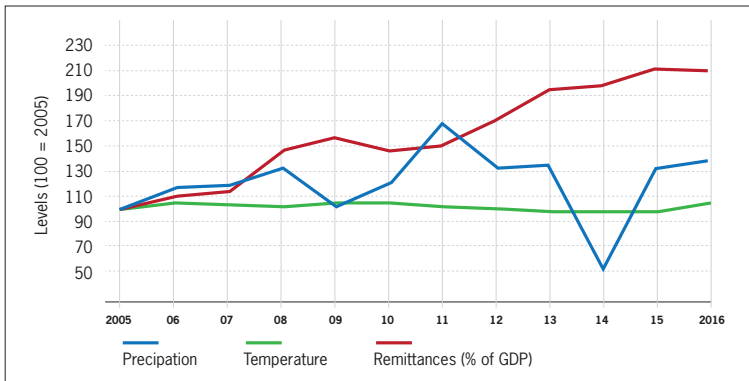
This quantitative analysis was performed using observational data from various sources. The first stage of the analysis was conducted using national level data, all of which were retrieved from the World Bank. It is important to state here that remittances data available through the World Bank reflects Nepal's national balance of payments data, which only captures remittances from international sources. Hence, remittances from

¹⁰ While the paper would have benefitted from including glacier retreat in the quantitative analysis, this data was not accessible.

internal sources are omitted for this part of the analysis. Furthermore, since remittance transactions may be small in magnitude and may be transferred through a multitude of channels, they are often difficult to measure and capture in a country's balance of payments. This is especially true for informal remittances, such as those transferred as cash or goods carried across the border (World Bank, 2019). Thus, it is likely that the World Bank data underestimates the true size of remittances.

A visual analysis of the trends of average annual temperature, precipitation, and received remittances (as a percent of GDP) in Nepal was first undertaken: results are shown in figure 6.2.¹¹ A preliminary conclusion from this analysis is that remittance flows to Nepal, annual temperature and precipitation averages do not exhibit synchronised trends. Notably, the growth rate of remittances far outpaces that of temperature and precipitation. Hence, at the very least, we know that their relationship is not directly proportional.

Figure 6.2. Evolution of Remittances (as % of GDP), Temperature and Precipitation Levels in Nepal between 2005 and 2016



Note: Values indexed to 100 using 2005 as the base year.
Source: Author's calculations based on World Bank data

Next, econometric methods were employed to more robustly assess the relationship between climate change indicators (temperature and precipitation) and remittances. The approach was to conduct an ordinary least squares (OLS) regression where the dependant variable is remittances and the predictors are temperature, precipitation, per capita GDP, and

¹¹ In order to improve visual comparability, the values were normalized such that value at year 2005 equals to 100. This also means that the comparison here will be on the trends of the variables rather than their levels.

population. The choice of temperature and precipitation as covariates is self-evident as these are our variables of interest. Per capita GDP is included as a control variable, which is in line with existing literature on the macroeconomic determinants of remittances (Gupta, 2005). The inclusion of population is to proxy for prior migration:¹² one regression was conducted using this proxy, and another one without. The rationale behind this choice is that the regression without a control for migration would reflect changes in remittances from both an increase in migration and an increase in remittances from pre-existing migrants. The regression controlling for prior migration would more likely only reflect the effects from the former channel. Admittedly, there are weaknesses to using population as proxy for migration as changes in population is a product of many other factors—in addition to migration—such as birth and death rates. However, other data on migration flows (e.g. net migration) are only available at several year intervals. Hence, rather than interpolating the missing years, we chose to use a proxy. Another important methodological note is that analysis was conducted using first differences and the log transformation of the variables. The rationale behind these choices is that when conducting OLS regressions with time series data, it is critical to ensure that the data meets the stationarity assumption.¹³ If data is not stationary, there is a risk of identifying a spurious correlation (i.e. identifying a non-existing relationship). Thus, to correct this issue, first differences and logarithmic transformations were used.¹⁴ Results are shown in table 6.7. Even though these results suggest a negative impact of rainfall and temperature on remittances, these values are not statistically significant.

¹² It is well established that migration is an important determinant of population, especially given declining fertility rates. For example, estimates suggest that the population in Asia would be larger without migration. Thus, while migration is not the sole contributor to population, the former does partially explain variation in the latter (UN DESA, 2017).

¹³ Stationarity reflects a time series whose statistical properties (mean, variance and autocorrelation) are not dependent on time. Stationarity of these variables was tested using the Augmented Dicky Fuller Test. For more details on the theoretical importance of stationarity in time series analysis, see Baumöhl & Lyócsa, 2009.

¹⁴ Taking the first differences stabilizes the mean and taking the logarithmic transformations stabilizes the variance over time.

