



# Research overview

2022:2

A photograph of a desert landscape at sunset or sunrise, with the Great Pyramids of Giza visible in the distance. The scene is framed by large, white, curved geometric shapes that create a modern, abstract design. The foreground shows a sandy area with some sparse vegetation and a metal railing on the left side.

**The impacts of migration for  
adaptation and vulnerability**



# The impacts of migration for adaptation and vulnerability

François Gemenne

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# Preface

Climate change is one of the greatest issues facing our generation as well as generations to come. With the 2015 Paris Agreement, the nation states of the world committed themselves to keep global warming well below 2°C above pre-industrial levels and work towards limiting warming to 1.5°C. Even if the world manages to cap global warming at 1.5°C, the consequences of climate change are likely to be far reaching.

As changes to the climate continue, it will have a bearing on and drive the movement of people within as well as across countries. This will have repercussions on receiving and sending countries, as well as on the migrants themselves. A long-held truth is that climate related migration is caused by a failure to adapt to new circumstances induced by climate change. This research overview finds that migration due to environmental changes is not only a historical feature of migration but an ongoing one. And that migration can reduce vulnerabilities in the communities of origin by reducing demographic pressures on resources and provide a source of remittances to provide families with added incomes.

Yet, as reported in this research overview, the question of migration and climate change is complex, as it can present new challenges and increase vulnerabilities for all involved actors: Migration may drain human resources from the community of origin, increase demographic pressures on the community of destination, and put migrants in vulnerable positions.

In this context, it is imperative that we seek to both broaden and deepen our understanding of how migration can aid resilience and at the same time also reinforce vulnerabilities in the face of climate change. It is our intention that this research overview will add to the current agenda of finding ways to ensure that the issue of climate change and its effects on migration is properly addressed.

The report is written by François Gemenne, FNRS senior researcher and director of the Hugo Observatory, University of Liège (Belgium). The work on this report has been followed by Annika Sundén, associate professor in economics, and member of Delmi's Board of Directors. At the secretariat of Delmi, Delegation Secretaries Daniel Silberstein, André Asplund and Suzanne Planchard have contributed to the review process of the report.

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The author is fully responsible for the report's contents, including its conclusions and policy recommendations.

Stockholm March 2022

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# Summary

In public debates, migration is usually considered as the signal of a failure to adapt for populations affected by the impacts of climate change. Yet empirical research reveals another picture, with migration often mobilised as an adaptation strategy in communities and households faced with the impacts of climate change. Migration can indeed reduce the demographic pressure on scarce environmental resources, work as a risk-reduction strategy against environmental disruptions, or provide additional income in the form of remittances. Yet migration might also deprive communities affected by climate change from essential human resources, create a feeling of abandonment and reduce the interest of public authorities for public investment in these regions. This research overview attempts to summarise the differentiated effects of migration for the adaptation and vulnerability under climate change, from different viewpoints. In particular, it seeks to delineate how migration affects the adaptation and vulnerability of the migrants themselves as well as their communities of origin and of destination. It also acknowledges that the impacts of migration on adaptation and vulnerability can be different in rural and urban settings.

In different contexts, migration is widely used as an adaptation strategy to climate change, with different outcomes. Such outcomes depend on the policy responses that are implemented, but also on personal perceptions. This research overview shows that such perceptions are often very different from observed climate impacts or actual migration costs.

In rural regions, migration is very dependent on a household's exposure to hazards, its dependence upon natural resources and pre-existing vulnerabilities. Migration is often available to the most resourceful households, while households that aggregate the most pre-existing vulnerabilities will often find themselves trapped and unable to migrate. Therefore, in communities that are resource-dependant, climate change is likely to reinforce existing vulnerabilities. In cities, migration will drive a rapid urbanisation process, and migrants will usually reside in neighbourhoods and settlements that are more exposed to climate impacts, meaning that the vulnerability of migrants can increase in cities, while putting additional demographic pressure on resources like jobs, housing or sanitation.

Remittances that are sent to their communities of origin are usually spent on the satisfaction of basic needs such as food supplies, but remain little pooled together in order to fund long-term projects that could support adaptation and

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reduce vulnerability. This research overview relies on a comparative study of remittances in a context of climate change conducted in the framework of the MECLEP project to describe the effects of remittances on adaptation and vulnerability.

It concludes with a series of policy recommendations for migration to better support adaptation and reduce vulnerability, at different stages and levels of policy-making.



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# Sammanfattning

I debatter anses migration ofta signalera ett misslyckande hos befolkningar att anpassa sig till de klimatförändringar de upplever. Samtidigt visar forskningen en annan bild där migration ofta mobiliseras som en anpassningsstrategi i samhällen och hushåll som står inför klimatförändringar. Migration har möjligheten att minska det demografiska trycket på knappa naturresurser, fungera som en strategi av riskreducering inför klimatförändringar eller bidra med extra inkomster i form av remitteringar. Samtidigt kan migration också beröva samhällen som påverkats av klimatförändringar från centrala resurser i form av personer, skapa en känsla av övergivenhet och minska intresset från statliga aktörer att investera i dessa samhällen och regioner. Denna kunskapsöversikt syftar till att summera de olika effekterna av migration för utsatthet och anpassning till klimatförändringar utifrån olika utgångspunkter. I synnerhet syftar den till att beskriva hur migration påverkar möjligheterna till anpassning samt potentiell utsatthet. Detta undersöks i tre former, för migranten själv, för ursprungsregionen samt destinationsregionen. Kunskapsöversikten identifierar också att påverkan från migration på anpassning och utsatthet kan skilja sig mellan rurala och urbana områden.

I vissa sammanhang används migration som en anpassningsstrategi med varierande utfall. Utfallen beror både på policysvar, men också personliga uppfattningar. Kunskapsöversikten visar att dessa uppfattningar ofta skiljer åt från faktiska klimatförändringar eller reella kostnader för migrationen.

På landsbygden är en potentiell migration avhängig hushållets exponering gentemot risker, dess beroende av naturresurser samt redan befintliga sårbarheter. Migration är ofta en möjlighet för de hushåll som har mest resurser samtidigt som de hushåll som har flest föreexisterande sårbarheter ofta befinner sig i situationer där de inte har möjlighet att migrera och därmed är fast i området. Det är därför som klimatförändringar riskerar att slå hårdast och förstärka sårbarheter i hushåll som är beroende av naturresurser. Migration kan också driva en kraftig urbanisering där migranterna ofta bosätter sig i kvarter eller bosättningar som i högre grad är utsatta för klimatförändringar. Detta betyder att sårbarheten hos migranter i städerna kan öka, samtidigt som de kan presentera en demografisk utmaning i städerna där tillflödet av människor tillför press på resurser så som arbeten, bostäder och sanitet.

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De remitteringar som skickas till ursprungsregionerna används oftast för inköp av basvaror så som mat istället för att samlas för att finansiera projekt med längre tidshorisont som i gengäld skulle kunna stötta anpassningar och minska sårbarheten. Denna kunskapsöversikt använder en komparativ studie från MECLEP-projektet för att påvisa effekterna av remitteringar för anpassning och sårbarhet.

Slutligen presenteras policyrekommendationer kring migration vid olika steg och nivåer för att hjälpa beslutsfattare att tydligare stötta anpassningar och minska sårbarheten för migranten själv, för ursprungsregionen samt destinationsregionen.

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# 1. Introduction

Migration studies have long considered migration as a positive process aimed at adjusting to changes. One of the founders of migration studies, Ravenstein (1885), described migration as 'life and progress', whereas a sedentary population meant 'stagnation'. As of today, there is much empirical evidence to show that migration is an adaptation strategy which households use to diversify and support their livelihood strategies (Castles and Miller 2003, Massey et al. 1998). In the context of climate change, different important empirical studies have shown that migration was often a way for populations affected by climate change to adapt to these impacts – because it allowed them to relieve the demographic pressure on the environment or to provide an additional income, for example (Black et al. 2011, Webber and Barnett 2010, McLeman and Smit 2006, Gemenne and Blocher 2017). For this reason, migration has been increasingly promoted as an adaptation strategy to climate change in the international negotiations on climate change and considered there as a policy priority (Warner 2011).

Yet for the public and to decision makers, migration in general is still commonly perceived very differently. It is often viewed as a failure to adapt to climate impacts, which should be avoided at all costs. There is therefore a significant gap between the empirical evidence and popular perception of migration related to climate change. Indeed, migration related to climate change is commonly perceived as a humanitarian disaster in the making, which could be avoided thanks to a dramatic drop in greenhouse gas emissions.

## 1.1 Ambition

Therefore, this research overview will seek to bridge the gap between realities and perceptions, fleshing out the relationship between migration and adaptation. Too often, adaptation policies are designed on the basis of perceptions, and it is therefore essential that these perceptions are reflective of empirical realities. Therefore, this research overview will seek to describe how migration can reduce vulnerability and increase the adaptation capacities to these impacts. In particular, it will seek to show how remittances – that is, money sent by migrants to their families and communities – can support adaptation to climate change.

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In order to do this, it is important to consider that migration is, by nature, an adaptation strategy to hardships. Considering migration as adaptation solely in regard to environmental changes may set climate-related migration as a separate migration category, apart from other migration dynamics. Yet migration drivers, including climatic drivers, intermingle and influence each other, making it impossible to establish 'environmental migration' or 'climate migration' as discrete migration categories.

## 1.2 Objective

The key objective of this research overview is therefore to flesh out how migration can serve as an adaptation strategy. Empirical works have highlighted that migration did not always signal a failure to adapt but could also be used by migrants and local populations as a strategy to adapt to environmental transformations. For example, migration can reduce demographic pressure on natural resources, or provide alternative sources of income. This bears important policy consequences, as some adaptation programmes or projects have sought to enable or facilitate migration. It has also been acknowledged in some international texts, such as the Cancun Adaptation Framework, which recognises migration as a potential adaptation strategy.

Yet the potential of migration for adaptation remains largely untapped. This is because the *impacts* of migration on adaptation and vulnerability have not yet been sufficiently documented. Research on the environment-migration nexus has mostly focused on the environmental causes of migration, while research on the impacts of migration has mostly focused on the economic and cultural impacts of migration rather than on its environmental impacts. Therefore, this research overview seeks to identify a significant gap in literature, which has wide-ranging policy implications, as adaptation and development programmes will increasingly need to account for migration. How the outcomes of migration may serve to increase or decrease adaptive capacities is less understood and requires more empirical research, which this research overview seeks to synthesise.

Though the idea of 'migration as adaptation' usually considers migration as a strategy benefitting primarily the migrants themselves, a particular emphasis will be put on the *relationship between the migrants and their communities of origin*: does the migration of some increase or decrease the vulnerability of those who have stayed behind? This research overview also considers how migration affects the vulnerability of the *communities of destination*: for example, does migration significantly increase the risks of

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instability/insecurity at the destination, because of the increased pressure on natural resources?

Therefore, it is important to state from the outset that this research overview does not focus on the impacts of environmental changes on migration, but rather on the impacts of migration (of whatever kind) on adaptation and vulnerability. Following the IPCC (Intergovernmental Panel on Climate Change) definition, adaptation is defined as 'the process of adjustment to actual or expected climate and its effects', while vulnerability is 'the propensity or predisposition to be adversely affected', encompassing 'a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt' (IPCC 2014).

### 1.3 Disposition

A first section of the research overview reviews the different pieces of work that have highlighted how migration could be an adaptation strategy and shows how this policy ideal has not yet really been engaged with.

A second section seeks to bring some clarification to the concept of migration as adaptation, and further discusses how migration can have very different impacts on the community of origin, on the community of destination, and on migrants themselves.

A third section discusses the impacts of migration on adaptation and vulnerability in rural regions, while urban settings are discussed in the fourth section. Although migration often takes place between rural and urban areas, it would be over-simplistic to assimilate the former to places of origin and the latter to places of destination; migration patterns can be more complex, so that both rural and urban areas can both be places of origin and of destination.

A fifth and final section addresses one of the most discussed aspects of the migration-adaptation nexus: the remittances sent by migrants to their families and communities of origin. While they represent the largest source of investment in the global South, can these remittances really reduce the vulnerability of the communities of origin and foster their adaptation?



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## 2. State of the art

Within the wider framework of climate change adaptation, the IPCC defines adaptation as the “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (Adger et al., 2007: 869).

A body of evidence, part of which is outlined in this study, indicates that migration has been a component of human adaptive systems to respond to both historical and contemporary climate stress. Here, migration is conceived as one adaptive strategy in a complex adaptive system employed by households. Migration may not be the first adaptive response chosen or indeed, the most appropriate or most successful mechanism. As a proactive strategy employed to confront risks or when other coping mechanisms have been exhausted, migration is noted by some to be a “successful” adaptation strategy only if it can increase the ability to rely on existing strategies, such as farming innovation and intensification (Tacoli, 2011b).

### 2.1 Perception and adaptation

The assumptions implicit in the IPCC definition is that people have an accurate perception of climatic changes and their potential harm, that actions taken to adjust will be necessarily positive, and that strategies to respond to said changes are temporally static; here, this definition is used to describe short term coping strategies that mitigate harm as adaptive, which in many cases have proven to be mal-adaptive in the long term: migration, for example, can in some cases deprive the community of origin from essential workforce (Melde et al. 2017). However, migrants’ perceived ability to employ adaptation as a successful migration strategy, as well as their perception of the relative challenges presented by climate change, might be different from an external assessment and yet may be of greater importance in the use of migration as an adaptive strategy: migrants make their decision on the basis of their own perceptions (De Longueville et al. 2016; De Longueville et al. 2020).

Within a broader framework of climate change adaptation, Moser and Ekstrom (2010) take the IPCC definition further to remove the normative bias and these stated assumptions:

*Adaptation involves changes in social-ecological systems in response to actual and expected impacts of climate change in the context of interacting non-climatic changes. Adaptation strategies and actions can range from*

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*short-term coping to longer-term, deeper transformations, aim to meet more than climate change goals alone, and may or may not succeed in moderating harm or exploiting beneficial opportunities.*

In a recent paper, De Longueville et al. (2020) showed that populations responded primarily to their perceptions of environmental changes, rather than to environmental changes themselves. This raises important questions for migration as adaptation: can migration in response to a biased perception of environmental changes be considered as maladaptation, and should adaptation policies be framed around environmental changes themselves or the perceptions thereof?

Maladaptation is given a strict definition by Barnett and Neil (2010) as any adaptation process that has a negative effect on any parties involved in the structure of the system itself: either the migrant, home community, or host community. Within McLeman and Smit's (2006) conceptual model the adaptation options available to households are reflected by their capital endowments, however, the authors stop short of exploring how the relationship between adaptive capacity and capital endowments affects the adaptation options available to individuals. These concepts are related to discussions surrounding immobility which explore the motivations, individual attributes, and conditions of those who stay behind in both households that send migrants or not (Sultan and Gaetani 2016, Zickgraf 2018). Recent studies focus on the "trapped" populations, which lack the resources to use migration to ameliorate the risks facing them, and are essentially struggling to survive (Zickgraf 2018, Vigil Diaz Telenti 2017).

