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MIGRATION DRIVERS FROM RURAL SENEGAL TO DAKAR: LACK OF JOBS IN A CLIMATE CHANGE SCENARIO

Abstract. Migration is a form of adaptation to climate change, the most relevant environmental problem that humanity faces at the moment. We aimed to improve our knowledge on the perceptions about migration drivers of people emigrating from rural areas suffering land degradation and to characterize their social profiles and their migration projects. With this aim, internal migrations from rural areas to Dakar (Senegal) were chosen as our study system. We carried out a survey to immigrant workers in Dakar. We hypothesized that internal migrations in Senegal would be induced by multiple factors, with environmental conditions related to desertification and climate change playing important roles. Internal migrations from Senegalese rural areas to Dakar were mostly concentrated in arid and semi-arid regions. Lack of job opportunities was the dominant driver of migration. However, land degradation and climate change were not the main perceived drivers of migration, immigrants in Dakar thought that the climate was changing. These perceptions of climate change depended on gender and on the place of origin of immigrants in Dakar. The vast majority of respondents (85%) thought the climate was changing, but there were differences between the perception of people from arid zones and those from humid areas. Restoration efforts on degraded land are needed to fight desertification, increase social and ecosystem resilience, and increase job opportunities in rural areas.

Keywords: drought, ethnic group, land degradation, survey

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1. Introduction

Climate change is the most relevant environmental problem that humanity faces at the moment. Human activities will cause +1.5°C of global warming above pre-industrial levels between 2030 and 2052 if it continues to increase at the current rate. The consequences of global warming are multiple and closely related, including increases in mean temperature, extremes of high temperature, heavy precipitation and drought (Intergovernmental Panel on Climate Change, 2018). In this global environmental crisis, drylands are especially threatened by land degradation in the form of desertification, in addition to climatic disturbances such as drought, dust storms, heat waves and extreme rainfalls (Pravalie, 2016). So, there is a need for change in land management practices to address the challenges of climate change adaptation (Smith et al., 2020).

In the context of climate change, migration is a form of adaptation (Black et al., 2011; Cattaneo et al., 2019). Environmental migrants are increasing since more people can no longer gain a secure livelihood in their homelands because land degradation in the form of desertification and other environmental problems (McLeman & Gemenne, 2018). Moreover, environmental problems are aggravated by socioeconomic problems such as poverty, making migrations complex multi-causal processes (Henry et al., 2003; McLeman, 2014). The numbers of environmental migrants may swell dramatically with increasing desertification and global warming (Castillo, 2011). In fact, gradual environmental degradation such a desertification influence more on environmental migrations than extreme meteorological events such as severe droughts (Henry et al., 2004). However, there is no consensus about the role of environmental change in shaping migration decisions, and little is known about the perceptions of migrants about climate change and the relationship with that and the perceived causes driving migration (Koubi et al., 2016; Shi et al., 2019). In fact, the adaptive role of subsistence farmers, a vulnerable population who often migrates, is largely overlooked (Tschakert, 2007).

The main aim of our study was to improve our knowledge on the perceptions about migration drivers of people emigrating from rural areas suffering desertification and to characterize their social profiles and

their migration projects. With this aim, internal migrations from rural areas to the capital Dakar (Senegal, Sahel, Africa) were chosen as our study system. The severe Sahel droughts in the late 20th century were very harmful to both human societies and nature (Epule et al., 2014). Afterwards, however, although rainfall increased slightly in some areas, the Sahel's biodiversity continued to become impoverished (Walther 2016). Moreover, food yields remained low and tree mortality rates were still high denoting desertification (Epule et al., 2014). Peanut production fell to 18% from 1960s to 2002 (Faye et al., 2007). Decades of peanut monoculture and the lack of financing and means to diversify crops and improve agricultural techniques have depleted agricultural soils in Senegal (Ministry of Agriculture, 2008). Regional climate change promotes strong declines in the forest area, high erosion, salinization and overgrazing (Sambou et al., 2016, Capozzi et al., 2018;). As a consequence, overwhelmed by desertification and territorial pressure, many Senegalese rural residents are attracted to Dakar (Gueye et al., 2015; Food and Agriculture Organization, 2020). Internal, intra-African and international migrations are important in sub-Saharan Africa (Morrissey, 2014). These migrations have often a significant environmental component, among others including historical, political and socioeconomic drivers of migration (Beauchemin et al., 2018). Even from environmentally fragile areas, people have many different reasons to migrate, which often go beyond risk prevention and adaptation to environmental stress (van der Land et al., 2018). The future predictions based on global climate models indicate increasing temperatures, rainfall variability and aridity in the Sahel (Masih et al., 2014; IPCC, 2018). In this context, there is a potential risk of large-scale out-migrations if adaptation measures to combat desertification are not carried out (Lambin et al., 2014).