Table 6.7. OLS Results using National-Level Data (1993-2016)¹⁵

DV: Remittances (2010 USD)	(1)	(2)
GDP per capita	-14.35 (8.773)	-14.30 (8.499)
Population	-5.088 (10.45)	
Average annual precipitation	-0.248 (0.153)	-0.250 (0.149)
Average annual temperature	-2.085 (1.861)	-2.091 (1.781)
Constant	0.591* (0.307)	0.511* (0.264)
Observations	23	23
R-squared	0.403	0.397
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Source: Author's calculation based on World Bank Data

As seen in table 6.7, no statistically significant impact of climate change indicators on remittances from international migrants was found. That being said, there are some limitations to our analysis. Firstly, the number of observations should be larger in order to have more confidence in the analysis. Secondly, there is also a risk of omitted variable bias. This means that there may be certain variables that affect both remittances and the chosen climate change indicators that were not included in the analysis. Addressing these shortcomings is an important area for future work.

Subnational-Level Analysis: Remittances from Internal and International Migrants

Whereas the previous analysis was conducted using national-level data, this section will focus on subnational data. That is, the analysis is conducted using data at the level of Nepal's four province/state equivalent regions. This will allow to account for the heterogeneity in climate properties within Nepal and subsequently understand whether this

¹⁵ All variables are logarithmic transformations.

heterogeneity affects remittance flows. Moreover, this section will take into account remittances from internal sources in addition to international sources.

To conduct this analysis, two data sources are used. The first source consists in data from Nepal's Household Living Standards Survey, which includes data on household-level remittances from both internal and international sources. The second data source is AidData's GeoQuery, which aggregates subnational geo-physical and meteorological data by subnational administrative units. The results of this analysis are summarized in table 6.8. The approach used for this analysis—in terms of the choice of covariates—is similar to the one used previously, with one exception. Given the lack of subnational economic data as well as very limited data on subnational migration and population flows, a proxy variable was used. This proxy is nighttime luminosity, which is often used in literature to assess population and economic development at a subnational level and in countries with poor national statistical systems (Chen and Nordhaus, 2011). Moreover, a fixed effects model was employed,¹⁶ where time-invariant unobserved heterogeneity across different provinces in Nepal is accounted for by including a dummy variable for each province.

Table 6.8. OLS Regression Results Using Subnational Data¹⁷

DV: Average Remittance per Remittance Receiving Household	(1)	(2)
Nighttime Lights		0.733 (0.423)
Average Annual Precipitation	0.627 (0.751)	1.262** (0.407)
Average Annual Temperature	22.42*** (2.687)	18.31** (4.715)
Constant	-51.21*** (8.510)	-50.09*** (10.53)
Observations	15	15
R-squared	0.932	0.958
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Source: Author's calculations based on data from AidData GeoQuery and Nepal's Household Living Standards Survey 1995/1996, 2003/04, 2010/11.

¹⁶ For more details on the fixed effects method, see Williams (2018).

¹⁷ All variables are logarithmic transformations.

The results suggest a statistically significant relationship between the chosen climate change indicators and remittances. Specifically, a 1% increase in average annual temperature is associated with a 22% increase in average remittances. This positive relation remains (although it drops to 18%) even if we control for population and economic outcomes using the proxy nighttime lights. In fact, in the version which includes nighttime lights, annual precipitation is also statistically significant.

As only the model which includes internal remittances shows statistically significant results, we are inclined to suggest that climate change increases remittances as it reacts to internal migration. However, the results are not conclusive as the sample size of our analysis is quite small: only three iterations of Nepal's Household Livelihood Survey have been conducted, and thus only three years were included in the sample. Thus, at best, our results are preliminary and indicate correlations rather than robust causations. Moreover, even though a fixed effects model was used, it does not consider all relevant statistical biases and thus do not allow to make a causal inference. To conclude, while we have some initial evidence that climate change correlates with an increase in remittances, the results are not conclusive.

Conclusion

A review of existing literature reveals a knowledge gap concerning the link between increased environmental vulnerability in the HKH and the flow of remittances within (and to) Nepal. Nevertheless, research suggests a potential causal mechanism through which climate change in the region could impact remittances in Nepal. Although there is noticeable heterogeneity, climate change in the Hindu Kush Himalayas has generally led to an increase in temperature, precipitations, and receding glaciers. Furthermore, there is well-established evidence that the frequency of extreme events (droughts, floods, torrential downpour, etc.) has increased. These impacts have subsequently intensified pre-existing social and economic vulnerabilities in Nepal by escalating the threats of natural hazards, water scarcity, and food insecurity. As a result, vulnerable populations—especially around the river basins in the HKH—have exhibited altered migration patterns, which plausibly impact remittance flows.