## 2.2 Breaking away from determinism

Though environmental disruptions have been key determinants of migration throughout history, the impacts of climate change have given a new dimension to this, as migration was identified by the IPCC as one of the 'gravest impacts' of climate change on societies as early as 1990 (McTegart, Sheldon, & Griffiths, 1990). Since then, massive population displacements have often been presented as one of the most severe impacts of climate change and as a decision of last resort that people take when they are faced with environmental disruptions. It is commonly assumed that migrants have exhausted all possible options for adaptation in their place of origin, and were left with no other choice. This perception is deeply rooted in environmental determinism, where people's course of action would be exclusively determined by their environment. Indeed, an all too common perception is that most people affected by environmental changes would necessarily need to migrate, and that environmental factors would be the sole drivers of their

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migration. Examples of this perspective can be found in different reports on climate impacts, and sea-level rise in particular, which also aim to forecast the number of people who could be potentially displaced (Nicholls, Marinova et al. 2011, Burzynska et al. 2019). The consequence of this deterministic perspective is that 'environmental migration' often has been viewed as a distinct and new migration category, where migrants would be set apart from global migration dynamics, and whose nature and magnitude would be determined by environmental changes only.

## 2.3 Impacts of migration

Yet migration is often a common response to extreme vulnerability and is essential in satisfying basic needs. Migration can build resilience through enhancing livelihoods or as a sort of insurance strategy for households through diversification of income sources (Foresight, 2011, Melde et al. 2017). In case studies of migration in Bolivia, Senegal and Tanzania, out-migration was linked to periods of environmental disruptions with positive results on adaptive capacities (Tacoli, 2011a). The adaptive capacity of communities of origin may benefit from out-migration in unexpected ways. For example, a number of significant studies in Jamaica, Haiti, and the Philippines found that remittances towards these countries increased following disaster events (Foresight, 2011). In addition, for the community of destination, in-migration can correct labour shortages and demographic deficits while infusing new skills and strengths into the community (Melde et al. 2017). However, other studies have shown that migration could also increase vulnerability for the migrants themselves, host communities and communities of destination (McLeman 2018).

Diverse empirical studies have shown that those who had migrated because of environmental changes often refused to be considered as victims, but insisted on their resourcefulness (Borderon et al. 2019, Gemenne 2010). The EACH-FOR project, a European empirical research project conducted between 2007 and 2009, was the first to show that migration was not always a last resort strategy in the face of environmental changes, but could also be, for many households, a voluntary choice aimed at reducing their exposure to risk and diversifying their sources of income (Jäger et al. 2009). Since then, similar observations were made irrespectively of the nature of environmental changes: Van Der Geest (2011) showed that it was part of a traditional lifestyle to cope with adverse environmental conditions in Ghana, Borderon et al. (2019) came to a similar conclusions when reviewing African cases of migration related to desertification and soil degradation. Ransan-Cooper et al. (2015) highlighted that migrations were often part of a social routine in the Pacific,

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even when confronted with creeping sea-level rise, as in the case of the small archipelago of Tuvalu. Already in 1966, Wolpert had shown that internal migration in the US was an adjustment to environmental stress.

An important factor appears to be the disposition of – or lack of disposition of – various capitals required to migrate. Household resources may equate to the capacity to use migration as a strategy, capacities mediated by a number of important social, cultural, and economic factors. This is supported by studies demonstrating that there may be a U-shaped relationship of migration to deviation from typical rainfall variability: when households are faced with environmental conditions that exhaust their resources, their ability to migrate decreases (Nawrotzki et al. 2013, Feng, 2010). During times of relative environmental plenty, households were able to free up the resources necessary for a family member to migrate and further reduce household vulnerability. During times of peak environmental stress, however, households lacking the resources to migrate were less mobile, in part due to the need to prioritise basic necessities.

## 2.4 Migration as adaptation

As a result, some recent works highlighted that migration could be a powerful adaptation strategy for populations faced with environmental changes. Black et al. (2011) noted that 'although environmental change will alter an already complex pattern of human mobility, migration will offer opportunities as well as challenges' and called for fresh discourse and research on the linkages between migration and adaptation. In a paper prepared for the World Bank, Barnett and Webber (2010) argue that 'migration is itself a strategy to sustain livelihoods in the face of environmental and economic perturbations and change', and that 'in many cases migration enhances the sustainable development of both sending and host areas'. In the same line, McLeman and Smit (2006) presented a model to frame migration as a possible adaptive response to climate change, which they had tested with the case of the *Dust Bowl migration* that took place in Oklahoma in the 1930s. It has been noted that environmental variability overall can influence the longer term vulnerability of households, which may lead to out-migration in a gradual, "erosive" process that may further *prevent* households from utilising migration as a strategy (Warner and Afifi, 2014, Melde et al. 2017). Migration *in anticipation* of future shocks and changes can therefore also serve as an adaptive strategy (Gemenne and Blocher 2017), while the discussion on climate-induced migration often focuses on migration occurring after an environmental shock or change, migration that occurs in anticipation of such events often goes

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unnoticed. Yet migration in anticipation of environmental disruptions is also a form of adaptation.

In public debates, migration remains mostly presented and reinforced as the undesirable outcome of a failure to cope with changing conditions, a last resort strategy (Gemenne and Zickgraf 2019). Mounting distrust of migrants and asylum seekers in the last few decades, together with misconceptions associated with environment-related migration, reinforce and have co-evolved with this view (Morrissey, 2012, Gemenne and Zickgraf 2019). The 'refugee crisis' that unfolded in Europe from 2014 onwards has reinforced this perceived threat of a looming 'migration crisis'. The presentation of migration as a problematic phenomenon is evidenced by a policy focus on influencing the modality, volume, and geographic bounds of migration flows rather than seeking to facilitate human mobility for the potential positive outcomes of migration (DFID, 2013; Black et al. 2006). Such a disconnection between empirical research and public debates is likely, in turn, to induce maladaptive policy responses aimed at preventing migration (Magnan et al. 2016).

## 2.5 Summary

As this section has shown, migration is used as an adaptation strategy to environmental changes in diverse contexts, with different outcomes. While environmental changes have always been key determinants of migration, public narratives remain fraught with the idea that migration is a failure to adapt, and should be avoided. Yet empirical studies show that migration is often used as an adaptation strategy in the face of environmental changes, with the migration decision often taken on the basis of personal perceptions. Depending on the context, the migration of some has diverse impacts on the vulnerability of the community of origin, as it might deprive this community from essential resources. It is therefore essential to look not only at how migration can serve as an adaptation strategy (for the migrants, their community of origin, or both), but also at how migration can also increase the vulnerability of others, and therefore weaken their own adaptation capacity.

Therefore, the following section attempts to provide some conceptual clarification about the target group: when discussing the impacts of migration for adaptation and vulnerability, who are we actually talking about? The migrants themselves, or their communities of origin or destination?

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## 3. Adaptation for whom?

### Conceptual clarifications

In this research overview, it is argued that migration can affect adaptation and vulnerability in different ways, depending on the context. As shown in the previous section, migration can yield different outcomes, which can sometimes lead to maladaptation. A key difficulty in the assessment of the adaptation potential of migration is therefore to know who benefits from migration, and for whom migration might actually be detrimental. This section seeks to answer this very question: *adaptation for whom?* Indeed, what can be a positive outcome for some may be a detrimental one for others. In that regard, migration could also qualify as maladaptation, and increase the vulnerability of other systems, sectors or social groups. This is the reason why it is essential to define who benefits from migration as adaptation if policies are to be designed to maximise its adaptation potential.

In order to answer the question of 'adaptation for whom?', it is suggested that there are three target groups that need to be considered: *the migrants themselves, the community of origin, and the community of destination*.

#### 3.1 For the migrants themselves

Traditionally, when migration is mooted as an adaptation strategy, it is envisioned that people affected by environmental changes would use mobility as a way to adapt *themselves* to the environmental changes that they face.

Yet it is important to stress that migration at large, not only migration triggered by environmental changes, can have an impact on adaptation. Focusing only on the migrants whose mobility is related to environmental changes – the 'environmental migrants' – would therefore appear as a limitation when studying the potential of migration for adaptation: all types of migration need to be included in the assessment of migration's impact on adaptation. Indeed, migration not related to environmental changes can also have an impact on a community's adaptation capacity.

As noted above, migration can contribute to building the household's as well as the individual's resilience by way of diversification of income sources, in a sense, it can be a livelihood insurance strategy (Foresight, 2011). In case studies of migration in Bolivia, Senegal and Tanzania, out-migration was linked to periods of environmental stress, employed with the goal to diversify

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livelihoods, increase resilience, and reduce vulnerability to environmental change. Residents in a majority of locations identified some event that precipitated migration: a drastic change or “tipping point” that threatened local livelihoods (Tacoli, 2011a).

Migration has been found to improve conditions for the migrants. Access or lack of access to various capitals is important. For example, the EACH-FOR project concluded in many contexts, apparently successful migrants – a self-selecting group – were the young and socially mobile (Jaeger et al. 2009). The opportunity cost of migrating was more attractive, whereas the older and more established members of a society in the face of severe environmental stress were less able or likely to choose to migrate and risk losing their relatively advantageous social stature. The former position thus indicates that social capital is a key factor in the decision to migrate.

An example of the importance of social capital in the decision to migrate can be found in Northern Burkina Faso, where cultural factors were found to be essential in the determination of why one group may adopt different livelihood strategies in the context of changing climate as compared to other groups (Nielsen and Reenberg, 2010). As previously noted, the potential gains of migrating made it an attractive strategy for younger members of a community. In some contexts, such as in some small island states and West African cultures, migration for income diversification is an important rite of passage into adulthood for young males. In parts of West Africa, migration, and especially international migration, constitutes an affirmation of household and personal success, reflecting the collective cultural views of the population. Those who stay are seen as lazy and un-adventuresome, even undesirably feminine (Jónsson, 2010).

Migration is, however, a risky strategy and can fail to increase the resilience of the household as a whole, the migrant included, or increase the vulnerability of the migrant alone. In a number of case studies, including in Ghana and Tanzania, migration was found to be an ‘erosive’ coping strategy for vulnerable households that employed migration but without achieving a positive consequence on resilience (Warner and Afifi, 2014, Sultan and Gaetani 2016). Migrants often suffer a relatively lower socio-economic status than their hosts as well as compared to their previous status in their community of origin (Melde et al. 2017). Furthermore, migration may not in the short term contribute to the ability to rely on existing strategies to cope with stress, this is for example, in cases where the migrating family member is unable to find adequate employment and living conditions and is less able to subsist in the host community (Jónsson, 2010). Migrants may also contribute a significant proportion of their income to their household, leaving themselves in relative

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poverty. The migrant, as one among others, may contribute to detracting from his or her own resilience, for example, by processes that lead to the lowering of demand for labour in the area of destination, exacerbating competition over scarce resources or increasing exposure to risks (Melde et al 2017).

However, considering the migrants only, may overlook the adaptive capacities of non-migrants and the overall community. Concretely, migrants may inaccurately represent or be unaware of the situation in their community of origin. The migrant may feel they have made significant sacrifices and suffer poor conditions in the destination area, unaware or overlooking the non-migrants that feel disadvantaged for staying. Vulnerable households in the community who are *unable* to employ migration as an adaptive strategy may be underrepresented, despite them being important to consider in the adaptation of the community overall (Adger et al. 2002, Jónsson, 2010, Melde et al 2017).

## 3.2 For the community of origin

Immobile populations often suffer considerably from the departure of those who have decided to migrate. While migration can be a key tool for the development and adaptation of origin communities, it can also represent a huge deprivation of workforce and assets for those who were forced to stay (Banerjee 2012, Zickgraf 2018).

Yet the literature on migration and development has long shown that migration had to be recognised as a meaningful development strategy for the region of origin (Banerjee 2012). In the case of the migration-development nexus, the potential of migration to promote sustainable development is usually materialised through the mobilisation of migrants' networks and the sending of remittances. These two channels appear relevant as well in the case of adaptation, but a third channel needs to be added: the alleviation of population pressure, lessens strain on limited resources such as land or water, facilitation of risk reduction; this offers those who stay better chances for survival (Scheffran et al. 2012).

Although there is ample literature on the role of migrants' networks for development, their role to support adaptation remains unaddressed, despite the significant overlapping between adaptation and development. Adaptation, however, cannot be reduced to development, and thus the role of migrants' networks for adaptation requires a specific analysis. Yet many migrants' networks engage into overseas mobilisation to support their country or region of origin, but their potential for adaptation remains undefined. Migrants' networks can improve resilience to climatic crises and vulnerability reduction.



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This can be done through different ways such as humanitarian and development projects, better access to information, lobbying in the political sphere and of course by channelling donations and remittances of emigrants (Barnett and Webber 2011, Asian Development Bank 2012).

As shown by Yang (2008), when a natural disaster strikes their country of origin, it is common that migrant networks organise themselves to provide relief effort. They can provide resources, information and capacities to help communities deal with environmental changes. They can implement long-run risk alleviation strategies or support diaspora mobilisation in the wake of environmental hazards such as flooding, drought or earthquake (Asian Development Bank 2012). Finally, they can also lobby local, national and international authorities to promote vulnerability reduction plans.

Yet the privileged way of intervention for individuals and networks are the remittances sent to their relatives back home on a regular basis, which can greatly improve the resilience of the latter to environmental changes and shocks (Gubert 2002, Adger et al. 2002, Scheffran et al. 2012).

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## The role of remittances

Literature on the migration-development nexus is rich with insights about how remittances can support the development of communities of origin (Gubert 2002, de Haas 2005, Kapur 2009). These transfers, which are discussed in detail in the fifth section of this report, play a crucial role in poverty alleviation and development: they are much more stable capital flows than overseas development aid or foreign direct investment (Yang and Choi 2007). Some works have also addressed how they could support the livelihoods of communities (Adger et al. 2002, Scheffran et al. 2012), or provide an insurance against risks, including natural hazards (Gubert 2002). Most studies however focus on the impact of remittances on development and peace building, whereas more limited attention has been paid to their impact on vulnerability reduction and adaptation to environmental changes (Melde et al. 2017). Such transfers can indeed foster adaptation – here's how.

First, they can bolster an income diversification strategy: migration is a way of securing a source of revenue in times of hardship, thus compensating for the loss of agricultural incomes. In addition, remittances can support farm and non-farm investment. They foster a more resilient agriculture and are instrumental to the diversification of rural economies (Yang and Choi 2007, Barnett and Webber 2011). This is further supported by findings from all three study countries reviewed by Tacoli (2011a) and Borderon et al. (2019), in which the most vulnerable households were those that did not receive remittances.

Second, they can provide support in the wake of environmental hazards. Natural disasters usually trigger waves of solidarity among emigrant groups (Yang 2008). Diaspora philanthropy can be channelled by a large array of organisations: NGOs, places of worship, hometown associations, and so on. They can also follow informal channels of interpersonal networks. This latter form of diaspora philanthropy is facilitated by the existence of online social networks and the use of new communications technology.

