

# Migrants' perspectives on environmental change and translocal practices in Morocco, Senegal, and the Democratic Republic of Congo

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## Abstract

This qualitative study takes a translocal perspective by considering migrants' views on environmental change, migration decisions and translocal practices in favour of environmental adaptation. This article addresses the following question: To what extent do migrants' perceptions of environmental change in their region of origin influence their translocal practices in favour of adaptation to socio-environmental change? Our data show that while environmental change may not be the primary reason that people migrate, nor do they perceive it as such, their translocal practices may have very concrete impacts in environmentally fragile areas, especially with respect to non-migrants in the place of origin. Most practices (e.g. family economic remittances) are spontaneous and unintentionally adaptive to environmental change. In contrast, collective projects initiated through hometown associations, especially in Senegal and Morocco, often have a more intentional and proactive character, resulting in translocal adaptive socio-environmental dynamics.

**Keywords:** environmental change; migration; perceptions; remittances; Democratic Republic of Congo; Senegal; Morocco

## 1. Introduction

Over the last two decades, empirical research on environmental migration has focused on understanding the extent to which sudden and/or slow-onset environmental change—including climate change—acts as a driver of human mobility (Morrissey 2009; Piguët, Kaenzig, and Guélat 2018; Ferris 2020; İçduygu and Gören 2023). Studying the nexus between environmental change and mobility, a growing number of scholars and policymakers have framed migration as an adaptation strategy. Such discourses suggest that migration can reduce population pressures and result in knowledge transfer and remittances, resulting in more resilient

communities in the regions of origin (Gemenne and Blocher 2017; Entzinger and Scholten 2022).

In this field of research, most migration patterns are studied at the national level, while only a relatively smaller group has focused on international migration (Veronis *et al.* 2018; Piguet 2022). Moreover, little empirical research has been done on the feedback processes that are the result of international migration and what types of practices are perceived to have positive effects on adaptation strategies in communities of origin affected by environmental change.<sup>1</sup> This is because the links between environmental perceptions, including climate change, and motivations for translocal practices have only very rarely been studied explicitly (e.g. TransRe project 2014–2018, see Greiner, Peth, and Sakdapolrak 2015; Van Praag *et al.* 2021; Ou-Salah, Van Praag, and Verschraegen 2022). We assume that international migrants will consider environmental change in relation to their translocal practices in at least two contexts: (1) when environmental change constitutes one of the main direct/indirect causes for their move; (2) when they consider it important to secure people's livelihoods in the region of origin. Therefore, this research also retrospectively investigates the role that perceived environmental factors played in the participants' migration decisions and trajectories.

International migration decisions and translocal practices are not undertaken and conducted solely by the individual migrant, but collectively through household and community social mechanisms (Levitt 2001; Binaiša 2011; Carling 2014; Entzinger and Scholten 2022). At the household level, some people leave so that others can stay and, conversely, some people stay so that others may leave (Zickgraf 2018). Migration experiences and practices occur in a translocal social space, implying that analyses should not focus exclusively on migrants as isolated individuals or groups (Binaiša 2011). Rather, studies should include an understanding of how migrants are connected through the social networks they sustain across locations (Steinbrink 2007; Greiner and Sakdapolrak 2016; Schöfberger 2017).

Making use of a translocal perspective not only allows us to examine how people navigate and stand between different worlds, as well as create communities across borders (Levitt 2001), but also how these overlap, with resources and ideas being shared between people and groups (Greiner and Sakdapolrak 2016; Sakdapolrak *et al.* 2016; Entzinger and Scholten 2022). Therefore, this research adopts a translocal perspective, interviewing migrants living in Belgium who originate from select areas vulnerable to environmental change in Morocco, Senegal, and the Democratic Republic of Congo (DRC), with the aim of understanding the translocal dynamics of their migration relative to non-migrants still living in these regions. Focusing on three migrant groups in one specific country is relevant to an understanding of how transnational practices can contribute to increased social resilience and climate adaptation in the region of origin. Each group has their migration history and specific migrant community composition in terms of education, profession and transnational ties, as well as dealing with unique environmental, developmental, and political discourses in the region of origin (Hut and Zickgraf 2021). This could shape the specific perceptions of migrants with respect to environmental change in the region of origin and, consequently, their transnational practices. Therefore, this article seeks to answer the following research question: To what extent do migrants' perceptions of environmental conditions influence their translocal practices? In other words, to what extent do migrants originating from environmentally fragile areas act in favour of climate adaptation and social resilience through their translocal practices?

Using this translocal approach in the field of environmental migration studies is innovative, as the causes and impacts of migration remain overwhelmingly treated as separate objects of inquiry (McLeman and Gemenne 2018). We argue that by reconciling the fields of study of migration drivers and migration impacts (at both origin and destination), we can more adequately and comprehensively capture the *complexity* and diversity of environmental migration (Ferris 2020; Van Praag *et al.* 2021; Ou-Salah, Van Praag, and

Verschraegen 2022). In doing so, we can also establish the links between migration causes and impacts. Instead of focusing on environmental change as a *driver* of migration, we seek to uncover the weight of environmental factors—among social, political, economic, and demographic factors—in shaping migrant remittance practices and their impacts in the country of origin.