To quantitatively test the hypothetical impact of climate change in the HKH on remittances in Nepal and address the aforementioned knowledge gap, we conducted an econometric analysis at both the national and

subnational levels. The results, while preliminary and limited by a small sample size, suggest that internal remittances are more likely influenced by climate change in the HKH than international ones, which aligns well with existing literature that most climate-influenced migration is internal. That being said, to complement our results and discern appropriate policy implications, further analysis is required. In particular, this requires conducting analysis that takes into account the climatic and socio-economic heterogeneity across Nepal. The implication of this work could be enormous. If remittances are shown to consistently increase because of climate change, they also represent an opportunity to increase climate resilience and adaptation in the most vulnerable areas. Moreover, it is worth examining the extent to which this inflow of remittances may affect Nepal's macroeconomic and budgetary health.

The second major area of future work is determining the extent to which internal migration caused by climate change interacts with pre-existing forces that determine international migration. Notably, to what extent, and in what ways, does this internal migration (e.g. from rural to urban areas) aggravate the social and economic anxieties that drive transnational migration out of Nepal? Such a question is particularly relevant for instituting policy measures that ensure not only social cohesion, but also understand economic realities (e.g. is the labour market in urban areas oversaturated because of rural to urban migration?).

Finally, one question that has not been addressed by this paper is whether climate change actually reduces incentives for migration: for example, an increase in agricultural yields in certain areas, which may increase the standard of living in certain regions, can decentivize migration. However, it may also be that climate change reduces physical and social connectivity, which are critical for migration. This is an important question as it helps identify the net effect of climate change on migration dynamics and hence, provides a more complete picture of the relationship. Furthermore, if climate change hinders vulnerable populations from migrating out of precarious situations, then there is a strong impetus for policymakers to respond accordingly and ensure their well-being.

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Caroline Zickgraf is the Deputy Director of the Hugo Observatory: Environment, Migration, Politics. She is also a lecturer at Sciences Po Paris, co-teaching the class “Environment and Migration” with François Gemenne at the Paris School of International Affairs (PSIA). Caroline has been involved in several international research projects, including the HELIX project, an EU-funded FP7 programme on high-end climate change (2013-2017). She led ULiège in the Horizon 2020 EDGE project, a partnership between the University of Economics in Bratislava, Sciences Po Paris and the University of Liège on environmental diplomacy and geopolitics. She is also actively involved in ULiège current ongoing projects, including MIGRADAPT, MISTY and MAGYC. In addition to her academic work, she has consulted for the World Bank, ICMPD, and FAO on environmental migration issues. She holds a doctorate in political and social sciences from the University of Liège. She also holds a Master of Research in History from Leiden University (The Netherlands), as well as a Bachelor’s degree in History from Michigan State University (USA).

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Tatiana Castillo Betancourt is a Research Assistant at the Hugo Observatory, a research centre dedicated to the study of the interactions between environment, migration and politics at the University of Liège. There, she is responsible for supporting the daily activities of the Horizon 2020 MAGYC project and contributes to the preparation of research project proposals. Before joining the Hugo Observatory, she worked at the UNDP Regional Service Centre for Africa in Addis Ababa, Ethiopia, where she co-produced the *Scaling Fences: Voices of Irregular African Migrants to Europe* report. She has also consulted for the Entrepreneurial Institute of Yucatan in Mexico and the Alberto Lleras Camargo School of Government in Colombia. She holds a double Master’s Degree in Economic Development and Growth from Lund University (Sweden) and Universidad Carlos III de Madrid (Spain). She completed her Bachelor’s studies in Economics and Business Administration at Universidad de los Andes in her hometown Bogota, Colombia.

Elodie Hut

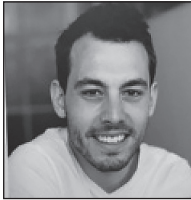


Elodie Hut is a PhD candidate at the Hugo Observatory. Her thesis is conducted in the framework of the Horizon 2020 MAGYC project on migration governance and asylum crises. Her PhD work seeks to analyse and compare insights from Greek, Italian and Turkish migrants living in Brussels in order to shed light on how they have engaged with the governance of migration in their home country. Elodie is also actively involved in the coordination of the MAGYC project.

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Jonas Bull graduated from Sciences Po with a Master's degree in Human Rights and Humanitarian Action (cum laude), with a focus on migration and diplomacy. Jonas is interested in disability studies, social cohesion, human rights monitoring and disability inclusion within humanitarian assistance/DRR. Throughout his studies, Jonas was a fellow at the Friedrich-Ebert-Foundation and at the Open Society Internship for Rights and Governance Program, where he focused on self-reliance policy and its effects on refugees with disabilities in Uganda. Jonas' most recent research fellowship includes studying the access to services by refugees with psychosocial disabilities in Greece. Currently, Jonas works as an inclusive governance specialist, focusing on Disabled People's Organisations, at Humanity & Inclusion (formerly Handicap International).

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