Finally, remittances could also fund collective adaptation projects. Though there's little evidence of remittances resources being pooled to fund common projects in general, the exacerbation of climate change impacts might make this more likely. Some examples exist already, in areas not linked to adaptation (Lucas 2019). In a few study areas, for example in Bolivia, remittances provide the bulk of the capital needed for local agriculture (Tacoli, 2011a). Remittances are acknowledged to be important in supporting adaptation to local environmental change within the farming sector in many contexts (Melde et al. 2017).

When considering the impacts of migration on the community of origin, it is important to also determine whether an adequate compensation for labour shortage and loss of skills has been provided to these communities. According to Tacoli (2011a), in three case studies (Tanzania, Senegal, Bolivia), any labour

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shortages or so-called “brain drain” caused by out-migration was compensated by income flows from remittances. In this instance the researcher determined whether the magnitude of remittances allows, for example, the hiring of day labourers; this is the case of pastoralists in Tanzania. These dynamics will also depend on the time the migrants spend away, and whether the community continues to build its adaptive capacity; the accrued experience of migrants and their community induces ever greater capabilities to respond to climate change.

### 3.3 For the community of destination

The effect of migration on people and communities are diverse. Yet the dominant narrative on the impacts of migration for the community of destination, in the context of environmental change, is one of competition, tensions and conflicts. For example, reviews of poverty reduction as well as development strategy papers across Africa found worrying evidence that unfavourable attitudes towards migration may be deeply held beliefs and migration is commonly used as a “scapegoat” for a host of larger socio-economic structural issues (DFID, 2013).

These assessments indicated that despite the lack of evidence for such negative perceptions of migration, migration flows are perceived as putting pressure on urban areas, promoting the spread of crime and HIV/AIDS, stimulating land degradation and reinforcing both rural and urban poverty (Black et al. 2006, Brzoska and Fröhlich 2016). Overall, migration has been presented as a threat rather than as a driver of adaptation in communities of destination. There is therefore a significant need to assess the impact of migration on the adaptive capacity in the community of destination. The concept of environment-related migration may have acquired an additional unwanted character because it arose at a time in which migrants and asylum seekers were increasingly viewed in negative light. The representation of environmental migration as a failure of adaptation played into negative and commonly held pre-misconceptions of migrants and helped reinforce – and enable – growing anti-immigrant and anti-asylum seeker sentiment. This narrative fits well with discourses surrounding the mounting mistrust of asylum seekers, as European citizens lamented becoming ‘flooded’ and ‘overwhelmed’ with interlopers (Bosswick, 2000). The popularisation of migration as a failure of adaptation is today evidenced by continued use of threat terminology regarding migrants, as migration related to climate change is often depicted as ‘wave’ or a ‘crisis’ (Oels 2012, Gemenne and Zickgraf 2019).

Empirical research stresses that there are still very important and potentially maladaptive migration flows towards areas that are highly vulnerable to the

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impacts of climate change, and coastal and deltaic cities in particular (Foresight 2011, Melde et al. 2017). Migration flows may increase vulnerability in areas of destination that are exposed to recurrent risks or where there are pre-existing structural vulnerabilities and population pressure. High rates of migration to already densely populated and low-lying urban areas can contribute to increasing vulnerability and increased disaster risk. Thus, vulnerabilities are further exacerbated by the increasing scale and frequency of natural disasters.

Rural to urban migration flows may decrease resilience in rapidly expanding cities, increasing vulnerabilities due in part to resource scarcity, overcrowding and inadequate infrastructure (Burrows and Kinney 2016). In some areas exposed to frequent natural hazards, these pressures also increase the populations' vulnerability and exposure to disaster risks. Migration, including rural to rural migration, may increase the burden of population pressure on fragile ecosystems.

For example, the scale of poorly managed internal migration has been asserted as among the primary factors contributing to the high disaster risk of impoverished communities in the Philippines, to add to poor governance in some areas, insufficient understanding of the impacts of climate change and other hazards and lack of effective early warning systems for extreme weather events (Ginnetti et al. 2013).

Environmental factors – for example, the effect of temperature and rainfall variability that may affect natural resources and exacerbate pressures that contribute to tensions – have been noted on occasions to lead to local-level conflicts. Many organisations and practitioners have become aware of inequalities between migrants and members of the host communities and barriers migrants face to their access to rights more broadly, including obtaining employment, access to adequate and dignified living conditions, and security of tenure. While commendable examples of social cohesion exist, tensions can arise. Few empirical studies have explored this comprehensively and many researchers are hesitant to make this link assertively. One such study, conducted by O'Loughlin et al. (2012), found a non-linear relationship between temperature and conflict in East Africa between 1990 and 2009; while much warmer than normal temperatures raise the risk of violence, average and cooler temperatures have no specific effect on the occurrence of violence.

However, there is a vast body of literature that must be recognised that professes the benefits of migration, as a component assisting in a wider socio-cultural phenomenon of adaptation, for building resilience in the community of destination.

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First, in initial works on the topic, migration was viewed as an adjustment to the imbalances of the labour market (Ravenstein 1885, Lee 1966). In growing urban areas in particular, migrants provide new skills and may fill demographic gaps, in particular those related to aging populations (Foresight 2011).

Second, works on multiculturalism and migration policies have highlighted the cultural benefits of migration for diversity. Diversity has dividends for education, inclusiveness, and innovation (Legrain 2009).

A final, and related, point is that because of the diversity that accompanies migrant communities, migration acts as a vehicle for transfers of knowledge and technologies, and can thus help spur growth and development (Castles 2002, Freeman and Kessler 2008). Migrants are a self-selecting group that may contribute an entrepreneurial and risk-taking spirit as compared to the average population.

### 3.4 Summary

Migration induced by environmental changes can yield benefits for some and difficulties for others. This is not just a matter of contexts, but also a matter of viewpoints: whether we consider the impact on the community of origin or of destination, or on the migrants themselves. Yet most often the discussion on migration as adaptation focuses on the perspective of the migrants and neglects the perspectives of the communities of origin and of destination. Remittances are an essential vehicle through which migrants can support their communities of origin, and this aspect will be further developed in Section 5.

Context is also important: when migration is deployed as an adaptation strategy, it is often from a rural region towards a town or a city. The following sections will therefore attempt to identify and exemplify the impacts of migration as adaptation in rural regions and in urban settings.

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## 4. Impacts in rural regions

Rural populations are amongst the most dynamic settings in which the multiplicity of links between climate change and migration can be investigated because of their geographic exposure to natural hazards; their dependence on natural resources; and their pre-existing vulnerabilities. Such factors often lead to migration towards urban areas, but also to pendular or seasonal migration.

### 4.1 Exposure to hazards

Firstly, rural areas (especially in developing countries) are highly exposed to natural hazards – both slow and sudden – that have augmented in frequency and intensity as a consequence of anthropogenic climate change (IPCC 2014). Both types of hazards are expected to modify the dynamics of human (im)mobility around the world, but above all in rural areas. For their part, extreme weather events, including heat waves, tropical cyclones, droughts, and flooding, provide the most clear and direct causal pathway from climate change to migration (Adger et al. 2014). According to their geographical exposure, South East Asia, Asia-Pacific and the Gulf of Mexico are the regions where the incidence of these events is the highest. Climatic and weather events can directly displace populations because of their destruction of residences and infrastructure. In fact, natural disasters displaced 30,7 million people in 2015 (IDMC 2021). Much of the literature, such as reviewed in the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), concludes that an increasing incidence and changing intensity of extreme weather events due to climate change will lead directly to the risk of increased levels of displacement.

But while such extreme weather events present the clearest causal link between climate change and migration, it may be that the biggest impacts on rural migration dynamics will stem from the slow-onset hazards associated to climate change. Slow-onset events associated with climate change include sea level rise, increasing temperatures, ocean acidification, glacial retreat, salinisation, land and forest degradation, loss of biodiversity and desertification (UNFCCC 2012). Sudden-onset disasters tend to lead to immediate destructive impacts on rural areas with spiking levels of displacement. Slow-onset events, on the other hand, create and amplify risk through economic and social impacts that can drive what at first glance could appear to be voluntary labour migrations from rural areas. The most

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significant consequences from slow-onset events on mobility result from sea-level rise and land degradation. Evidence of loss and damage resulting from sea-level rise, with considerable impacts on agriculture, include salinisation of soils and reduction of crop yields; loss of fish habitat and reduced fish production (IPCC 2012). Given that coastal and deltaic regions are amongst the most densely populated on the planet, and an average expected sea level rise of 1m by the end of the century (IPCC 2014), migration is expected to rise significantly. Land degradation, resulting from a combination of climatic and human activities, reduces the productivity of soils leading to reduced food production and increased food insecurity. One can already witness the importance of land degradation in North Africa: in Egypt, 70 percent of internal migrants interviewed in the Nile Delta and Valley, newly reclaimed desert and slums in Old Cairo, named land degradation and water shortages as root causes of their migration (Warner et al. 2008). In the Middle Draa Valley of Morocco, a household survey found that land degradation was a major factor in both past migration decisions and migration intentions (Ait Hamza, El Faskaoui and Fermin 2009).

## 4.2 Natural-resource dependence

Both types of aforementioned hazards present a major threat to these agricultural livelihoods and threaten to increase rural poverty and incite distress migration. Climate change is currently exacerbating the existing challenges faced by the agriculture sector, and will thus greatly affect rural populations including their desires, needs and abilities to migrate. Increases in temperature, rainfall variability and the frequency and intensity of extreme events are only expected to add to pressure on the already struggling global agriculture system upon which many rural populations depend (OECD, 2015). It is expected to harm crop and livestock production systems, forestry and fisheries, and to negatively affect productivity levels in most regions. A study conducted by the UN Food and Agriculture Organisation (2015) has shown that approximately 22 percent of the economic impacts caused by medium and large-scale natural hazards and disasters in developing countries are directly affecting the agricultural sector. Considering just climate-related disasters, the agriculture sector represents 25 percent of the total damage and losses.

The vulnerability of the agricultural sector to climate change has far-reaching impacts beyond those rural livelihoods directly dependent upon it. The dimension of food security in regard to climate change and migration cannot be underestimated. All four pillars of food security can be connected to climate change and migration in agricultural, rural areas: food availability, food access, utilisation, and food systems stability. Disasters, for instance, can

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cause unemployment and/or a decline in wages. They lower the availability of food commodities, leading to food inflation and a rise in food prices. These pressures reduce purchasing capacity, restricts access to food, deplete household savings possibly forcing the sale of land and other productive assets and erode livelihoods (FAO 2015). All of which can exacerbate the need to locate external income sources through at least partial household migration.

Additionally, alterations in seasonality caused by climate change can drastically alter agricultural livelihoods and traditional migration patterns (e.g. seasonal labour migration among farmers and fishermen) but can also lead to the temporary or permanent depletion of certain local food stocks. Increasing food scarcity, even seasonally or temporarily because of climatic variability and/or shocks, can make rural livelihoods even more marginal and difficult to sustain, increasing rural poverty and further driving migration in search of non-agricultural livelihoods to counterbalance this food instability. Even those households that are not directly dependent on agriculture may seek or be forced to migrate in the face of rising food prices and food insecurity.

### 4.3 Pre-existing vulnerabilities

No migration is caused by a single factor – climate change included. Migration is a highly complex process in which social, political, economic, environmental, and demographic drivers interact. Existing migration dynamics are usually modified or exacerbated by different climatic events rather than uniquely caused by them (Dasgupta et al. 2012: 623) and causal attribution between climate change and migration thus remains extremely complex.

The supplementary stress that climate change brings thus amplifies an already difficult reality for many rural populations, upon which the distribution of, and access to, resources as diverse as water, land, infrastructure, capital, the rule of law, kinship networks, education, aid and mobility play decisive roles (Tacoli 2009, Sultan and Gaetani 2016). While some extreme weather events directly cause displacement, climate change must also be understood as a threat multiplier that acts on the already pre-existing drivers of migration: social, economic, demographic, political and environmental. In this respect, rural areas experience specific vulnerabilities to climate change as a consequence of their dependence on natural resources and weather dependent activities for their livelihoods, as addressed, but also by their relative lack of access to information, decision-making, investment, and services (Dasgupta 2014). Therefore, we must consider geographical exposure to climate change, the economic dependence of rural livelihoods on agriculture and natural resources, but also the sensitivity of individuals,



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households<sup>1</sup> and communities to its impacts if we are to understand the consequences on migratory outcomes of rural populations, but also how these migrations feed back into a vulnerability/adaptive capacity.

Moreover, the pre-existing vulnerabilities of rural populations are very diverse and depend on age, gender, socio-economic status, level of information and connection, etc. The differentiated vulnerabilities of individuals, households, and communities in rural areas affect the migration outcomes and their impacts.

## 4.4 Migrants profiles

The vast differences in impacts associated with similar climate stressors in the same place at different times, from place to place or among different social strata highlight the complex non-linear relation between climate and migration outcomes. Migration can be propelled by poverty, or encouraged by wealth, embedded in economic transformation or in cultural changes, it can narrow inequalities and improve well-being, or on the contrary increase them and lead to further marginalisation (Rigg 2007). Who migrates, for how long, and what types of relationships are maintained with the communities of origin, are all factors that determine the impacts of migration (FAO 2016). The following section attempts to briefly outline the different impacts that migration has had on rural, agricultural areas. While acknowledging the negative aspects, the real and potential gains in adaptive capacity that can result from migration is especially highlighted.

As shown above, it cannot be assumed that all rural people facing the impacts of climate change on their rural livelihoods will simply all leave: this will primarily depend on the local socio-economic context. While some rural households will send members to seek employment/economic opportunities elsewhere, the selection process itself is worthy of attention. Moreover, there are rural households that *do not* engage in migration. Rural households in the developing world must in fact draw on various assets including natural, physical, human, and social capital in order to migrate, none of which are equally available or accessible.

Within migrant-sending rural households where one or more persons are 'selected' as migrants, this selection process involves a number of factors including, but not limited to gender, age, marital status, relationship to the household head and occupation. Evidence of the relative importance of each

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<sup>1</sup> A household is understood here as the ensemble of family members living under the same roof.

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variable is not contradictory, but highly contextual. For example, gender roles in many societies prevent the mobility of women, who are 'left behind' to manage households, raise children, and so forth. In northern Bangladesh, for example, 97 percent of migrants in a household survey were men (Etzold et al. 2015). On the other hand, gender roles that impede the formal access for women to natural resources can have the opposite effect (Neumayer and Pleumper 2007). For their part, Gray and Mueller (2012) found that Bangladeshi women are more likely to migrate in the face of environmental stress than men precisely because they lack secure access to land. Moreover, differentiated off-farm opportunities for men and women are also strong determinants in the migration process. Women in northern Senegal migrate from rural areas to urban centres in Senegal and Mauritania as care workers, a more 'acceptable' employment for women than men.