### 1.1 Conceptual framework

This research uses a 'migration as adaptation' approach (Gemenne and Blocher 2017) and, based on insights gained from the Foresight Report (2011), we aim to understand translocal practices and dynamics and their consequences for social resilience in contexts of environmental change. The Foresight Report (2011) identified five key factors—social, political, economic, environmental, and demographic—that overlap and interact with each other in influencing human mobility.<sup>2</sup> When studying environmental migration, the environmental factors should not be isolated from other migration factors, but rather analysed so as to understand their relative weight in decision-making, trajectories and translocal practices, among other aspects (Van Praag 2023b).

This article starts from and acknowledges this broad, encompassing view on migration. The 'migration as adaptation' approach, which has emerged in the last decade, contributes to a more optimistic framing of migration by enabling a renewed focus on the positive outcomes of migration. It seeks to present migration not as a failure to adapt and an option of last resort, but rather as a deliberate strategy to adapt to environmental change and to improve one's life and that of one's relatives or community of origin. Instead of presenting migrants as 'powerless victims' of climate change, it portrays them as 'positive agents of change' (cf Grabowska et al. 2017), including 'adaptation' to socio-environmental change (Lietner and Durand-Delacré 2021). As such, the migration as adaptation approach implies a positive relationship between migration and the adaptation process, involving anticipation and planning (Vinke et al. 2020: 628).

Some authors have pointed out that migration may lead to a 'triple-win' outcome: for the migrants themselves, for their communities of origin and for their communities of destination (Gemenne and Blocher 2017). In this view, migration allows migrants to leave a hostile environment and contribute to diversifying livelihoods in their communities of origin, with the latter benefitting from various types of remittances, which results in more social resilience. Within the context of environmental mobility, this form of social resilience allows social actors to better cope with adversities, to learn from past difficulties and incorporate this knowledge into future actions, as well as to develop institutions that enable and guarantee individual welfare (Keck and Saksdapolrak 2013). In turn, migrants' destination communities benefit from both the cultural and economic contributions of migration. However, it remains unclear to what extent this approach leads to adaptation in practice and how migrants contribute to and perceive their actions in terms of climate adaptation.

The literature has presented remittances as a translocal economic relationship in which income, investment and capital are transferred from migrants to the household left behind (De Haas 2006). These economic exchanges have attracted extensive interest from governmental actors and institutions (e.g. the European Commission and the World Bank; Kapur 2005) at the expense of social exchanges, thereby concealing crucial aspects of the transformative qualities of migration (Levitt and Lamba-Nieves 2011). Non-economic, social remittances are also relevant in the context of environmental mobility and adaptation/resilience, including the effects of social networks and knowledge transfer on environmental change and adaptation, which may result in translocal social resilience. Taken together, different types of remittances lead to better coping, adaptive, and transformative capacities (Gemenne and Blocher 2017; Saksdapolrak 2018). Assessing the scope of these various remittance practices will allow us to understand how migrants can contribute to such capacity building in their regions of origin. In this article, using a comparative approach, we aim

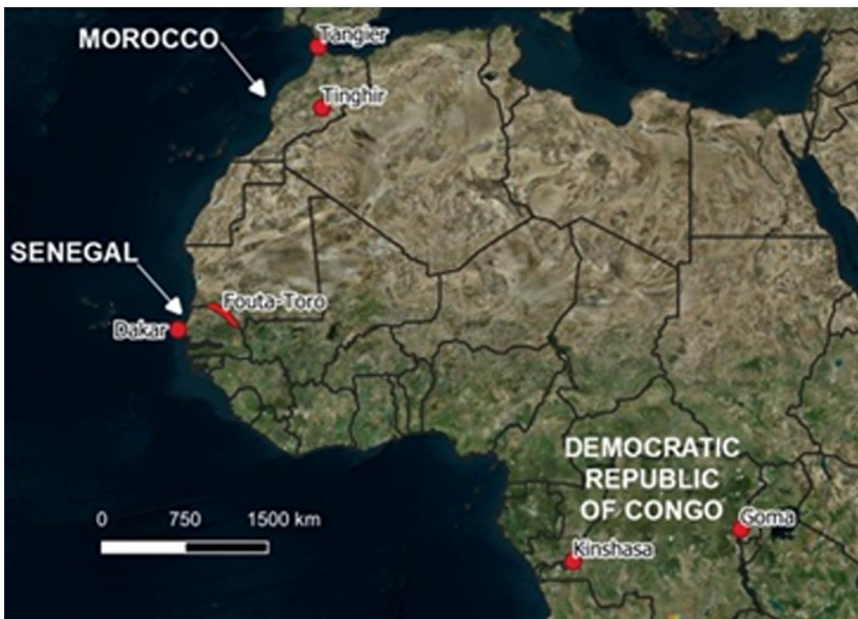
to understand how migrants themselves perceive environmental change in their regions of origins, and how their various remittance practices contribute to building resilience against risks related to environmental change.