The aim of this study is to analyse the reasons behind internal migration from rural areas to the Senegalese capital, particularly those linked to climate change. The focus is on the social profiles of migrants, their migration plans and their strategies for integrating into urban life. We hypothesised that internal migration in Senegal is driven by multiple factors, with environmental conditions linked to desertification and climate change playing a significant role.

2. Material and Methods

Study area

Senegal is located in West Africa and has c. 18 million inhabitants with 45,3% living in rural areas (ANSD, 2023).

The economy of Senegal is predominantly rural. Agriculture employs over 70% of the labor force (Martin-Gutierrez et al., 2016). Most of the agriculture is based on small land properties. In large cities, c. 53% of the population works in street trading and other informal⁵ economic activities (ANSD, 2013). In addition, Senegalese fisheries generate a high economic value for local communities (Belhabib et al., 2014). Immigration has long been a permanent part of Senegal's history due to its colonial heritage, political stability and economic growth (Diatta & Mbow, 1999). In the last decades, north and central areas of Senegal have been suffering from severe land degradation and desertification due to multiple causes such as biological invasions, vegetation degradation, overgrazing and decreasing rainfall (Brandt et al., 2014; Herrmann et al., 2020).

Our work was carried out in the Senegalese capital Dakar (Figure 1). Dakar population has been growing markedly during the last decades, having 2318004 inhabitants in 2013 (ANSD, 2013) and 3215000 inhabitants in 2017 (Oficina de Información Diplomática, 2017), 4.004.426 inhabitants in 2023. Dakar is divided into 19 districts. Our survey was carried out in Ouakam District (14°43'26'' N, 17°29'21'' W) which occupies c. 500 ha with a growing population of c. 80000 inhabitants, (Ouakam District, 2016). The Ouakam District was chosen since it had a high rate of immigration compared to other districts in Dakar.

Survey instrument, organization and participants

A two-page questionnaire with 27 questions was developed as a quantitative survey instrument, primarily using a qualitative exploration of the thematic dimensions (Myers & Oetzel, 2003).

⁵ Informal employment: People are considered to be in informal employment if their employment is, in practice, not subject to national labour legislation, income tax, social security or entitlement to certain benefits (2019, ERI-ESI).