Relating to age, marital status, and the household composition as determinants; the elderly and non-active population are most typically immobile in the face of environmental hazards. In L'Angue de Barbarie, Senegal, upon retirement fishermen also retreat from seasonal international migration. In the same fieldwork by Zickgraf (2018b), the elderly were also found to be the least likely to *aspire* to migrate – often citing old age, but also cultural attachment to land and ancestral homes in spite of environmental and economic stress. In terms of marital status, in a drought-prone rural area of the southern Ecuadorian Andes, married men were more likely to migrate internationally, but marriage was not a significant variable for women. The male children of household heads engaged in international migration more often than other members of the family and the migration of female children was mostly internal (Gray 2010). In rural China, sibship structure was also found to have an impact on migration decisions: 'young men were more likely to report that they had moved for purposes of starting a business or personal development than young women, while young women were more likely to report that they had moved to support the tuition of a family member (Chiang et al. 2015).

In terms of human capital, non-formal education in the form of traditional knowledge for predicting cyclones was very important for understanding and interpreting warning information on cyclones in India enabling communities to make informed migratory decisions (Sharma et al. 2013). In the drought-prone rural areas of Ecuador, the level of education significantly determined the level of out-migration. Social networks proved to be important for all migration streams: those with more connections outside of their community, such as friends or colleagues, were more likely to migrate (Gray 2010). In Senegal and Mali, formal education played an important role in reducing

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vulnerability to environmental stress. This is because people with a higher level of education are usually less dependent on environmentally sensitive economic activities such as farming and thus had less of a need to migrate once environmental stress occurred (van der Land and Hummel 2013).

Since dependence on agriculture continues to be the defining characteristic of many rural areas, access to and quality of natural capital, defined as land and associated environmental services, is key for the livelihoods of millions of people around the world (Ellis 2003). Although environmental scarcity constituted by landlessness and pressures on environmental assets can have strong impacts on human mobility, lack of natural assets is not always clearly correlated to out-migration. In Ethiopia, for example, the availability of land in origin areas tends to correlate with higher migration rates (Gray 2009, 2010). Nearly 80 percent of Ethiopian rural migrants surveyed in areas of destination cited land shortage as the major reason for their migration (Zeleeke et al. 2008). In South Africa, however, it was the households with higher natural capital, i.e. higher land ownership, that had the higher tendency to migrate, though most of this migration was temporary (Hunter et al. 2014).

However, all forms of capital are unequally distributed within rural communities. Thus, class and power relations within communities also play an extremely important role in migrant selection. For example, in rural areas in Ghana, Carr (2005) underlined how power relations embedded in these communities and the broader economic setting determines migration decisions in degraded environments. Based on empirical research conducted in rural Ghana, Carr explained that migration shows the ways in which environmental change becomes inseparable from local perceptions of economy and local politics through local manifestations of power.

Moreover, recent findings from West Africa show that population's migratory responses are often made based on their perceptions of environmental changes rather than on actual environmental changes (Zickgraf et al. 2016, De Longueville et al. 2020). This means that access to climate information should be considered as a key policy priority for adaptation.

Overarching structural factors also have a high influence on the migratory outcomes of climatic stress. Whilst livelihoods approaches can allow for a refined microanalysis of migration drivers, they still pay relatively scant attention to structures, institutions, relationships, and processes (Collinson 2009). Although much research aiming to assess the impacts of climate change on agriculture has concentrated on assessing the sensitivity of crop systems to biophysical aspects, this analysis overlooks the socio-economic

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aspects, which in turn leads to only a partial reading of climate change impacts.

The largest share of rural and natural resource-dependent populations lives in developing countries where economic growth is dire, off-farm opportunities are scarce, and political contexts marred by instability. Rural populations in the Least Developed Countries (LDCs) face multiple stressors such as under-investment in agriculture, problematic land tenure and resource policies, food policies, and processes of environmental degradation (Dasgupta et al. 2014). Although invisible directly to the observer's eye, the engagement, or disengagement, of the State in family farming, as well as land tenure arrangements and migration policies are amongst some of the major determinants of population movements in the context of climate change. In many of the LDCs, government spending on agriculture has been cut dramatically and so has foreign aid directed to the sector (Bezemer and Heady 2008). The share of central government expenditures on agriculture was less than half the sector's contribution to GDP between 2001 and 2014.

This (dis)engagement has consequences on the socio-environmental resilience of agricultural communities. For example, fieldwork by Vigil (2016) with pastoralists and farmers in the Senegal River Delta indicated that – although extremely prone to climate hazards – the construction of dams and State-led agricultural projects had substantially decreased the vulnerability of natural resource-dependant rural villages on rainfall variability. However, with the retreat of the State from agriculture since the 1980s and the increasing competition over natural resources between local and international investors, the most vulnerable communities still lack access to irrigation, machinery and the farm inputs needed to viably develop their activities. Moreover, and concurrent with her recent findings in Cambodia (Vigil 2016), the lack of secure land rights for smallholder farmers and forest-dependent communities has led to land acquisitions that – coupled with capital intensive farming methods introduced by private investors – have left many communities without sufficient land on which to develop their activities. Nor have these land acquisitions always translated into employment opportunities within the agribusiness sector for rural populations. Development choices in agriculture are thus already significantly modifying rural migratory dynamics around the world.

Although significant rural-urban migration flows have occurred as countries develop, in many countries they have coincided with limited industrialisation, high unemployment, and increasing poverty rates in urban areas. Evidence from South East Asia indicated that transition pathways to industrialisation and urbanisation are uneven and that protecting smallholder farming is crucial

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for societies in transition (Dorner and Thiesenhusen, 1990, Sunam and McCarthy 2015, Li 2009). A recent study from Cambodia suggests that 'by the year 2030, the transfer of unskilled labour from agriculture to secondary and tertiary sectors will lag behind the demographic increase in the active rural population' and that vast areas of additional land will be needed to assure the livelihoods of the growing population (Diepart 2016: 3).

Furthermore, as we move forward in trying to mitigate and adapt to climate change, it is of extreme importance to consider not only the direct but also the indirect effects of climate change on rural populations and on their migratory dynamics. Climate change will provoke adjustments in the value of natural resources in ways that are hard to predict (Sultan and Gaetani 2016, Vigil Diaz Telenti 2017) and as its impacts worsen, struggles over use, management and control of land and other natural resources can be expected to deepen. As pointed out by the IPCC (AR5), responses to climate change can aggravate conflict over natural resources (Marino and Ribot, 2012), and limit access to land and other resources required for people's livelihoods (Adger et al. 2014). Climate mitigation policies aimed at biofuel production or REDD+<sup>2</sup> projects have been incentivising land grabbing in rural areas of the Global South, often overlooking the rights of local populations and leading to the forced displacement of whole communities (Vigil 2015a). When land previously used for agriculture and grazing is converted into biofuel plantations or forest conservation projects, communities may be displaced or left with little more options than to move (Popp et al. 2014).

## 4.5 Patterns and impacts of migration

Population mobility, temporary or permanent, rural-urban or rural-rural, is a routine part of life in agricultural contexts for both farmers and pastoralists (Taylor and Martin 2011). Geographically, as climate change interacts with other migration drivers, evidence shows that most migration is likely to remain internal, inter-regional, and South-South (Foresight 2011). One explanatory factor is that people need human, financial, social, and natural capital to be able to move longer distances and because both sudden and slow-onset climatic hazards deeply compromise the assets required to move. Additionally, policies are much more likely to intervene in international movements – although in some cases they act as facilitating forces. Agricultural and pastoral rural populations are more likely to move to internal urban locations to seek economic and educational opportunities than to

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<sup>2</sup> REDD+, standing for "Reducing emissions from deforestation and forest degradation" is an international initiative aimed at reducing deforestation through carbon compensation, launched in 2008.

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undertake international migration. However, borderlands and neighbouring countries may witness short-distance, but international movements. After a severe drought hit Morocco in 2007, two-thirds of the irregular migrants arrested in Spain were from Khourigba, a farming and mining region (EACH-FOR 2008). Thus, globally, there are approximately 740 million internal migrants compared to 250 million international migrants, and climate change is not expected to modify the trend. Of course, as previously mentioned, individual and household access to information, education, social networks, and employment opportunities can make distance less of a deterrent.

Although urbanisation is expected to increase with rural, agricultural exodus, rural-rural migration dynamics are too-often overlooked. Cultural and practical attachments to agricultural livelihoods in terms of skill sets, ancestral knowledge, agricultural equipment and other resources also drive labour migration of fishermen, farmers and farm labourers, and pastoralists from one rural area to another. Geographic mobility in this case does not indicate sectoral mobility. Rural Senegalese households engaged in fishing and small-scale agriculture facing coastal erosion, depletion of fish stocks and biodiversity, and soil salinisation in the Langue de Barbarie move seasonally to other internal and international destinations in West Africa that offer better fishing prospects. In response to rainfall variability, rural migration to other more productive agricultural areas has also been witnessed in Ghana, Bangladesh, and Tanzania (Warner and Afifi 2013).

This rural-rural dynamic also underlines the variety of temporal migratory dynamics on display amongst rural agricultural populations. While the migration type, distance and occupation in the destination may influence temporality, evidence also shows that different hazards tend to lead to different migration temporalities depending on the characteristics of the populations. In general terms, it is expected that extreme weather events displace populations in the short term with only a smaller proportion of such displacement becoming permanent (Foresight 2011). However, returning is not always an option. It is now increasingly acknowledged that extreme weather events can lead to not only short-term but also long-term movement and protracted displacement (Gemenne 2011: 184). In Bangladesh, whilst displacement tends to follow sudden-onset disasters, slow onset disasters that affect livelihoods and food security gradually, tend to compel people to first undertake a migration which might be temporary or seasonal and can be followed later by more permanent migration (Shamsuddoha et al. 2012).

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## Immobility

*Immobility*, in fact, may be one of the greater threats to rural populations facing climate change. Just as any population, rural dwellers show social differentiation in their vulnerability to climate change (gender, class, education, etc.) and access to the resources needed to migrate. Migration, especially pioneer, long-distance and international migration, requires human and financial capital that is not available to all (Black et al. 2013). The wealthiest segments of the population are often those with the highest adaptive capacity, both in terms of decreased vulnerability *in situ* and their ability to move out of harm's way. In Bangladesh, the 2011 Foresight report found that "although mobility can serve as a post-disaster coping strategy, ... disasters in fact can reduce mobility by increasing labour needs at the origin or by removing the resources necessary to migrate."

While the focus is on who leaves rural areas because of the impacts of climate change on agricultural livelihoods, those who stay are often forgotten (Foresight 2011). Many migrate because of the harmful impacts of climate change on their livelihoods, but the vast majority of people do not leave, either by choice or by obligation. For example, in rural drought-prone Mozambique, men with established patterns of labour migration to South Africa were able to make economic gains from forced migration, whereas women left behind were prevented, by civil war-induced violence, from engaging in their usual small-scale mobility in response to the prolonged drought of the early 1980s, increasing poverty rates among the latter group – the involuntarily immobile (Lubkemann 2008).

## Positive impacts: adaptation

Rural households frequently allocate part of their labour to other rural, urban or international markets (Massey et al. 1993, Sultan and Gaetani 2016) since the remittances the migrants are, in some occasions, able to send play a crucial role in diversifying income and also in overcoming environmental and social risk. Evidence from Senegal, Bolivia, and Tanzania shows that financial remittances significantly increase the food security of origin communities (Hunter and Luna 2005). Further evidence from Guatemala, Peru, Ghana, Tanzania, Bangladesh, India, Thailand and Viet Nam shows that, depending on the vulnerability of the household and its sensitivity to climatic factors, migration can be an important adaptation strategy in the face of rainfall variability impacting food security. Across all these sites, Warner and Afifi (2013) found that the households that used migration to improve their resilience, although low income or poor, had adequate access to a variety of socio, political and economic assets. Thus, whilst migration can decrease the pressure on natural resources for origin communities and improve resilience to further environmental shocks through socio-economic remittances, this

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depends once again on the household's pre-existing vulnerabilities (Warner and Afifi 2013).

In terms of food security, rural households purchase a great deal of their food with the remittances they receive from migrant household members and evidence from Africa shows that they are a critical component in the food security of migrant-sending households (Crush 2013). However, the problem is often that these remittances are insufficient to uphold the food security of these households (Crush 2013: 62). Moreover, migrants themselves need to assure their food security at destination, yet are very often concentrated in the poorest and least food secure neighbourhoods of urban areas.

Financial remittances are undoubtedly highlighted in research and policy efforts as the main potential form of adaptation resulting from migration. However, migration from rural, agricultural areas can also bring social remittances in the form of ideas, skills, beliefs, values and practices (Levitt 2001). While seldom explicitly studied, agricultural knowledge and technology transfers can accompany the more favoured financial remittances. Senegalese artisanal fishermen, for instance, have begun importing boat construction techniques from Mauritania as a result of their migration in order to deal with intensifying harsh wave conditions locally.

Ideally, migration as an adaptation strategy should bring benefits for all of those involved in the process: presenting a 'triple win' scenario for the origin community, the migrants themselves, and the community of destination. However, when assessing how migration can be an adaptation strategy for rural populations, one is often oblivious to the impacts on the communities of origin and of destination in favour of its benefits for the individual migrant and/or the migrant-sending household. The *Migration, Environment, and Climate Change: Evidence for Policy* project (MECLEP) has looked at the effects of migration in rural and urban areas in six countries, including Kenya and Mauritius in Africa. In rural areas, the migration of some can represent an alleviation of the pressure on natural resources but can also create a feeling of abandonment for those left behind, especially if outmigration is matched with a disinvestment in public services. Conversely, in areas of destination, the arrival of new migrants can create an increased pressure on natural resources, but can also disrupt local food market and induce a greater volatility of food prices (Gemenne and Blocher 2017). This has been observed, for example, after the protracted drought that affected Syria between 2007 and 2011 (Kelley et al. 2015). Thus, migration even as an adaptation strategy for some does not necessarily represent adaptation for all.



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## Negative impacts

Although financial remittances are seen as a positive outcome of migration that can counterbalance the loss of productive labour force, many rural populations enter migration routes in vulnerable positions that can actually lead them to increase their vulnerability rather than reducing it. For example, in Ethiopia, Morrissey (2013) found that virtually none of the migrants described sending any remittances to rural areas. Whilst they expressed a desire to do so, their situation at their destination made it impossible. As Kothari states (2012: 15): “While migration can be understood as a strategy out of poverty, there is no guarantee that the strategy will be successful. The expectation that by moving they will find better employment and enjoy a better standard of living does not always materialise and subsequently, those who are poor and migrate can end up in the category of the chronically poor”. Additionally, even when remittances are available, evidence shows that migration and remittances are no panacea to overcome structural development constraints (Taylor 1999). As stated previously, and given the often-precarious situation of migrants in areas of destination, remittances are commonly used for basic consumption needs rather than for investment (Tacoli 2011a). While this fortifies household food security, for remittances to serve as a long-term poverty reduction strategy for rural areas and not just households, remittances need to promote income growth by facilitating investment and raising productivity (Davis et al. 2010). Moreover, since migration is a highly selective process to which the most vulnerable households cannot access, remittances do not tend to flow to the poorest members of the poorest countries who often remain in a state of involuntary immobility (Carling, 2002), remaining ‘trapped’ in the face of natural disasters (Foresight 2011). Distress migrants can face landlessness, homelessness, unemployment, food insecurity, conflict with host societies, marginalisation, and health troubles (Cernea 1997) and supplementary migration flows towards unprepared and already vulnerable areas can also add stress on the environmental resources of the host regions.