## 2. Methods

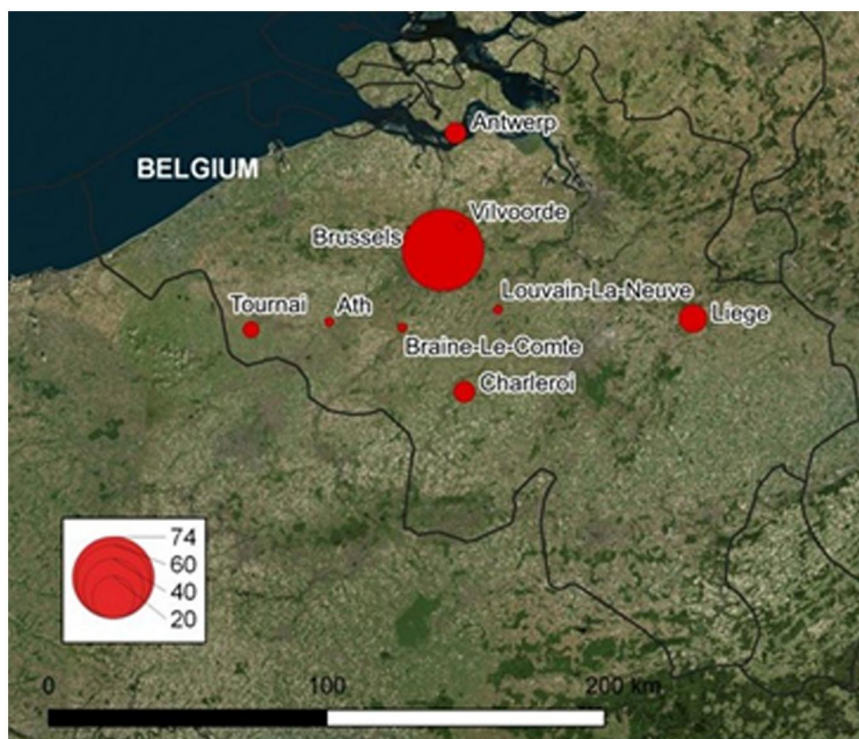
### 2.1 Case study: migrant groups living in Belgium

This study focuses on one immigration country, Belgium, and three migrant groups coming from specific regions in Morocco, Senegal and the DRC. The number of migrants in these groups are relatively high in Belgium (Myria 2022), and their regions of origin are all dealing with the consequences of climate change (e.g. IPCC 2023). Furthermore, selecting several migrant groups allowed us to apply a more translocal approach and further assess the translocal practices that may have contributed to social resilience when confronted with environmental change.

The data collection was part of a larger research project that focused on translocal practices between migrants in Belgium and households in their regions of origin that had family overseas, thereby including both mobile and immobile individuals. For this larger project, we used a qualitative, multi-site approach, in which fieldwork was conducted in different locations in Morocco (Tangier and Tinghir), Senegal (Dakar and twelve villages in the northern regions of Saint-Louis and Matam) and DRC (Kinshasa and Goma) (Fig. 1 below), as well as in Belgium (Antwerp, Brussels, Ath, Braine-le-Comte, Louvain-la-Neuve, Vilvoorde, Liege, Charleroi, and Tournai) (Fig. 2 below). This choice was based on long-standing migration flows between these countries—and especially some regions—and Belgium, often further strengthened through chain migration, their exposure to different types of environmental change and existing development partnerships with Belgium. These migrants live across the three communities in Belgium, each with their distinct migrant integration policies. Since migration policy is a federal responsibility, in our study, no differences were found across migrants living spread in Belgium. While the data analyses



**Figure 1.** Field work locations in Morocco, DRC, and Senegal.



**Figure 2.** Field work locations in the destination country Belgium.

were conducted in the context of this broader project, for this study, we only focus on the interviews conducted with migrants originating from these countries who are currently living in Belgium.

## 2.2 Data collection and analysis

The study targeted individuals from each selected country of origin, regardless of their legal migration status. Respondents were recruited using both purposive and snowball sampling strategies. Sampling criteria included: (1) originating from one of the above-mentioned localities or having migrated and lived there (2) being over 18 years of age, and (3) residing in Belgium. Between 2017 and 2021, the research team (made up of Belgium-based researchers affiliated to three different universities) conducted a total of 109 in-depth semi-structured interviews with Moroccan ( $n = 24$ ), Senegalese ( $n = 60$ ), and Congolese ( $n = 25$ ) migrants (Table 1). All interviews were transcribed verbatim, coded manually and pseudonymized to guarantee the anonymity of respondents.