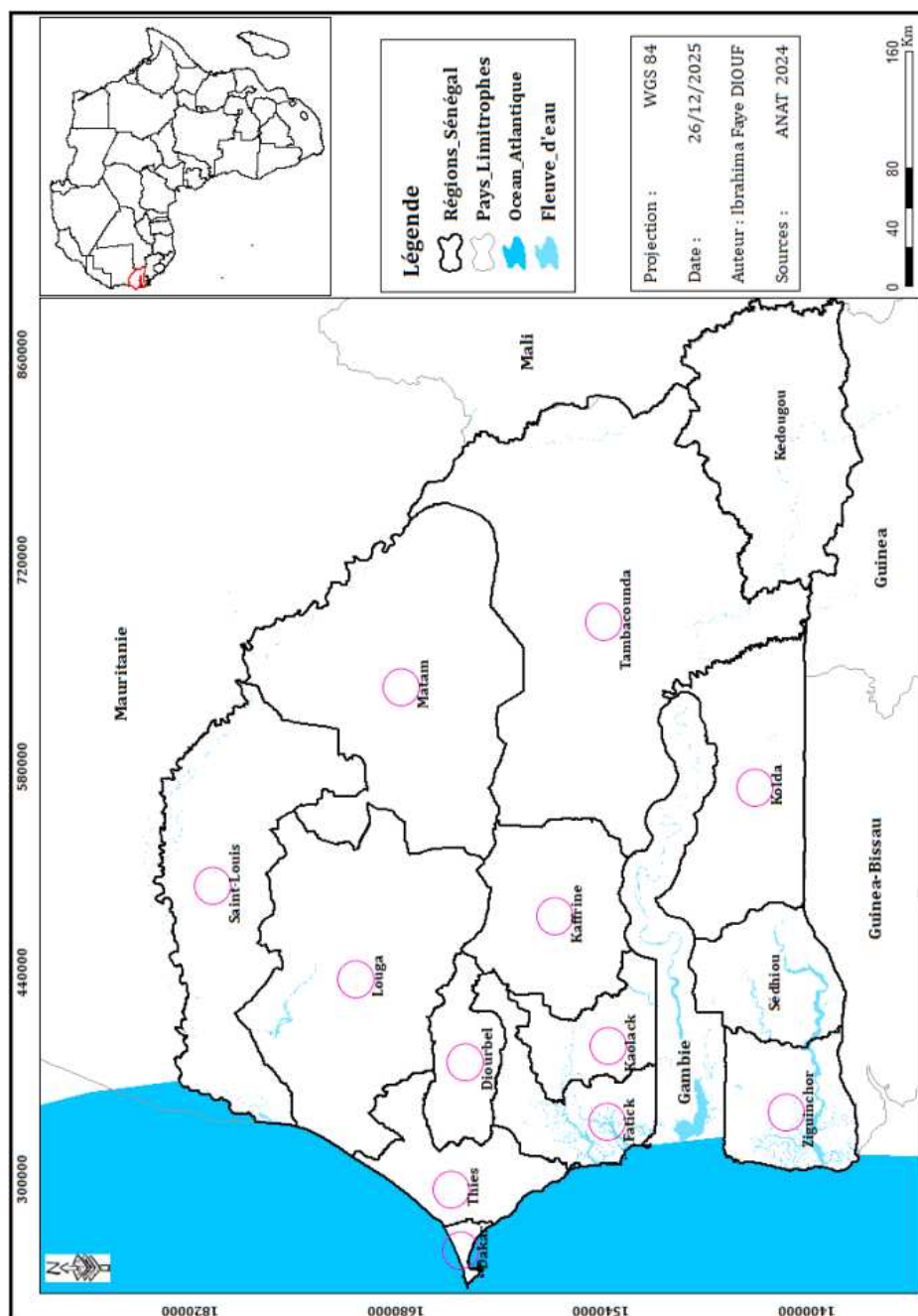


Figure 1. Region of origin of migrants

The questionnaire was developed by us following our knowledge about climate change and migrations and some recommendations of Haladyna and Downing (1989) about the format. The definitive survey was conducted after testing the questionnaire on one sampling day (December 7th 2017) in order to avoid possible misunderstandings in its implementation. The quantitative data date from 2017, prior to a series of global crises: the COVID-19 pandemic and political crises with their economic implications. In the current context, the results should be interpreted as reflecting migration dynamics prior to the aforementioned crises, providing a critical baseline against which more recent migration dynamics can be assessed, rather than as a direct description of current migration patterns.

The survey used multiple-choice questions in 21 items with a variable number of response categories according to the targets measured, and 6 open-ended questions (items 8, 10, 19, 21 and 27).