Evidence also shows that many migrants are moving into high-risk zones and not out of them. With coastal cities already overcrowded, migration of people out of rural communities into urban zones in search of employment puts additional pressure on already fragile ecosystems and urban infrastructure as well as food security. Despite the tendency to portray migrants as strictly rational (often based on the evaluation of a single driver), climate-induced migration is not simply about moving from a risk area to a safe environment. Those people leaving rural livelihoods in favour of socio-economic opportunities in urban areas are not necessarily able to gain better employment or to move out of physical danger. Many African coastal

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megacities are in fact flood-risk zones, and many poor, rural migrants meet with precarious conditions in slum areas. With little access to services, infrastructure, and accurate information, they may in fact amplify their vulnerability to environmental hazards and their impacts, e.g. disease, material loss, displacement and even death. In this sense, internal and international migration flows do not necessarily represent positive adaptation strategies in the long or short-term, even when they generate remittances.

## 4.6 Summary

In rural areas, migration triggered by environmental changes is inherently dependent on a household's exposure to hazards, dependence upon natural resources and pre-existing vulnerabilities. One should therefore not assume that all rural households migrate when confronted with environmental disruptions. On the contrary, migration is a highly selective process, which can bring out both benefits – often in the form of remittances – and difficulties – often in the form of a loss of workforce. As climate change will drive more people to migrate, it will also trap more people into immobility. In communities that are resource-dependant, climate change risks reinforcing existing vulnerabilities. In all cases, migration remains dependent upon structural determinants and household-level factors.

A major risk, however, is that some migrate towards high-risk zones or put additional pressure on resources: this is often the case in cities, as the section below shall explain.

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## 5. Impacts in urban settings

Whether they are destinations, transit points, or origin points, or a combination thereof, cities are transformed by migration. For destination and transit cities, rapid urbanisation presents a major challenge to infrastructure and services, while also increasing risks for urban displacement. Particularly, for large cities in the Global South, this poses a major challenge to managing climate impacts and simultaneously ensuring the well-being of marginalised groups, including immigrants (internal or international), owing to low public finance and already overwhelmed infrastructure and services, for example. Cities such as Freetown, Dhaka, and Bogotá are all experiencing rapid growth and in-migration to the capital cities. The rapid growth of these cities places stress on existing infrastructure and services. To meet growing urban needs, especially in disaster-prone cities, forward-thinking urban planning becomes a critical feature in order to avoid loss and damage caused by climate change. In-migration transforms the urban landscape, particularly when people contribute to urban sprawl, blurring the lines between urban, peri-urban, and rural areas. Transit cities, too, are transformed by 'passing' migration. As populations may not intend to settle in the long-term, they rarely invest in permanent shelter.

In- and transit-migration affect the physical surroundings, but they also affect the social and economic landscape of urban areas. Different economic studies have shown that migrants were key contributors to the economy in cities, with a higher level of entrepreneurship than the native-born population (Naudé et al. 2017). They often close skill gaps and labour shortages in urban labour markets (Docquier, Machado and Sekkat, 2015). However, migrants tend to be younger than the native population, which raises specific challenges for the labour market, as youth unemployment tends to be much higher amongst migrant populations (OECD 2018).

In cities, migrants tend to gather according to their ethnic origin and/or their place of origin. While this can create ethnic neighbourhoods valued for the social and cultural contribution, it can also lead to challenges related to social cohesion and integration. This is the case in some European cities, but also in Africa, where xenophobic tensions and clashes have been reported amongst urban migrants of different ethnic origins (World Economic Forum 2017).

While most attention is afforded to how cities are transformed by in-migration, as is the case for the cities within this study, it is important to note that cities are also transformed by the departure of their inhabitants. In New Orleans

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following Hurricane Katrina, one third of the population of New Orleans has never returned to the city. Migrants – from central America in particular – finding work opportunities due to the reconstruction of the city, has settled in the area (Gemenne 2010).

In some cases, urban populations engage in international out-migration. Small- and mid-sized cities witness the movement of populations to other urban centres out of and within their countries as well. Saint-Louis, Senegal, a city of some 280,000 inhabitants, has seen its fish stocks devastated by foreign trawlers and the impacts of climate change. Its fishers now rely greatly on migration to Mauritanian cities, principally Nouakchott and Nouadhibou. There, they transform the ethnic and economic landscape of the destination cities, but also contribute to transformations in Saint-Louis. Through social and financial remittances, migration acts as an adaptation strategy for migrants and their families back home. Migrant-sending households are able to diversify their livelihoods and stimulate the local economy, but also construct new houses away from the threat of coastal erosion (Zickgraf et al. 2016; Zickgraf 2018). Furthermore, urban return or circular migrants can bring new skills and knowledge back – i.e. social remittances (Levitt 1998) – that assist with adaptation in cities of origin, e.g. commuting practices, urban agriculture techniques, and entrepreneurial activities. Such transnational or translocal practices between rural and urban, or urban to urban areas, then act as migration-stimulated adaptation strategies (Tacoli 2011). Many city and national governments alike are acutely aware of the remittance potential of migration. In Dhaka, international out-migration is seen as a way to relieve pressure on the city, but also as a development strategy.

## 5.1 Vulnerabilities of migrants in cities

Unmanaged and unplanned urban migration can contribute to infrastructure, housing and service shortages in cities, as well as aggravate financial problems and service delivery challenges for the responsible local authorities and institutions (IOM 2015). Whenever the capacity of urban authorities and markets are exceeded and/or insufficient to provide adequate employment, water and sanitation, decent housing, efficient transportation, and quality and accessible health care, some segments of the urban incoming populations will be marginalised (IOM 2015). When migration challenges are unmanaged or poorly managed in cities vulnerable to climate change it can cause effects where migrants become especially exposed, particularly when urban climate action is unjust and non-inclusive. This is particularly the case for those whose migration has been prompted by the impacts of climate change, as they

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will often come from impoverished regions, with few material resources with which to establish themselves – and in some cases will not benefit from specific legal protection (unlike conflict refugees).

Furthermore, it should be noted that migration continues to happen toward zones of environmental risk, such as coastal cities (de Sherbinin et al. 2012, Geddes et al. 2012; Rigaud et al. 2018). People are often moving to areas that afford better income-generating opportunities, but which may be exposed to other kinds of risks (Findlay 2011).

When migration and urbanisation outpace the capacity of urban infrastructure and services in cities exposed to climate change, migrants are then left vulnerable to the impacts of climate change and less able to cope with those impacts. Marginalised migrants are particularly vulnerable when they settle and live in informal settlements. Globally, there are an estimated 880 million people living in informal settlements, many of which are highly vulnerable to climate change. Studies indicate that migrants are disproportionately represented among the urban poor in informal settlements (Hoang et al. 2013; Kyed 2019). This disproportionate representation can have a number of reasons such as, shortage of affordable housing, lacking legal status and needing to stay out of view of local authorities, or that family members or other social contacts already settled in these areas (Kyed 2019). Poor living conditions can exacerbate health risks and urban poverty: In Accra, Ghana, 92 percent of migrant households living in the Old Fadama slum have no ready supply of water or access to toilet facilities and migrants in poor neighbourhoods pay more than their native counterparts for services (Awumbila et al. 2014). Between 1 million and 2 million migrants reside in the slums of Nairobi without proper access to sanitation or affordable clean water (Awumbila et al. 2014). While life in informal settlements may be difficult for any number of reasons, climate change and disaster risk compound their vulnerability, through intensifying floods and landslides, for example (Bolin 2006; IOM 2015). For example, in Buenos Aires, such settlements are often in low-lying areas prone to flooding, while in Rio de Janeiro, they are located on hilly areas prone to landslides and mudslides (Warn and Adamo 2014). On top of the higher exposure of informal settlements to disasters, migrants often live in unsafe buildings, unable to withstand the impacts of climate change (Wisner et al. 2004). They then end up suffering disproportionately when disasters occur (de Sherbinin et al. 2012).

Urban poverty and inequality play a major role in the distribution of disaster displacement risk (IDMC 2019). Low socio-economic status significantly affects migrants' adaptive capacity, as they will typically be less able to put into place short term coping measures when disasters strike, such as evacuating or

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protecting assets from associated loss and damage. In cities such as Dhaka, Mumbai and Kolkata, high levels of exposure to hazards such as floods combine with high levels of vulnerability, poor education and limited access to critical infrastructure and livelihood opportunities (IDMC 2019). Their vulnerability to disaster can also manifest in their evacuation responses. Migrants can be reluctant to evacuate in the face of a disaster for fear of losing their income, their job, or their home, or return prematurely in the immediate aftermath. While this may also be the case generally for the urban poor, adding to these challenges, language barriers, a lack of knowledge of local contexts and previous environmental shocks, discrimination, insufficient community participation and representation, and weak social networks can alter their perception of environmental risks and hinder migrants' access to timely, quality and complete information before, during and after disasters occur (Adeola 2009; IOM 2015). These limitations can push migrants to make hazardous choices. For example, Warn and Adamo (2014) argue that a lack of personal experience with mudslides may lead migrants from the northeast of Brazil to erect precarious constructions on slopes above the favelas in Rio de Janeiro. These constraints can also reduce people's abilities and willingness to seek and receive relief in the wake of disasters. When documentation is a prerequisite for receiving emergency aid and recovery assistance, undocumented migrants or migrants who have lost their documents during a disaster face difficulty accessing relief (Donner and Rodríguez 2008). Even when this is not the case, the fear of deportation may outweigh their need for formal support for those undocumented, exacerbated when there is a lack of trust in local officials (Enarson and Morrow 1997; IOM 2015). Recovery also takes longer when people do not have financial resources to rebuild or move elsewhere (IDMC 2019).

Limited employment opportunities and livelihood insecurity, weakening or reduced access to social services, poor housing conditions, and worsening crime and other social conditions contribute to the increased vulnerability of migrants to environmental stresses and shocks (Frayne 2004). A lack of political participation limits the abilities of migrants to voice their concerns and impact urban climate action. For all these reasons, the impacts of climate change disproportionately affect marginalised urban migrant communities compared to native residents. Furthermore, many migrants will combine different factors of marginalisation, related to their sex, age or ethnic origin. This results in intersectional vulnerabilities that need to be considered in relation with one another – populations with a 'lack of visibility' are often amongst the most vulnerable to climate change, including migrants, women, ethnic minorities, older persons, persons with disabilities, and children (McGill 2016). Cities' efforts to integrate migrants into their communities, therefore,

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have a direct impact on their vulnerability to the impacts of climate change. When urban migration and settlement is well-managed and people are well-integrated economically, socially, and civically, cities can enhance the capacity of incoming populations to cope with and adapt to the impacts of climate change. In the global South however, resources to manage large-scale migration, migrants' integration or rapid urbanisation are often lacking.

In the forthcoming section, some opportunities and obstacles for climate policies that would be more inclusive of migrants, and for integration policies that account for their vulnerabilities to climate change are examined.

## 5.2 Opportunities for cities and migrants in cities

Climate objectives and migration and asylum policies are typically set by national governments, but it is often at the local level, however, that the actual issues are dealt with. When it comes to climate policies, cities can promote bicycle use or better housing renovation to reduce their greenhouse gas emissions, as well as adaption strategies such as flood control infrastructure or evacuation drills. Though they are not in charge of migration- or border control, they can implement a wide range of integration policies, from language classes to social housing.

Regarding migration policies, most countries tend to try and discourage rural-to-urban migration, with policy interventions that seek to maintain rural livelihoods (OECD 2018). In India, for example, the *Mahatma Gandhi National Rural Employment Guarantee Act*, which has been implemented in 2006, provides rural population with a replacement income for up to 100 days, when they would otherwise be unable to sustain themselves through agriculture. This policy seeks primarily to maintain rural populations' livelihoods and avoid a rural exodus. Most countries worldwide are keen to avoid such rural exodus, while only three countries – China, Sri Lanka, and Poland – actively seek to encourage migration to urban centres, primarily for administrative reasons and to reduce infrastructure costs (UN Population Division 2019). This means that in an overwhelming majority of countries, especially in the global South, rural-to-urban migration happens despite policies aimed at maintaining people in rural regions.

In many contexts, cities lack measures to protect the civil rights of migrants or ensure their political participation. Until recently, some countries such as India or China severely restricted the portability of social benefits for internal migrants (Asian Development Bank 2012). Furthermore, many internal migrants do not enjoy voting rights in municipal elections, and their political participation can remain limited. In Beirut, a city that is home to more than 1,5

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million migrants and refugees, those remain excluded from the formal labour market and have no access to private property. Even labour migrants working under the formalised Kafala system (a system of sponsorship by the employer) are not protected by labour laws and depend entirely upon their employer.

For these reasons, climate action with a focus on climate vulnerabilities can foster the integration of migrants and provide them with a form of 'right to the city', i.e. consider them as full-fledged residents of the city, on par with the native residents. For example, focusing on climate action in marginalised neighbourhoods is an efficient way to advance the integration of their residents, and vice versa: fostering integration can also support adaptation and resilience, especially in marginalised neighbourhoods. This can create a virtuous circle where the objectives of climate action and integration mutually advance each other. For example, allowing migrants to partake in the decision-making process on adaptation policies can create positive feedback loops (Gemenne et al. 2020)

For this, it is useful that migrants enjoy economic, social, and political rights at the city level that do not depend on the national scale. For example, New York City has implemented a municipal ID in 2015, called IDNYC, which provides a form of documentation at the city-level so that the around 500,000 undocumented migrants who live in New York can exercise their rights. Sao Paulo also gave voting rights to migrants and refugees, who are now represented in the city council.

Second, the process of climate action planning, by including all residents regardless of status, and based on their vulnerability, can empower migrants, and give them political legitimacy. It is therefore important to include them in participatory policy processes, especially those related to climate action. Since 2000, the French city of Grenoble has implemented a consultative council for its foreign residents, so that their voice can be heard with regard to different policy options, though they don't have the right to vote in municipal elections (at least for non-EU migrants). Since 2014, Paris has dedicated 5 percent of its investment budget to participatory budgets that allow all residents to vote for projects of their choice, and many of those projects are climate action projects. The city of Montreal has launched a 2018–2021 action plan called 'Montréal inclusive', which seeks to implement an integration policy with no barriers between native residents and migrants. Such initiatives that seeks to give migrants political legitimacy can help reduce their vulnerabilities and maximise their potential for the transformation of cities.



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Though such initiatives are more present in cities of the Global North, some also exist in the Global South. There's no denying that cities in the Global South often lack the resources to accommodate large influxes of migrants and manage rapid, informal urbanisation, but some have pioneered the integration of migrants through some forms of political participation and community planning. This is for example the case of Freetown, the capital city of Sierra Leone, where planned relocation to face the impacts of climate change is actively discussed and designed with the migrants themselves. Freetown has also built a funicular to connect migrant settlements with the inner core of the city (Gemenne et al. 2020).