While a similar qualitative methodology was used to study both migrants and non-migrants in all the study locations (see Lietaar and Durand-Delacre 2021), this is not a comparative article *per se*. While the different researchers involved in the project used a common qualitative approach, different sets of methods were mobilized and used. This approach highlights variations across different communities (e.g. between groups with different socioeconomic backgrounds, etc.) based on a set of similar guiding questions and contextual elements related to mobility and/or to environmental change. During our interviews, we first asked the participants to discuss their living conditions, professions and the socio-political and economic context. Related to this theme, we asked them to describe the climate in their region of origin, how it had changed over time and how it had affected

**Table 1.** Sample overview (fieldwork in Belgium).

Data from fieldwork conducted in Belgium			
Country of origin	Morocco	Senegal	DR Congo
Total interviewed	24	62	25
Total interviews in Belgium	111		
Female/male	39 women/70 men		
In-person/online	17 in-person (Brussels, Liège); 10 online	62 in-person (Brussels, Antwerp, Charleroi, Tournai, Liège)	22 in-person (Brussels, Liège, Ath, Braine-le-Comte, Louvain-la-Neuve, Vilvoorde); 4 online
Language of interview	French, Arabic	French	French
Female/male	10/14	16/46	14/11
Age variation	20–70	18–73	29–62
Region of origin	Tangier	Futa Tooro	Kinshasa
Total interviewed	12	45	22
		Other	Other
		9	10
		Tinghir	Dakar
		3	7
			Other
			1
			2

people's living conditions. Second, we asked them about their migration decision-making processes and trajectories. Third, questions were asked about living in Belgium, how and whether they contributed to their regions of origin, and whether they were part of translocal or local migrant networks.

### 3. Results

The environmental changes that were perceived were both sudden and gradual in nature, with respondents across the three migrant communities primarily citing erratic rainfall (leading either to drought or flash-flooding), deforestation and industrial development (leading to landslides, soil erosion or increased desertification), as well as pollution and lack of sanitation. While largely attributing such changes to human activity, most respondents demonstrated that they were aware of the potential adverse effects on their communities of origin (at both household and wider community levels), as well as in other parts of their country. Among other impacts of disasters such as floods and drought, they mentioned water shortages, food insecurity, crop failure, increases in food prices, social unrest, and both internal and international migration.

#### 3.1. Environmental change and migration decision-making

##### 3.1.1 *The indirect role of environmental factors on the migration decision*

Our respondents in Belgium largely confirmed two major previous research findings. First, they confirmed the largely multi-causal nature of population movements. Second, they substantiated claims about the difficulty that migrants have in isolating environmental drivers from other migration drivers that are generally perceived to directly shape migration decisions, such as economic and political factors. Indeed, despite a general acknowledgement and science-based assessment of the causes and impacts of environmental change, our respondents rarely acknowledged such change as a *direct* driver of their migration, even when they and/or their household of origin were directly affected by such change. Rather, the impacts of environmental change on migration were judged as having an *indirect* impact on migration decisions.

For example, several respondents from Kinshasa narrated how the degradation of the natural environment in the capital, combined with other reasons—mainly economic and political—had contributed to their growing discontent and to the decision to migrate to improve their living conditions. Pollution leading to contaminated drinking water, soil erosion, and increasingly frequent flooding were recognized as contributing to the deteriorating quality of life and growing discontent of the capital's inhabitants, which may contribute to the decision to leave the country and, in some cases, not to return to live in Kinshasa. This was the case for André, a 60-year-old Congolese man who had primarily fled DRC for political reasons, and who had arrived in Belgium in 2011:

André: During the rainy season there's a lot of damage in Kinshasa, many floods, even deaths. [...] and all of this is an environmental problem. There are always landslides, whereby the ground collapses in some parts of Kinshasa, a house disappears because the sand moves and then there's a landslide and then the whole house is gone; that happens in Kinshasa.

Interviewer: Would you say that's always existed, or is it something you've noticed recently?

André: No, no, no, when I was growing up—I'm from Kinshasa—this didn't exist. And as time goes by in Kinshasa, we don't see trees anymore, people keep building haphazardly,

even where they're not supposed to, and today we're seeing this problem of landslides and floods, because there are no water pipes anymore.

The same applied for many northern Senegalese migrants, whose migration journey brought them to highly exposed flood-prone suburban areas of Dakar, namely Pikine, Guédiawaye, and Thiaroye. In the Senegalese sample, however, some exceptional cases demonstrated the direct causality of environmental factors in the decision-making process, with some older respondents recalling how the droughts of the 1970–1980s had led them and their families to move to Dakar, highlighting once again the prominence of internal migration in the context of environmental change. As a 62-year-old man originating from the Fuuta-Toro region, who arrived in Belgium at the beginning of the 2000s, explains:

We had to go [and] find alternative income in the cities for a much longer time than before. Many decided to stay, especially in Dakar. Some then moved further in search of new opportunities, to the sub-regional countries and to Europe, for example. [...] Before the 1970s and 1980s, we just worked a few months in the cities; it was even possible to stay in our village and to rely on nature. The fish were numerous and there was better rain for good harvests and for our animals [mainly cows, sheep, goats and chickens].