The survey was carried out by means of a street questionnaire at work places (mainly mobile stalls, manual car washes, and construction sites) in the Ouakam District (Dakar) between 9:00 am - 14:00 pm from December 8th to 19th 2017 (except on Sundays). Interviewees were chosen randomly among people who worked and lived in Ouakam District, and have migrated to Dakar. The overall interview usually required about 10 minutes. A total of 242 people were asked by trained interviewers to participate in the survey, with a response rate of 95% (a total of 231 completed questionnaires were ultimately obtained). This number of questionnaires was significantly representative of the estimated immigrant population in the Ouakam District (7615 inhabitants) with an error probability of 0.05, a standardized distance (Z) of 1.96, a population variance (V) of 0.15 and a precision error (E) of 0.05 (calculated using the free software MAS (Manzano-Arrondo, 2010)).

This work was supplemented by a qualitative and observational study in the municipality of Ouakam. Conducted in 2024, it focused on migrant populations.

Data analysis. The data collected was analyzed using SPSS v. 15.0. (SPSS Inc., Chicago, IL, USA). Deviations were calculated as the standard error of the mean (SE). A significance level of 0.05 was applied for every analysis. Data was tested for normality with the Kolmogorov–Smirnov

test and for homogeneity of variance with the Levene test. Since normality and/or homogeneity of variance were not reached and our dependent variables were discrete, differences in the answers to the survey between genders, ages, ethnic groups, arid and humid zones, and income levels before migrating were compared using the non-parametric Kruskal-Wallis test and Mann-Whitney U-test. The Spearman correlation coefficient (ρ) was applied to analyze the relationships between the answer to different questions.

3. Results

Socio-demographic profile of emigrants

The graph below clearly illustrates the socio-demographic profile and geographical origin of migrants.

Considering the socio-demographic variables, 83% of the respondents were men and 17% women. The majority of the respondents were between 26-40 years old (53%) (Figure 2A). The percentage of men was c. 25% higher in people younger than 40, whereas the number of women was c. 27% higher than the number of men in older than 40 (Kruskal-Wallis test, $\chi^2 = 15.901$, d.f. = 4, $P < 0.005$; U-test, $P < 0.05$). Most of the respondents were married (61%) (Figure 2B). Nevertheless, 69% of the respondents migrated alone. Relatively more men than women (75% vs 44%) migrated alone (Mann-Whitney test, U-test = 2573.000, $P < 0.0001$). Most of the respondents were born and migrated to Dakar from the Senegalese regions Diourbel (28%), Fatick (11%) and Thiès (10%) (Figure 2), and the foreign country that contributed the most immigrants was Guinea-Conakry (12%) (Figure 2C). The predominant ethnic group was Serer (41%) (Figure 2D), who came mostly from Diourbel Region (49%). On the other hand, 65% of respondents migrated directly to Dakar from their place of origin, and 77% of respondents had lived in Dakar for 1-10 years.

In their place of origin, 69% of respondents worked in the primary sector (agriculture and pastoralism), with the remainder working in sixteen other types of occupation. Only 3% were unemployed before migrating (Figure 3A).