### 5.3 Summary

Migration related to climate change ranks amongst the key challenges that cities will face in the coming decades, especially in the global South. Already these cities are confronted with influxes of migrants from rural regions, drawing a rapid and informal urbanisation process. For this reason, climate change and migration are often presented as threats or risks for cities. This section however posits that there is a way to tackle these challenges so that climate resilience and social cohesion can mutually advance and reinforce each other. Participation of migrants to decision-making in adaptation is crucial in this regard, so that adaptation policies focus on marginalised neighbourhoods, which are often highly exposed to climate impacts.

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## 6. The potential of remittances

Remittances rank amongst the key impacts of migration for the community of origin: they constitute today the single largest flow of capital towards developing countries, with a total estimated at US\$ 702 billion in 2020. Yet, despite the evidence demonstrating the utility of remittances for sending households, many questions remain as to how remittances are reaching the poorest and how they are spent. How, and to what extent do poorer households in areas affected by climate change and other environmental degradation, benefit from out-migration? Admittedly, few studies have explicitly addressed these questions in the context of climate change – or any other environmental disruptions for that matter. This section relies on existent data from external case studies in different regions of the world and the MECLEP data<sup>3</sup> as they speak to the linkages between remittances, environmental change, and poverty.

### 6.1 Household remittance dynamics

On a macro-level, remittances primarily increase in the event of natural disasters in poorer countries. Yang (2008) found that hurricane exposure leads to substantial increases in remittances amongst the poorer half of his sample, and a slightly offsetting decline in bank and trade-related lending –

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<sup>3</sup> The MECLEP project was a major research project conducted over the period 2014–2017, which sought to assess the impacts of migration for the adaptive capacities of the communities of origin, of destination, and of the migrants themselves. The project conducted quantitative empirical research in five countries, all affected by environmental degradations: the Dominican Republic, Haiti, Kenya, Mauritius and Viet Nam. The project was coordinated by the International Organisation for Migration and associated researchers from the University of Liège, the University of Versailles St-Quentin, Erasmus University in Rotterdam, the University of Bielefeld, the UN University's Institute for the Environment and Human Security and FLACSO. Results from the project provide precious insights on the use of remittances in areas affected by environmental changes. MECLEP is one of the very few projects that can present results of a quantitative nature: about 800 households were surveyed in each country. The project was funded by the European Commission (DG DEVCO) under the Thematic Programme on Migration and Asylum (TPMA). The data was collected through a household survey that was administered in five of the six countries of the project. Between 1,200 and 2,000 surveys were administered by local enumerators in each country, to both migrants and their communities of origin and of destination. These sites were chosen in each country following a national assessment of the climate-migration nexus.

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such a trend was not found in richer countries exposed to hurricanes. What's more, remittances usually remain high for a long period after the disaster.

The source of remittances also matters for disaster preparedness – based on household surveys, Mohapatra et al. (2012) suggest that international remittances from high-income countries tend to be more important in enhancing ex-ante preparedness compared to those from other developing countries or domestic remittances, most likely owing to their greater magnitude. This has implications for poverty since many poor households cannot afford international migration, particularly when they are affected by drought and other environmental pressures on livelihoods and the very assets used to migrate (Foresight 2011; Black and Collyer 2014).

In fact, most studies focus not on the macro-level but on community and, primarily, household level impacts of remittances. In response to rainfall shocks in the Philippines, Yang and Choi (2007) found that for households with members abroad, remittances from migrants abroad decrease when the income of household increases, and vice versa. Acting as an insurance safety net for migrant-sending households, roughly 60 percent of exogenous declines in income are replaced by remittance inflows from overseas migrants. However, to address the framing questions, one must distinguish between poor(er) migrant sending households and non-migrant sending households. Even for the former, those able to engage in migration, financial remittances to poor migrant-sending households are not guaranteed. It can be the case that the migration occurs in precarious conditions, no surplus income is generated, or employment cannot be found, or because of debt accrued through the migration process. For example, in northern Senegal, even the poorest male fishermen had the possibility to migrate legally to Mauritania to fish seasonally because migration and equipment costs were fronted by Mauritanian factories. However, the debt accrued limited any short-term ability to send back money to relatives at home. Only the wealthier fishermen could avoid incurring debt and thus could maximise remittance potential in Mauritania (Zickgraf et al. 2016).

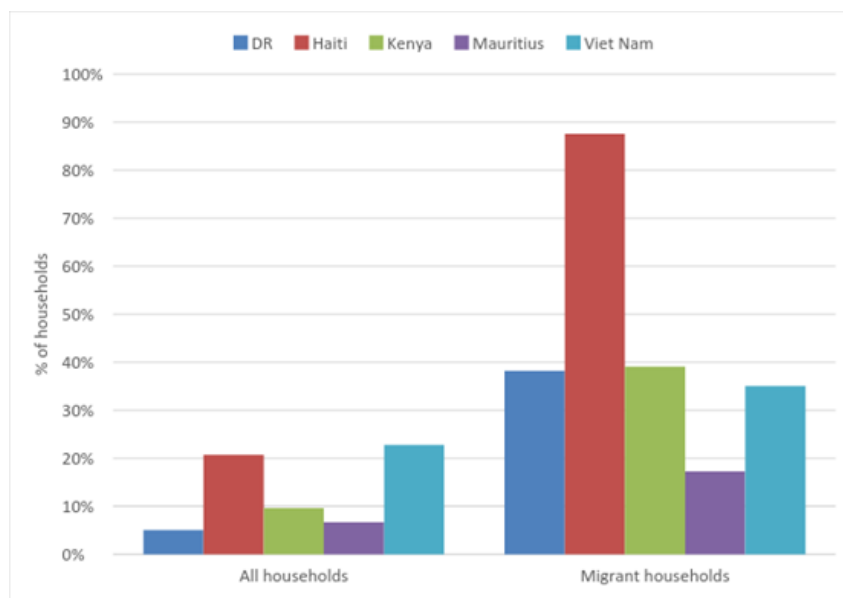
The MECLEP data shows that not all migrant households<sup>4</sup> receive remittances. In Haiti, close to 90 percent of migrant households receive remittances, making up more than 20 percent of the total households of the

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<sup>4</sup> In this specific project, a 'migrant household' was defined as a group of persons who share the same living accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food, and whose one or several members is (are) migrant(s). This definition slightly differs from the commonly used definition, and was used for the sole purpose of the MECLEP project.

country. In the other countries studied in the MECLEP project however (Dominican Republic, Kenya, Mauritius, and Vietnam), the share of migrant households receiving remittances is about 35-40 percent. And in a more developed country like Mauritius, this share drops below 20 percent - less than 10 percent of the total households.

Figure 1 Share of households receiving remittances<sup>5</sup>



Source: MECLEP household surveys, 2015; 2016.

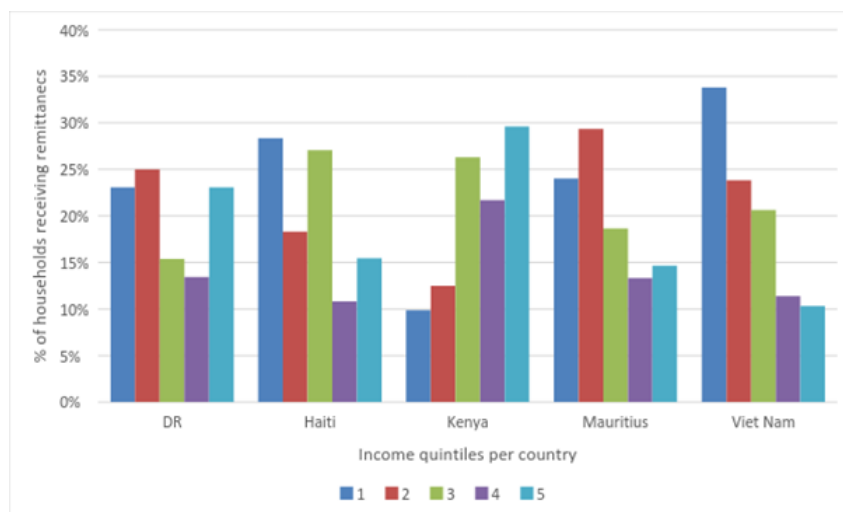
The socio-economic profile of the households<sup>6</sup> receiving remittances plays a pivotal role in the determination of the impacts of remittances. Remittances vary greatly from one country to another, but also from a household to another, making it difficult to make any general statement. Some evidence suggests that they are primarily received by middle and upper-income families, the poorest usually having lower levels of access to the international labour market (e.g. lower human and social capital such as level of education, networks abroad) (Le De et al. 2015). For low-income households, remittances will usually make up a large share of their resources, and will be spent on basic needs. High-income households, on the other hand, are more likely to use remittances for longer-term investments. Again, very significant differences can be observed in the socio-economic profiles of the receiving

<sup>5</sup> The total value of remittances is unknown. 'DR' stands for 'Dominican Republic'.

<sup>6</sup> 'Households' are understood in the meaning of the MECLEP project here.

households. In that regard, the spending habits of the household seem to be more dependent upon the socio-economic profile of the households than on the size of remittances – the latter does not really transform the socio-economic profile of the household.

**Figure 2 Remittances according to socio-economic profile (per income quintile <sup>7</sup>)**



Source: MECLEP household surveys, 2015; 2016.

Viet Nam in the MECLEP project is the country where the largest proportion of households receives remittances. As in Figure 2, the likelihood for a household in Viet Nam to receive remittances decreases with its income. Indeed, the lower-income households (first two quintiles) make up the largest group of households receiving remittances: therefore, those play a pivotal role in the reduction of poverty in the country. This trend is most salient in Viet Nam, where lower-income households tend to send migrants more than higher-income households. Note however that what is discussed here is the share of households that receive remittances, not the share of remittances received, as the poorest households usually receive lesser amounts of remittances.

The opposite trend is observed in Kenya: apart from a deviation in the fourth quintile, the higher the income of a household, the more likely that this household receives remittances. No linear relation is observed in Haiti, the

<sup>7</sup> Quintile 1 represents the households earning the lowest 20 per cent of income and quintile 5 the households with the highest 20 per cent of income.

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Dominican Republic and Mauritius, though low-income households appear more likely to receive remittances than higher-income households.

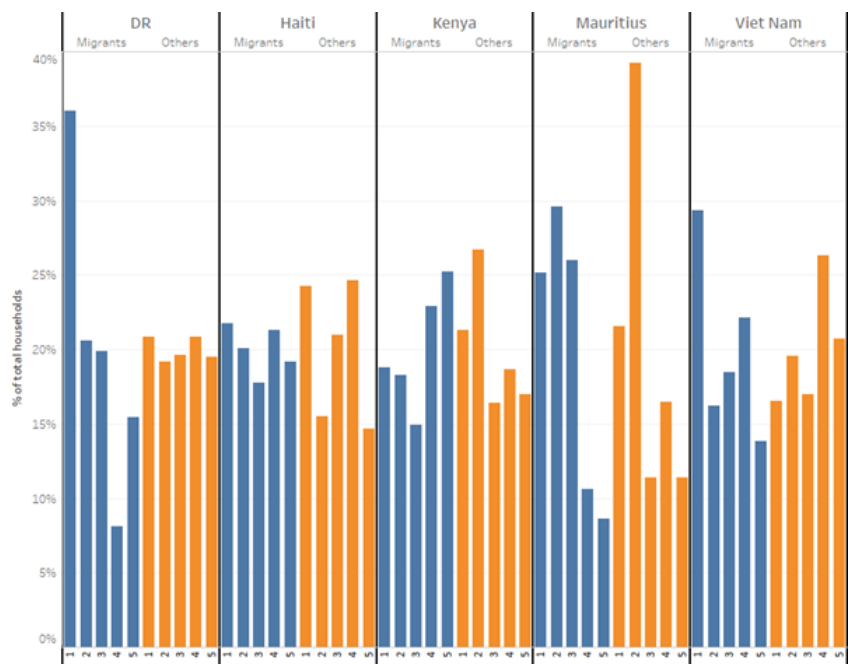
On the basis of these observations, a hypothesis can be put forward that mobility addresses poverty and contributes to the reduction of inequalities in Mauritius, the Dominican Republic, Haiti and Viet Nam, but has the exact opposite effect in Kenya: there, it reinforces the inequalities among households. In the other countries, remittances reduce poverty and inequalities: migration offers the potential to develop other sources of income, part of which are sent as remittances that in turn reduce poverty. However, this hypothesis would need to be tested against the actual amount of remittances received, as remittances might reduce poverty but increase inequality if amount of remittances received increase with the socio-economic status of the receiving household.

This can also be observed in the Figures 3 and 4 on the coming pages, which show income distribution among migrant and non-migrant households, before and after the migration. In Viet Nam, lower-income households make up the largest group of households sending migrants, while higher-income households make up the largest group of households that do not send migrants. The role of migration as a poverty reduction strategy appears clearly in this case: sending a migrant abroad is a poverty-reduction strategy for poor households, and these households will rely on remittances to supplement their income. In Kenya, we can observe the exact opposite trend: rich households send migrants, while poor households do not. This can be explained by the very high costs of migration from Eastern Africa. The KNOMAD-ILO (Global Knowledge Partnership on Migration and Development) migration and recruitment costs survey<sup>8</sup> has assessed the costs of migration for migrant workers in different migration corridors, according to their country of origin. The survey shows indeed that migration from Eastern Africa counts among the costliest.

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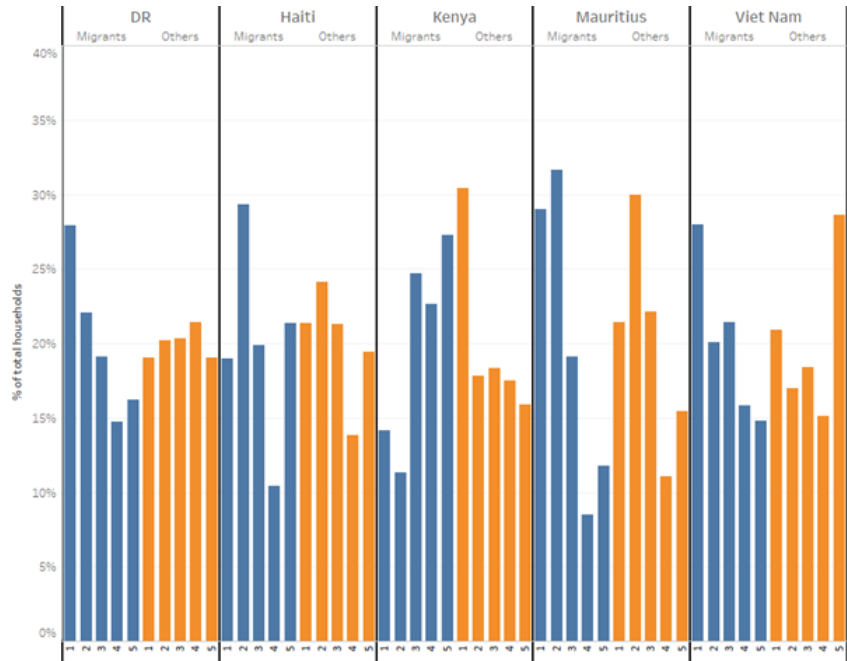
<sup>8</sup> See: <https://www.knomad.org/data/recruitment-costs>

Figure 3 Income distribution among migrant and non-migrant households – before migration (per income quintile)



Source: MECLEP household surveys, 2015; 2016.