Indeed, our respondents overwhelmingly regarded environmental migration as an *internal* phenomenon.

### 3.1.2 Emigration as a quest for resources?

Concerning international mobility, most respondents originating from DRC and Senegal considered their emigration above all as a search for financial, social, and cultural resources. Many were unable to support their families and meet their own needs and aspirations in their countries of origin. These aspirations usually concerned certain social goals, such as building a house, getting married, supporting their family or enhancing their life perspectives, all of which were often put under increased pressure by adverse environmental factors. For example, among agricultural households, decreasing agricultural yields had led to reduced income and livelihoods. Many Senegalese migrants in Belgium explained that their parents, who often happened to work in the agricultural sector, were affected by various environmental factors (mainly rainfall variability, unexpected water releases from the local dam, locust larvae plagues, nomadic grazing, etc.), combined with a lack of 'adapted' means of agricultural production, often due to issues with the State institution for development (SAED—Société d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal—National Society for the Development and Exploitation of the land of the Senegal River Delta), resulting in debt and financial issues. Low product prices, discriminatory public policies, financial barriers, and distorted markets were also deemed to increase precarity and thus vulnerability. This led some people to aspire to set up life projects away from their vulnerable rural villages and the agricultural sector. Thus, respondents in Belgium recognized an indirect influence of environmental factors as underlying reasons for leaving their village of origin.

For many respondents across the three countries studied, elements such as pre-existing migration networks, historical migration trends, and cultures of migration were seen to have played a more salient role in their move to Belgium. DRC, Morocco, and to a lesser extent Senegal have a long history of immigration to Belgium, which can be traced back to the 1960–1970s (due to former colonial ties between Belgium and DRC, bilateral agreements for foreign guest-workers put in place after the Second World War between Morocco and Belgium; and linguistic affinities between Senegal and Belgium; Timmerman et al. 2017). Successive migration 'waves' (1960s, 1980s, and 2000s) from these countries into Belgium have resulted in the establishment of strong migration networks and



translocal links between Belgium and the three countries over time, leading to 'cultures of migration' connecting the areas of origin and destination (Massey et al. 1993; Timmerman, Hemmerchts, and Marie-Lou De Clerck 2014). Such cultures of migration consist of a set of shared ideas and beliefs on migration in a particular region of origin, established by feedback mechanisms involving migrants who have left the region. Up to this day, family reunification is the main legal pathway through which Congolese, Moroccans, and Senegalese migrants enter and come to reside in Belgium (EMN 2023).

Although none of the respondents from the three countries identified adverse weather shocks or gradual changes as the major reason for their own migration to Belgium, they did acknowledge that insufficient agricultural revenue (linked to drought and other weather shocks) could affect the livelihoods of agriculture-dependent households and lead to—mainly internal—migration patterns. Environment-related migration was often perceived to be a relatively new phenomenon, which contrasted with previous labour migration trends, especially among Senegalese migrants who had strong rural ties (see quote above). As for Congolese respondents, environmental factors seemed relatively unimportant compared to other factors, such as economic, security, and political instability. Most Congolese and Moroccan migrants reported having not been personally impacted by the effects of environmental change and did not consider it to have affected their own migration aspirations and trajectories. Their migration to Belgium was therefore not directly or primarily attributed to environmental stressors but rather to socioeconomic ones.

### 3.1.3 *Individual, household, and social characteristics*

Respondents' perceptions were largely varied, depending on a set of factors, ranging from educational attainment and personal experience of environmental change and its impact (prior to or after their arrival in Belgium), to professional occupation, age of migration, and/or area of origin (rural or urban). Importantly, such factors were not mutually exclusive and strongly interacted with one another. Educational attainment was found to increase awareness of climate change impacts. In addition, some respondents referred to specific marginalized populations who had a limited adaptive and coping capacity to deal with environmental hazards. For example, Farida (a 46-year-old teacher from Tangier) highlighted the social and environmental vulnerability of nomadic populations she had worked with in the Ifran region; while Samir (a 53-year-old social worker from Tangier) stressed how water scarcity, resulting inflation and unfair political decisions (e.g. water cuts) had led to social unrest in the Rif Valley. This variation was found regardless of the sampling bias (the Congolese and Moroccan samples mainly consisted of educated individuals). The age at which respondents had left their country of origin to migrate to Belgium also played a role in how they perceived these changes to have affected them personally. Our Senegalese sample, for example, which mainly consisted of respondents originating from the northern Fouta-Toro region, who were over forty and had lived through the major droughts of the 1970s and 1980s, demonstrated a strong understanding of the crucial impact of this episode on human mobility in and outside Senegal. As a 41-year-old Senegalese from Doumga Lao, living in Belgium for 12 years, expressed:

I felt that it was a better idea to start new things elsewhere—business or whatever—to be able to provide for myself and my family. My parents suffered a lot because of droughts, and they also didn't want us to suffer the same. They were right because these issues are getting worse and worse ...