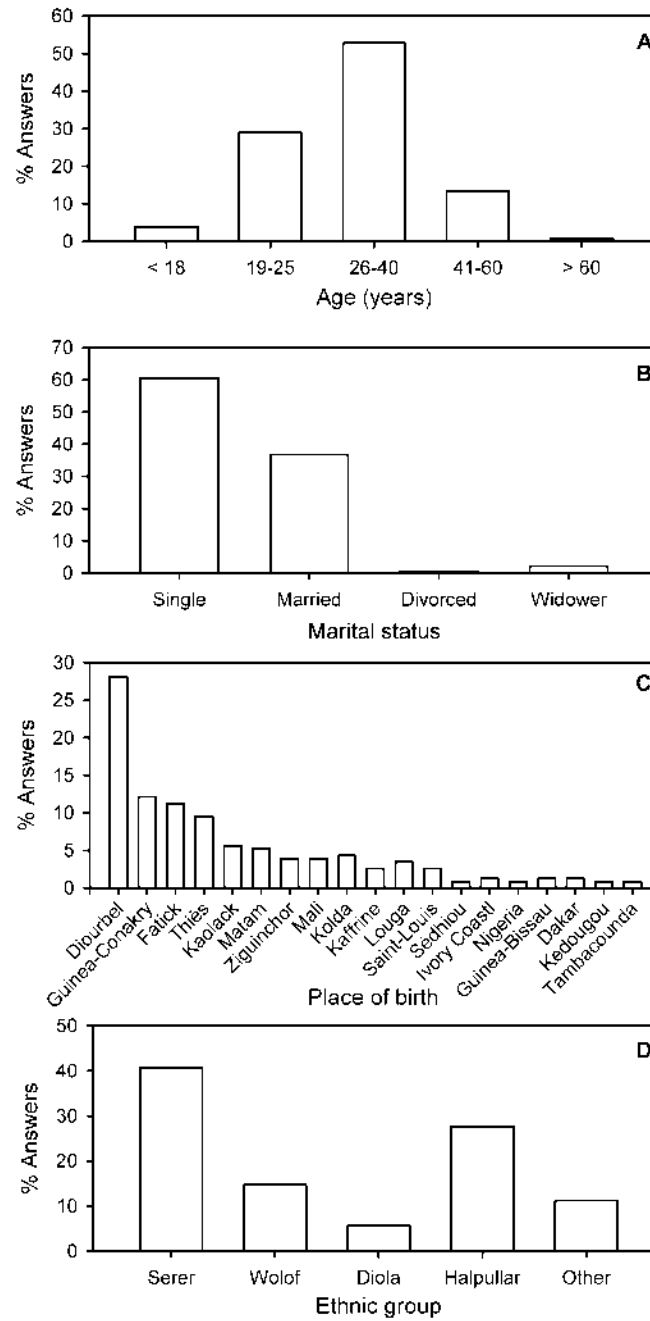


Figure 2. Socio-demographic profile and geographical origin
(Source: Field Survey, 2017)