**Figure 4 Income distribution among migrant and non-migrant households – after migration (per income quintile)**



Source: MECLEP household surveys, 2015; 2016.

As already observed in Figure 1, Viet Nam is the country where the largest share of households in the country receive remittances (23 % of households), closely followed by Haiti (21 %). When one considers only the households that have sent migrants (migrant households), Haiti tops the list of countries with the largest proportion of households receiving remittances (87.6 %). In Mauritius and the Dominican Republic, only a very small share of households receives remittances – 7 percent and 5 percent respectively. Even when one considers only the households that have sent migrants, the share of those receiving remittances is significantly lower in Mauritius than in the other countries.

When the share represented by remittances in the household's total income is correlated with this total income, some striking features appear.

Remittances make up a significant share of the income amongst low-income households, from 33 percent in Mauritius and Viet Nam to 83 percent in the Dominican Republic. Typically, the higher the share of remittances in a household's income, the more likely the household belongs to a low-income group.



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Apart from Haiti, remittances represent less than a third of the income of high-income households. Overall, the relation between the share represented by remittances in a household's income and the level of this income is largely negative: the lower the share of remittances in a household's income, the wealthier is this household.

## 6.2 Remittances at times of disasters

Empirical evidence explicitly investigating the impacts of remittances on ex-ante preparedness is relatively lacking. In contrast, there is a substantial amount of work on the impact of remittances on disaster relief and recovery. Most studies find a positive influence of remittances on recovery and reconstruction efforts (Wu 2006, Harvey & Savage 2007, Yang 2008, Mohapatra et al. 2012, Le De et al. 2015). In the immediate aftermath, remittance recipients tend to deal more easily with emergency needs, including purchasing food and clothing, accessing relief aid distribution points, or getting health-care treatments. For example, Le De et al. (2015) found that remittances helped balance the lack of agricultural production and counter food insecurity in Samoa after cyclone Evan in 2012 (Le De et al. 2015). In general, empirical evidence suggests that remittance-recipients are more able to deal with emergency needs, such as food and clothing purchases and tending to healthcare and medical needs, and recovered more quickly, for example through household repair and reconstruction and restarting agricultural production than their non-remittance receiving counterparts (Deshingkar and Ayeear 2006, Wu 2006, Le De et al. 2015). In contrast, poorer segments of the population that typically do not receive remittances become even more vulnerable after a disaster as a lack of access to remittances (or little access) can force them to adopt or revert to unsustainable livelihood strategies, such as decreased food intake, spending their savings or sell off assets and land, having to rely on aid from non-governmental organisations, and/or borrow from wealthier neighbours to meet basic household needs (Le De et al. 2015).

When remittance-receiving infrastructure remains intact, remittances tend to increase in times of natural disaster (Yang 2008, Manandhar 2016). Most studies examine remittances amongst countries with relatively large international emigrant populations where remittance infrastructure and channels are well-used to transfer money and other remittance forms between relatives. Evidence from Sri Lanka, however, showed that even infrequent remittance senders (primarily the highly skilled 'diaspora') donated generously in response to the tsunami that hit South and Southeast Asia in 2004 (Deshingkar and Aheeyar 2006). The Haitian diaspora, especially in the

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United States, has repeatedly stepped in after natural disasters with in-kind – such as food packages or appliances – and wire transfers to friends and relatives and through fundraising collective remittances. After typhoon Haiyan struck the Philippines on November 8, 2013 killing over 6,000 people, the country witnessed a spike in remittances from its population overseas. The Philippines already claims some of the highest remittance rates in the world, but reports indicated a 20 percent increase following Haiyan.

There is evidence, in fact, suggesting that migrants abroad react faster than international aid in times of disaster, as migrants might be able to mobilise themselves more quickly than international donors. For example, after the 2004 tsunami, Sri Lankan migrants' assistance filled the void left by a lack of government support in the first month of crisis (Deshingkar and Aheeyar 2006). Similarly, remittance-receiving households in Aceh, Indonesia, recovered more quickly from the 2004 tsunami because of quick action by migrants (Deshingkar and Aheeyar 2006). In a survey of four villages in Pakistan, Suleri and Savage (2006) showed that remittance recipients were able to repair and rebuild their houses more easily than non-remittance receiving households after a 2005 earthquake and that these households more easily accessed healthcare and relief aid. After a tsunami struck Samoa in 2009, Le De et al. (2015) found that 90 percent of disaster-affected households received international remittances, with 72 percent receiving them within a week of the tsunami. Despite the damage to communication networks, devices, and transportation infrastructure, 17.5 percent of households were able to access remittances the very same day, 24.5 percent within one and three days, and 30 percent between three days and one week after the event.

While remittances in the wake of sudden-onset disasters often satisfy short-term needs during times of environmental stress (e.g. prolonged drought), remittances can also reduce the potential loss and damage and the overall household vulnerability in disaster-prone regions (Mandandhar 2016). Although limited in scope, evidence suggests that remittances generated through migration can contribute to ex-ante preparedness in communities of origin by making resources available for house improvements to increase their disaster resilience (Mohapatra et al. 2012). Financial remittances can also be used to support longer-term savings and investments that reduce overall vulnerability including lower incidence of poverty. Households receiving international remittances tend to have more resources to invest in productive assets, better housing materials and means of transportation, improved communication amenities and access to information (Guadagno 2017). Poor households, whether they receive remittances or not, tend to exhibit higher physical vulnerability to slow and sudden environmental disasters since they

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cannot invest in higher-quality building materials or resilient construction techniques, or relocate pre-emptively or reactively evacuate elsewhere (Le De et al. 2015).

Mohapatra, Joseph and Ratha (2012) found that international remittance-receiving households in Ghana and Burkina Faso, independently from their socio-economic status, are more likely to have houses made of concrete as opposed to less disaster-resilient mud and brick houses and roofs made of corrugated iron sheets, cement, concrete, asbestos, slate and roofing tiles rather than roofing material made of leaves. These same households also had better access to communication equipment (e.g. fixed and mobile phones) and electricity, which helped them cope during the onset of a natural disaster by improving information on possible disasters and anticipatory precautionary measures.

In addition to a safety net in the event of disasters, Banerjee et al. (2011) found migrant remittances aided in disaster preparedness amongst households in the Hindu Kush-Himalayas facing water hazards. They found that financial remittances facilitated irrigation facilities in drought-affected areas, allowed recipient households to buy boats, and improved or strengthened housing quality in areas affected by floods.

While much of the evidence supporting the notion that remittances contribute to ex-ante preparedness in disaster-prone areas highlights the improved quality of housing, others question whether this really contributes to long-term resilience. Manandhar (2016) investigates this conclusion through a case study amongst earthquake-affected Nepalese households. The study shows that there is a significant contribution of remittances in building construction practices based on surveys conducted in Kathmandu valley and Jhapa. Remittance-dependent households allocated 20 percent of remittance income received in last 12 months for construction practices, which had a positive impact on the ownership of concrete houses. While not denying that owners of concrete houses are better equipped to deal with earthquakes, the data showed that the likelihood of the remittances contributing to more-resilient housing using engineer and awareness of building code for safe construction tends to decrease. Thus, the study shows that remittances may contribute to better quality of materials, but not necessarily safer constructions in terms of the quality of construction to face earthquakes. Notably, Manandhar points out that these constructions appear to be less driven by disaster risk reduction concerns, and more by the desire to have a 'modern house' (Manandhar 2016: 58). Therefore, it seems difficult to qualify such remittances as intended for adaptation, even though this might certainly be considered as a collateral benefit, as the section below will show.

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## 6.3 Limitations of remittances

Yang and Choi (2006) show for the Philippines that remittances help to compensate for nearly 65 percent of the loss in income due to rainfall shocks. In El Salvador, Halliday (2006) showed that households that experience adverse agricultural conditions also experience increases in remittances that are in the order of 40–60 percent (Halliday 2006). Are these remittances increasing the adaptive capacity of poor migrant-sending households? For poor migrant-sending households that are able to generate some level of remittances they continue to function primarily as a coping mechanism, a survival strategy in both slow and sudden-onset events. Coping is defined in line with the IPCC as, “The use of available skills, resources, and opportunities to address, manage, and overcome adverse conditions, with the aim of achieving basic functioning in the short to medium term” (IPCC 2014). Basic functioning for remittance-receiving households entails the usage of remittances for food, water, and shelter to cope with the impacts of climate change. However, remittances act as only one amongst a range of possible coping strategies for households experiencing environmental stress. Etzold et al. (2016) found that in the case of heavy, unexpected rainfall, the response to floods, crop damage and disruptions in the labour market is dealt with by reduction of food consumption, reducing expenditure on other goods to reallocate to basic food needs, selling assets, seeking to increase income through local employment, as well as utilising remittances for food.

Several studies have demonstrated how money sent back by migrants allow households to maintain a basic supply of food when faced with climate and rainfall variability: three-quarters of remittances to Kurigam District, Bangladesh, where food insecurity is a chronic problem, are spent on food consumption (Etzold et al. 2016). According to one study, Ethiopian households that depend on international remittances faced fewer shocks from food shortages, illness, and drought. They also tend to rely more on their own cash reserves during shocks to food security, and less on selling productive assets such as household assets or livestock (Mohapatra et al. 2012). In Nepal, around 79 percent of remittances are spent on daily consumption, 7 percent to repay loans, 4.5 percent on household property, 3.5 percent on education, 2.4 percent on capital formation, 0.5 percent in new business development, and only 0.6 percent for savings (CBS 2012 cited in Upreti and Shrestha 2017).

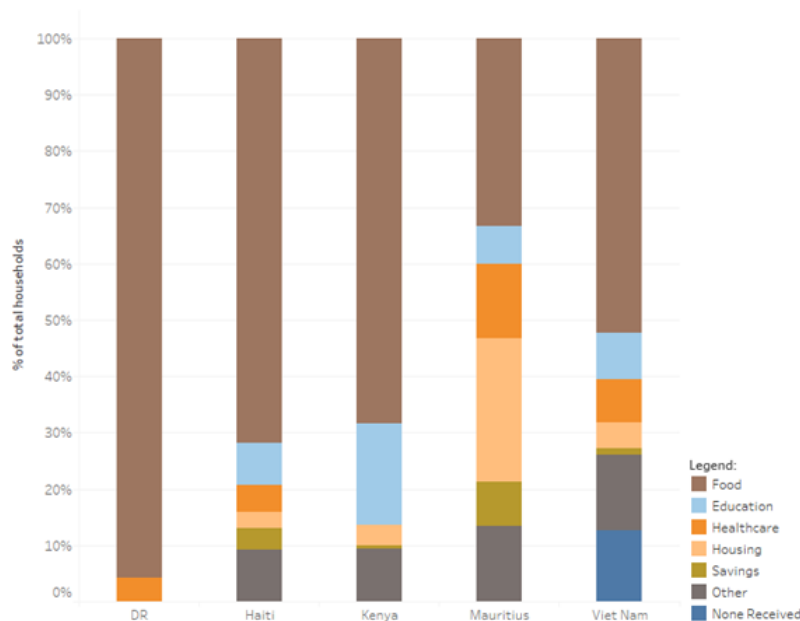
As expected from other case studies, MECLEP confirms that food is the primary use that households make of their remittances. In all five countries, most households spend their remittances primarily on food, from 95 percent in the Dominican Republic to 34 percent in Mauritius. However, a significant share of remittances is also spent on other services such as education,

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healthcare, and housing. What does it say about the linkages between remittances and adaptation? Remittances remain a lifeline for households: they are a key tool for poverty reduction, and for food security in particular. Remittances however also allow longer-term investments: about a fourth of households in Mauritius spend most of their remittances on housing, while close to a fifth in Kenya spend them on education. The potential for longer-term investments could be expanded through specific development programmes, which would seek to maximise the potential of remittances: for example, such programmes could match remittances with development assistance, provided the money is invested in an adaptation project for the community. Supporting the MECLEP data, in northern Ghana, seasonal migration acts as an ex-post coping strategy for poorer households, used to generate income to buffer acute food shortages during the rainy season (Schraven and Rademacher-Schulz 2016).

In contrast, their better-off counterparts were able to use remittances for investments and non-food consumption; therefore, migration had a greater influence on longer-term adaptive capacity rather than short-term coping for the wealthier migrant-sending households. Similarly, in Samoa, poorer households are subject to higher vulnerability because of the delegation of remittances to basic household needs rather than savings to protect against future shocks for ex-ante preparedness, investment in productive assets or education and skill attainment (Le De et al. 2015).

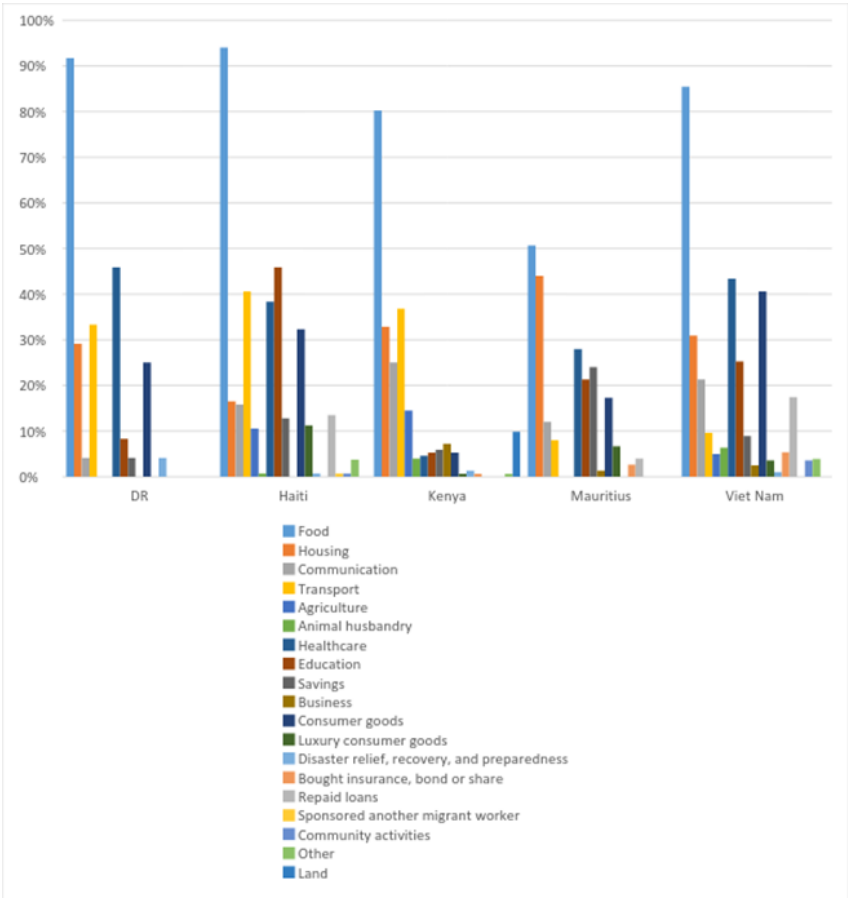
**Figure 5 Items and services households spent most remittances on in the previous 12 months**



Source: MECLEP household surveys, 2015; 2016.