We note that younger respondents who had not experienced these droughts also referred to them—albeit less spontaneously—showing how one event can be engraved in a community's collective memory and remain a critical point of reference across generations.

A common finding applying to migrant respondents from all three countries was that households that were less dependent on natural resources to secure their livelihoods were less likely to feel the impacts of environmental change, precisely because of their lower sensitivity and a stronger coping capacity. In this sense, our sample of international migrants in Belgium had usually first moved to nearby towns and cities in the country of origin or to neighbouring countries to study and/or gather the funds required to obtain a visa or pay for their journey to Belgium. These mobile households were usually less vulnerable than immobile ones and became more resilient by adopting translocal livelihood strategies.

Respondents often perceived migration as a risky strategy. Prior to their arrival in Belgium, some migrants saw their living conditions deteriorate on arriving at their intermediate destination, finding themselves, for example, in overpopulated urban areas highly exposed to disaster risks, often unknowingly trading one environmental risk for another. This was mostly observed by the Senegalese migrants and occurred during their move to the cities, especially Dakar. These findings are in line with previous research, in which environmental factors are closely linked to socioeconomic, political, demographic, cultural, and personal factors that either assist or prevent mobility (Laczko and Aghazarm 2009; Foresight 2011).

### 3.2 Translocal practices and social resilience

The perceived lack of relevance of environmental factors in most of our respondents' migration trajectories suggest that their translocal practices are unlikely to be directly aimed at or linked to environmental adaptation. Moreover, most of the translocal practices are only indirectly aimed at increasing the social resilience of the communities of origin, which makes it even harder to include environmental factors. Many practices are oriented towards supporting relatives to cope with immediate adversities and are focused, to a relatively lesser extent, on future adaptation and establishing institutions to guarantee individual welfare (Keck and Sakdapolrak 2013). To fully understand their translocal practices, we distinguish three broad categories, namely maintaining *direct connections* (through physical visits and ongoing communication), *economic* remittances (cash and material transfers), and *social* remittances (Levitt and Lamba-Nieves 2011).

Despite variations in their perceived levels of socioeconomic integration into Belgian society and satisfaction with their current lives, most participants maintained strong ties with their original community, particularly through social media. Additionally, most respondents, either currently or previously, send financial remittances, citing reasons such as family solidarity or religious beliefs. Regular financial transfers, usually sent monthly, were seen as a self-evident, quasi-obligatory step, generally intended to cover certain daily expenses in the household of origin (housing, food, health, education, etc.), unforeseen adverse events (illness, climate shocks), life events (birth, death), or expenses linked to religious holidays and celebrations.

Translocal practices relate to the socio-environmental perceptions of family and other relatives in the country of origin, as well as of migrants in Belgium themselves, especially when the former live in rural areas. The translocal practices of the migrant respondents varied according to their social status, professional activities, age and gender, but also according to the length of time spent in Belgium and their legal status, as well as perceived social pressure to remit. For example, educated Senegalese migrants from higher castes may even take a leading role in their hometown association. As a 41-year-old Senegalese migrant, working as a nurse for about a decade in Brussels, explained:

As my father is the village chief, and because I have quite some contacts in the medical field in Belgium via my job as a nurse, I have some facility to organize things for my village through the development association—even though I am a woman. Most of our activities concern health aspects. That's my thing and I get respected for that.

### 3.2.1 *Social pressure*

Respondents who did not send remittances were generally facing serious economic and administrative hardships due to ongoing efforts to regularize their stay. Many mentioned the pressure they felt on the part of their community regarding remittances, highlighting the contrast between the life that their relatives back home thought they were living and the complex realities of their daily life in Belgium. Yet, despite the personal sacrifices this sometimes entailed, most found it natural—and even obligatory—to assist their family members financially because of the socioeconomic context in their respective countries of origin.

Thus, many migrants experienced social pressure to send remittances. In our sample, the perceived pressure to remit in relation to environmental change in the country of origin seemed to be strongest among Senegalese respondents. In addition to higher levels of poverty in Senegal, Senegalese migrants' family and kin relationships were also more dependent upon subsistence farming (which, in turn, relies heavily on climatic factors) than their Congolese and Moroccan counterparts. Nonetheless, many respondents across the three samples referred to episodes of drought that periodically affected food prices (and therefore the economic situation of households) or led to water shortages, impacting access to drinking water. This was the case for Farida (46, from Tangier), who explained:

... [drought affected] purchasing power, food also became very expensive. Our father often explained the situation to us. Sometimes it's difficult because there's always an increase ... well, on bread, sugar, etc, basic food. There were difficult times in Morocco and even in Tangier, especially when it wasn't raining, so there was this problem of food.

This quote is illustrative of the multiple ways in which slow-onset environmental change has an impact on people's livelihoods.

### 3.2.2 *Social remittances*

Social remittances, or non-material remittances—which correspond to the intangible benefits of migration, such as networks, transfers of knowledge or know-how—were also found to be extremely relevant to direct or indirect adaptation strategies. For example, some diaspora members contribute to improving the resilience of their communities of origin through the provision of new skills, which sometimes materialize through collective engagement. Thus, various associative projects initiated by members of the diaspora had been set up in the different countries studied. These could involve organizations designed and set up using the local knowledge and influence of local people combined with insights and resources from migrants. These projects aimed to reduce migration by making local investment more attractive, using high-tech information and tools such as solar panels and innovative agricultural methods (e.g. Scheffran, Marmer, and Sow 2012).

Social remittances, including political remittances, are more difficult to detect and elicit from interviews. For example, Gilles, a 33-year-old student from Kinshasa, who came to Belgium as part of his studies in environmental management, was confident that the skills he acquired in Belgium would allow him to contribute to improved disaster risk reduction in DRC:

Gilles: Because I'm an environmentalist—I'm studying risk and disaster management here [in Belgium]. [...] Thanks to what I've learned, I'll know what to do in the event of disaster risks. But how can [an uneducated politician], who doesn't even know [anything about] that, make decisions? That's the problem.

Interviewer: Right, and in terms of your scientific experience compared with your colleagues, do you think that your experience here will bring added value to your work?

Gilles: Yes, very much so, because [I] work on forest ecosystems. Plus, here [we're learning about] mapping software and all that, it's going to help. [...] For example, [we're learning about] geographic information systems, software to assess crop yields, geomorphology, risks, landslides, all that. We're really going to contribute to that level.

Another example of social remittance was that of Saida (a 30-year-old PhD student and freelance journalist from Sidi Slimane). By writing articles seeking to raise awareness about drought and water shortages in rural areas of Morocco, she felt that she was directly contributing to improving environmental resilience in Morocco.

Most respondents acknowledged that they could leverage transformative adaptation and enhance social resilience in the face of environmental change through collective action (notably via their hometown associations) and political engagement. This was especially noted among the Senegalese sample, where individuals merged their social capital to ultimately initiate local co-development projects (see also Østergaard-Nielsen 2010). This bottom-up and participatory approach initiated by immigrant organizations, increases the beneficiary village's social visibility, thus enhancing the political status of the migrant initiators. This allows a stronger positioning of their family and village community in the quest for scarce public resources (including agricultural machinery, infrastructure projects, roads, bridges, and hospitals).

### 3.3 Adaptation as a by-product of migrants' remittances

Most respondents believed that they had, overall, very positive impacts on the development and economic resilience of their villages of origin through individual and collective (financial and social) remittances. However, they did not perceive these contributions to be directly addressing climate change adaptation, as opposed to economic resilience. Some local exceptions could be noted, typically through a complex interplay of local actors and migrants. The latter were very aware of climate change and local socioeconomic and political conditions and had the power and resources to set up initiatives and drive change. In this vein, diaspora funds were sometimes used to invest pre-emptively in climate change adaptation or to cover post-disaster rehabilitation efforts. For example, funds sent by members of the Senegalese diaspora in Belgium were used to introduce drought-resistant crop varieties and water harvesting management systems. In addition, during the 2019 floods in the Fuuta-Tooro region, some migrants actively participated in the reconstruction of destroyed infrastructure.

Based on the Moroccan and Senegalese migrant interviewees, it became apparent that most diaspora investments target sectors such as education or health, which can have positive medium and long-term effects on the adaptation of communities of origin to environmental change. For example, most Senegalese respondents from the Fuuta-Tooro region had co-financed at least one collective infrastructure project in their region of origin, such as a primary or secondary school, a health facility or productive infrastructure (e.g. water boreholes, crop storage sheds), usually in partnership with their translocal hometown association. Income diversification, which is made possible in the long term through better access to education, enables populations which were previously dependent upon subsistence farming to reduce their vulnerability to environmental hazards such as drought. Thus, adaptation outcomes tend to be indirect by-products of translocal livelihood strategies (Romankiewicz *et al.* 2016).

We can conclude from our interviews that many participants were generally aware of the human origin of environmental degradation in their countries of origin. These perceptions can thus be reflected, even indirectly, in the remittance requests of non-migrants to diaspora members residing in Belgium. Depending on the type of environmental impact, remittances were usually perceived as natural and logical coping practices or, less often, as proactive adaptation-related responses due to growing human-induced environmental

issues. For example, in Morocco and Senegal, artificialization and mechanization of agricultural practices—including dams, irrigation, chemical inputs, etc.—have resulted in the imposition of adaptive and/or transformative practices (Thornton and Manasfi 2010). Thus, adaptation can in many cases be seen as a by-product of migration (Romankiewicz et al. 2016).