In all surveyed countries, most remittances are spent on food and primary needs, and thus have no transformative impact regarding the socio-economic status of household. Remittances spent on education, housing, or other long-term investment, however, have the potential to go beyond poverty reduction and foster adaptation in the communities of origin of migrants, but they remain very limited. The investment of remittances in business, for example, remains extremely limited – only 7 percent of households use remittances for business investments in Viet Nam, and this percentage is even lower in the other countries. Some households also use remittances for savings: it is even the prevalent answer among a non-negligible share of households in Mauritius and Haiti.

**Figure 6 Items and services households spent remittances on in the previous 12 months (all options)**



Source: MECLEP household surveys, 2015; 2016.

Figure 6 indicates how households spent their remittances – they can of course spend them on different items, which explains that the total for a country can exceed 100 percent. As shown in the figure, households spend more remittances on education than on agriculture in all countries but Kenya. And at the same time, close to 20 percent of households receiving remittances in Kenya declare that education is their primary expenditure for remittances. The MECLEP team put forward the hypothesis that “in case of relatively high costs of education, when spent on education, the bulk of remittances a household receives are used for this purpose. Another explanation could be that only higher education is expensive, which links back to Kenyan households receiving remittances mostly being among higher income groups” (Melde et al. 2017).

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Overall, remittances remain primarily used for immediate poverty reduction. Long-term investments, despite being significant in some countries and sectors, are however far from representing the main expenditure from remittances. These differences in ways remittances are spent depend of course of the socio-economic profile of the household, but also on gender. It is already established that female migrants remit proportionately more of their earnings than men, but they also spend remittances differently: while men spend most of the remittances on consumer items, women are more likely to invest in education (Melde et al. 2017).

## 6.4 Impacts at the community-level

The impacts of remittances are typically analysed at the household level, understandably so considering that most migrants primarily, and often singularly, remit to family or other household members. Considering that many people are unable and/or unwilling to engage in migration, and that even those poor households that do receive remittances are limited in their utility beyond daily needs, are poor non-migrant sending households benefiting in any way from their neighbours' migration? In other words, are there community-level implications for remittances in environmental contexts? Direct engagement of migrants and diaspora members is one way in which communities, including poor households, are able to reduce their vulnerability to environmental shocks, including the impacts of climate change. Water management, health facilities and medical services, education (schools and trainings), food security, resource conservation, and ex-post disaster recovery have all been financed through collective support mechanisms or otherwise supported by migrants and return migrants (Le De et al. 2015, Scheffran et al. 2012, Guadagno 2017). Public and private institutions in home countries have leveraged diasporas' investments and savings to promote risk reduction among other forms of social and economic development.

Diaspora disaster relief and recovery is particularly successful beyond the household level, often owing to social and kinship obligations and shared norm pressures within transnational networks (Brown et al. 2014). Many recovery efforts financed partially or entirely by remittances result in the reconstruction of places of worship, local infrastructure, and other projects that contribute to the recovery and wellbeing of the overall community – including the poor (cf. Le De et al. 2015). However, community remittances are not limited to diaspora disaster relief: for instance, Pacific Island community groups organise regular visits (known as *tere patis*) to the major international destination cities such as Auckland, Wellington, Sydney and Melbourne specifically for the purpose of organising donations (Le De et al. 2015). Such



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sharing norms, pressures and obligations can also act locally between migrant-sending and non-sending households when remittances are sometimes shared with relatives or neighbours struggling to meet basic needs or to finance events such as weddings (Brown et al. 2014, Le De et al. 2015).

Remittances more typically, however, benefit the poor via more indirect pathways. Despite lower to no access to financial remittances, migration can bring indirect benefits to the community at large via both social and financial remittances. In the Hindu-Kush Himalayas, almost 72 percent of surveyed households reported spending the major share of remittances within their own communities, with around 38 percent of recipient households using remittances to finance new home construction or to improving current residences, creating demand for goods and service. Such remittance spending, even when allocated to basic needs or consumption rather than investment, contribute to overall poverty reduction through the consequent expansion of investment and local markets, including for households not receiving remittances (Banerjee et al. 2011, Le De et al. 2015, Guadagno 2017).

At the same time that remittances can provide a safety net for households and communities facing climate change and other environmental disruption via direct and indirect pathways, remittance income may increase economic and social inequality in communities of origin, further eroding social resilience for the poorest households (Adger et al. 2002). The implications of reduced social resilience can have widespread negative impacts, such as the greater risk of unsustainable exploitation of natural resources and agricultural practices, and environmental degradation (Adger et al. 2002), such as the use of coastal sand for ad hoc sandbag defences in Senegal.

Remittances do not necessarily reduce income inequalities in the community of origin even if they result in poverty reduction for some. As Guadagno points out, remittances can, in fact, entrench inequalities in communities of origin by concentrating resources in the hands of more well-off households or leading to currency devaluation and inflation, to the detriment of non-receiving households. Le De et al. (2015) showed that in a disaster context, international financial remittances tend to “increase or at least reproduce both the inequalities and vulnerabilities existing within the community of origin” (Le De, Gaillard and Friesen 2015). This can result in increased economic, political, and social marginalisation of poor non-recipient households, and ultimately in augmented vulnerability to future hazards (Deshingkar and Aheeyar 2006, Guadagno 2017).

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## 6.5 Summary

Remittances appear as the primary vehicle through which migration can reduce the vulnerability of the community of origin, and in particular help them satisfy their primary needs, such as food, at times of disasters. However, the potential for these remittances to foster adaptation remains only partially exploited, as there are only few instances where remittances are pooled together in collective projects, or spent on items with a transformative impact for the community.

On the contrary, empirical evidence tends to show that remittances favour the reproduction, if not the expansion, of social and economic inequalities in communities of origin. This can in turn be detrimental to their adaptation, as unequal societies are often more vulnerable to climate change. However, there are also examples to the contrary, as shown in this section, in which migration has also made a broader adaptation impact in unequal rural society. Overall, remittances often remain a blind spot of adaptation policies, and can in turn exacerbate inequalities as much as they can support vulnerability reduction. Therefore, the articulation of remittances with vulnerability processes appears as a key element to understand how the potential of remittances for adaptation can be unleashed. Remittances are a highly complex process that can produce different effects at micro-economic and macro-economic levels. While they can induce maladaptive effects, they remain also an essential component of the survival and well-being of many.

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## 7. Conclusion

This research overview highlighted the considerable potential of migration for adaptation to climate change. This potential is multifold, and can take different shapes, according to the type of migration or the viewpoint considered. In public debates, migration remains often seen as a failure to adapt, or as a disaster to avoid. Yet empirical realities show a different picture: migration is often used as a form of insurance against environmental risks and can provide additional income and resources to families affected by climate impacts. Furthermore, it can also alleviate demographic pressure on environmental resources. Migration can, however, also bring consequences that are detrimental to adaptation and reinforce vulnerabilities: it can create tensions or difficulties with the community of destination or deprive the community of origin of its workforce. Furthermore, some resources from migration, such as remittances, are not yet fully exploited for adaptation purposes.

The research overview makes the case for a greater attention to be paid to the beneficiaries of adaptation: is migration an adaptation strategy primarily for the migrants themselves, for their community of origin or for their community of destination? Or can it work from the three perspectives at the same time? Depending on the circumstances, migration might reinforce the adaptation capacity of some populations, but reinforce the vulnerabilities of others. Most often, the concept of 'migration for adaptation' focuses on the migrants themselves, but neglects the impacts of migration for the vulnerability and adaptation of the communities of origin and of destination.

In rural regions, migration is often a strategy deployed by households who are exposed to natural hazards, dependent on natural resources and pre-existing vulnerabilities. Yet migration is a very selective process, which is often only available to households able to mobilise sufficient economic resources. Migration is then considered as an investment or an insurance strategy against crop losses. For households without sufficient economic resources however, the migration of others might create a feeling of abandonment, as these households will often be trapped and unable to migrate away from harm. Migration from rural regions is often directed towards cities, where it can put additional pressure on resources, or create additional vulnerabilities, as migrants will often stay in areas highly exposed to climate risks.

Both in the global North and in the global South, migration poses a key challenge to cities. This challenge concerns the access to safe housing, the labour market, or essential services. Migration related to climate change

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ranks amongst the key challenges that cities will face in the coming decades, especially in the global South.

Cities in the global South are faced with significant influxes of migrants from rural regions, with a rapid and often unmanaged urbanisation process ensuing. Though such migration processes are often mooted as a risk for cities, they also present several opportunities for the transformation of cities towards sustainability. In cities, migrants often live in informal settlements – in the global South – or in peripheral neighbourhoods – in the global North. This makes them more vulnerable to climate impacts. Yet there are possibilities, for cities, to use a greater integration of migrants – in decision-making processes in particular – as leverage for more inclusive climate action. In cities, tackling migrant's integration together with climate action, rather than separately, can help achieve objectives for both policies. The participation of migrants to decision-making in adaptation is crucial in this regard, so that marginalised neighbourhoods, which are often highly exposed to climate impacts, are not left out of adaptation policies. It is particularly the case when such adaptation policies involve relocation processes, but other adaptation policies, such as the development of infrastructure or early warning systems, should involve migrants as well.

Remittances are usually presented as a key benefit of migration for the adaptation of home communities. However, the research overview stresses that these resources are mostly used in the communities of origin to fulfil basic needs rather than enhance long-term adaptation capacity. Furthermore, as previously noted, these remittances can also aggravate existing inequalities in the communities of origin if some households are able to benefit from these remittances and others not.

This research overview makes the case for a holistic view of the potential of migration as adaptation, which encompasses not only the migrants themselves, but also both the communities of origin and destination – often respectively in a rural area and in an urban setting. The benefit of this approach lies in comprehensively addressing how host communities and migrants contribute to the adaptation of the community of origin as well as the community of destination. These dynamics can be observed by exploring the creation of new social networks among migrants and between communities as well as through the transfer of knowledge, technology, remittances, and other resources. Finally, in areas of destination, it will be important to assess the modalities through which migration can contribute to the adaptation of the communities. A possible solution is to focus on migration corridors, that is, to assess adaptive capacities in areas of origin along with those of the popular migration receiving areas to which they are linked.

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This research overview argues that it is possible for policy interventions to maximise the benefits of migration for adaptation and minimise the costs for the home communities. For this, several key policy recommendations are made:

1. **Access to climate information should be facilitated**, as migration and adaptation decisions, at the local level, are often made based on perceptions rather than observed changes. In order for households to make informed decisions on migration and adaptation, it is essential that they have access to up-to-date climate information. This implies the development of data collection capacities at the local level and the active dissemination of such information.
2. Remittances can play a key role for adaptation, but their potential remains insufficiently tapped into. **Therefore, it is highly recommended that development policies and disaster recovery policies are better calibrated around remittances, with a view to maximise the potential of the latter for adaptation.** For example, remittances typically increase following a disaster but could be pooled together to fund emergency relief. Too often remittances are ignored in development policies, which can exacerbate inequalities. Remittances could be pooled to fund collective projects improving the reliability of rural livelihoods, and small-scale mechanisms to facilitate such pooling could be set up. For example, micro-insurance schemes in rural settings could prove essential to boost the resilience of households depending on agriculture for their livelihoods. It is also essential to facilitate access to banking services for rural households. Furthermore, skills transfers and other social remittances should be facilitated, possibly through the return of some members of the diaspora but only when security allows. This is the case, for example, of agricultural skills that can help diversify the crops and hence make them more resilient to climate variations. The debate on remittances should not be limited to financial remittances. Furthermore, remittances as a tool to boost resilience should place only a fair amount of responsibility on the migrants themselves.
3. Cities often have a wide array of policy tools at their disposal, and can act even when national governments do not. **In cities, the participation of migrants in decision-making processes on adaptation is important to reduce their vulnerabilities.** This can be done through the creation of a consultative council for migrants, which would give them some political legitimacy, crucial for inclusive climate adaptation.
4. Rural exodus and increased urbanisation happen as young people, unable to make a living out of agriculture, often flock to cities in the hope of

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supplementing their family's income or when poor households move to peri-urban areas from interior, rural regions. Cities are often unable to accommodate these migrants, and such exodus creates a risk of tensions. Furthermore, many migrants live in informal settlements which are often highly exposed to climate impacts and disasters. **Rather than seeking to limit rural exodus, it is recommended to boost the capacities of cities - and of mid-sized cities in particular - to accommodate migration through job markets, education and improved sanitation and health services.** Adaptation to climate change need not be limited to communities of origin, but also focused on adapting destinations and transit points.

5. Food security is a key element of adaptation. A major factor of migration and conflict lies in the diminishing returns of arable land and food insecurity. This situation is likely to be exacerbated not just because of climate change, but also because of the continuous increase of many regions' population. Indeed, food access, and not just food availability, will prove of crucial importance here. **Addressing the root causes of food security, including access to food and not just food availability, therefore needs to be a central strategy to help prevent displacement and conflict.** Climate-smart agriculture could be instrumental in this pursuit of this objective.
6. **Agricultural patterns and techniques will need to be a key element of any adaptation strategy in rural livelihoods.** However, they should not be implemented with the sole view to preventing migration, but rather to addressing forced displacement and the distress that this type of movement brings. As stated before, migration can also be a powerful adaptation strategy in rural areas. Rural communities will be affected by the migration of the youth to cities. In fact, aiming to interpret the relationship between development of rural areas and levels of out-migration as linear and inversely proportional is unfounded by empirical research. This relationship is rather curvilinear and development, at least initially, tends to coincide with rapid increases in migration rates because social and economic development enables and inspires people to migrate. However, since many natural resources dependent communities are not educated nor wealthy, encountering deep challenges in finding employment in urban areas, it is in this respect that the efforts should concentrate.
7. In adaptation plans, migration is often ignored, or remains perceived as a phenomenon to avoid. Yet policy processes increasingly recognise the positive role that migration can play for adaptation, especially in areas with rarefied natural resources. **The development of specific national strategies on migration as adaptation, as well as the organisation of**

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**workshops and capacity-building exercises of this topic, for a wide range of policymakers, would be welcome.**

8. In adaptation planning, little attention is paid to humanitarian situations and security risks compounded by climate impacts, food security and migration. Likewise, disaster preparedness remains little addressed in disaster reduction plans, which increases the risk of displacement induced by sudden-onset disasters. **Countries should integrate a structural response to humanitarian situations as part of their adaptation plans and disaster risk reduction policies, in a consistent and coordinated way.** At the moment, responses to humanitarian situations remain largely reactive, rather than proactive, and most countries rely on foreign assistance for disasters.

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