### 3.3.1 *Collective spill-over effects*

Most respondents reported acting from abroad through projects focused on their village, hometown and/or region of origin. Some had engaged in or created associations, which were mainly oriented towards health and education. In their various extra-agricultural endeavours, most hometown associations, or regional migrant associations integrated climate adaptation aspects, sometimes explicitly. For example, when migrants initiate or support the construction of health or school facilities, or when importing digital devices such as computers, they often discussed the impact of extreme climate events on their projects. Even individual donations for the family that are not channelled through a formal or informal organization may have wider collective benefits or spill-over effects, as they positively affect people beyond the migrants' household. Collective remittances represent much more than merely providing funds and/or material goods or equipment through formalized groups of migrants (Goldring 2004).

Despite being in Belgium, some respondents were still actively involved in homeland politics and continued to engage with political parties, mainly through social media. Several respondents also stated that their migration experience had enabled them to develop new knowledge that could be used in their region of origin should they return (Agergaard and Broegger 2016; Entzinger and Scholten 2022). In the case of Congolese respondents, some had very specific projects in mind to improve Congolese society (e.g. creating more efficient security services, developing opportunities for Belgium-based businesses in DRC, introducing concepts of healthcare and social services). However, these respondents rarely identified financial remittances as a way to contribute to the environmental resilience of their households and communities of origin. This could be due to the *indirect* impact of environmental change on their own livelihoods or that of their family members. Also, many participants did not want to interfere with how people back home spent the money they received.

## 4. Discussion and conclusion

Building further on the little but growing empirical evidence on how international migration relates to environmental change (Obokata, Veronis, and McLeman 2014; Veronis et al. 2018; Piguet 2022), our study compared three different migrant groups and migrant dynamics. Our aim was to better understand how environmental perceptions, as well as the agency and decision-making capacity of migrants and their families in coping with and collectively adapting to environmental change, are affected by translocal dynamics. More specifically, in this study, we aimed to understand how migrants coming from environmentally fragile areas support climate adaptation and social resilience in their region of origin through their translocal practices. We took a 'migration as adaptation' approach (Gemenne and Blocher 2017) and, on the basis of insights gained from the Foresight Report (2011), we examined, in the first instance, their perceptions of environmental change, translocal practices and how they related to social resilience and climate adaptation. Interestingly, we also found that specific translocal practices resulted in collective spill-over effects, which has an impact on adaptation. Our findings add to the literature (e.g. systematic review: Obokata et al. 2014) by delving deeper into how participants' perspectives relate to the structure and agency of migrants and their networks. Here, the aim was to understand the relationship of these perspectives to translocal practices that favour

adaptation to socio-environmental change and the unintended or unforeseen side effects of the latter. Although the comparison of reflections of people from three migrant groups in Belgium does not sufficiently allow us to map out all country-specific migration and adaptation dynamics, or different types of remittances and (mal)adaptation, some clear patterns emerged.

Our study commenced with the pivotal observation that numerous participants acknowledged the presence of environmental change. Nevertheless, there was divergence in the degree to which they considered perceived disruptions as a primary impetus for migration and how this contributed to climate adaptation. The determinants of migration were situated within a comprehensive framework, where various factors influencing migration, alongside individual, household and social attributes, played a significant role in the decision-making process (Black *et al.* 2011; Obokata *et al.* 2014; Van Praag *et al.* 2021). Our findings indicate that most of the common practices (e.g. family economic remittances) are undertaken in response to environmental hazards (Sakdapolrak 2018). Nevertheless, our findings also suggest that collective projects initiated through hometown associations, especially in Senegal and Morocco, often have a more intentional, proactive and adaptive character.

The latter might result in transformative socio-environmental dynamics, allowing access to assets and assistance from the wider socio-political arena. In addition, it may enable migrants and their non-migrant relatives and/or community members to participate in decision-making processes they would not otherwise have participated in, and to craft institutions that both improve their individual welfare and foster societal robustness with respect to future crises (Greiner and Sakdapolrak 2016). Various remittances (material and non-material), as well as those targeting household, family or broader community groups, usually resulted in positive collective spill-over effects in the communities of origin. As such, existing collaboration between migrants, their communities of origin and communities of destination should be further analysed with respect to drafting better social, economic, migration, climate, and development policies (Entzinger and Scholten 2022; Van Praag 2023b).

Future research could target other specific groups of migrants who come from comparable areas in the region of origin. It might also focus on the impact of translocal practices through the lens of social pressures to remit, which arise within migrant communities and networks. Also, more attention could be paid to the specific socioeconomic and rural/urban compositions of migrant networks to better assess how these networks can be used as an asset in the development of environmental adaptation, alongside other alternative policies and initiatives (Steinbrink and Niedenführ 2020). Such research might also consider migrants' vulnerabilities in both the region of origin and the destination (Van Praag 2023b). Finally, it should be mentioned that our samples are not representative of the selected countries, and that focusing on countries of origin as a unit of analysis may convey methodological nationalism. As our results already indicate that there are many regional and local variations, further exploration of these is clearly required.

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