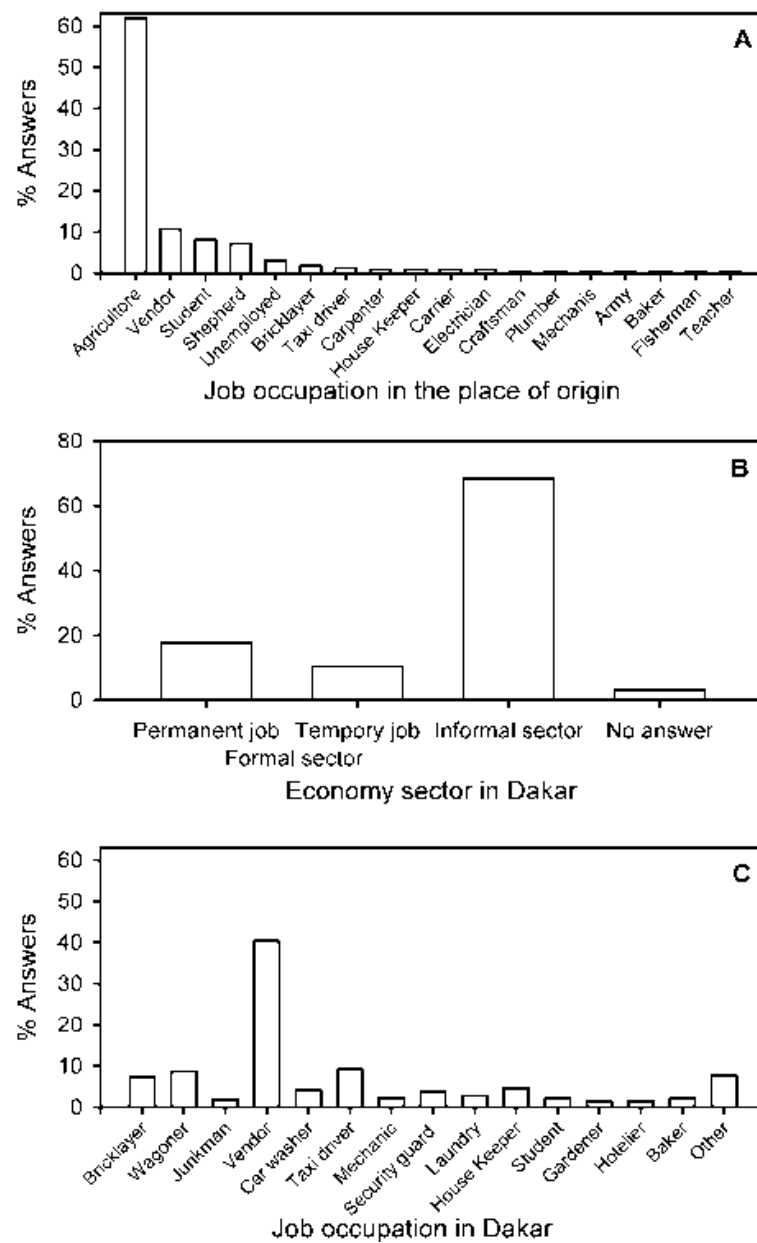


Figure 3. Job occupation in economy sector
(Source: Field Survey, 2017)

In response to the question ‘What was your previous job?’ (immediately prior to their current one), the results of the Mann-Whitney test ($U = 3086.500$ [MV1], $P < 0.05$) reveal that, prior to their current employment in Dakar, women were relatively more likely than men to have worked as domestic workers (14% versus 0%), shop assistants (21% versus 9%) or to have been unemployed (28% versus 14%), whilst men were more likely than women to have been in education (12% versus 3%). Before migrating, respondents from arid or semi-arid areas were more likely to work in the primary sector than those from humid areas (52% versus 33%), who were more likely to work as salespeople (18% versus 8%). In Dakar, the vast majority (91%) of respondents were in employment, mainly in the informal sector (68%) (Figure 3B). The analysis also examined the employment status of populations from Senegal’s various ethnic groups. The Kruskal-Wallis test provides significant insights into employment rates and the nature of the jobs held. The Diola suffered more from unemployment (31%) than other ethnic groups (around 10%)(Traders and street vendors were the most common occupations (40%) in Dakar (Figure 3C). The Serer were more likely than other ethnic groups to work as bricklayers (12%), and cart drivers (14%), the Wolof and Halpullars worked more frequently as vendors (74% and 51% respectively), and the Diola were more often students (27%) and hotel employees (18%).

Most respondents (92%) knew someone else who had migrated to Dakar (question 9), and of these, 29% knew more than 50 people from their hometown who had migrated to Dakar. Furthermore, 96% knew other migrants in Dakar from towns other than their own; 58% of them stated that they knew more than 10 people fitting this description. Indeed, 79% answered in the affirmative when asked whether they thought their place of birth was becoming significantly depopulated; the percentage was higher among men than among women (82% versus 65%).

Migration drivers: multifaceted causes

Regarding the drivers to migrate to Dakar, 89% migrated due to lack of job opportunities and 27% specified also economic problems derived from unemployment. Only 4% migrated due to land degradation or because of land grabbing (Figure 4A). The Diola migrated more than the

other ethnic groups because of armed conflict, political persecution and land grabbing (Kruskal-Wallis test, $\chi^2 = 10.307$, d.f. = 4, $P < 0.05$; U-test, $P < 0.05$). People with the highest income before migrating (> 1000000 CFA yr⁻¹) were the only income group that migrated to study in the university (Kruskal-Wallis, $\chi^2 = 17.953$, d.f. = 4, $P < 0.01$; U-test, $P < 0.05$). On the other hand, the majority of respondents answered that they would return to their place of origin if they could find a job (61%), specifying in most cases that they would work as a farmer, rancher or merchant. It should be noted that 22% responded that they would return if they had financial support to improve their means for agriculture, livestock or trade, despite this not being an option in the survey. Only 3% stated that they did not want to return, and 2% answered that the problem was the climate and that as long as it did not change for the better, they could not return (Figure 4B).

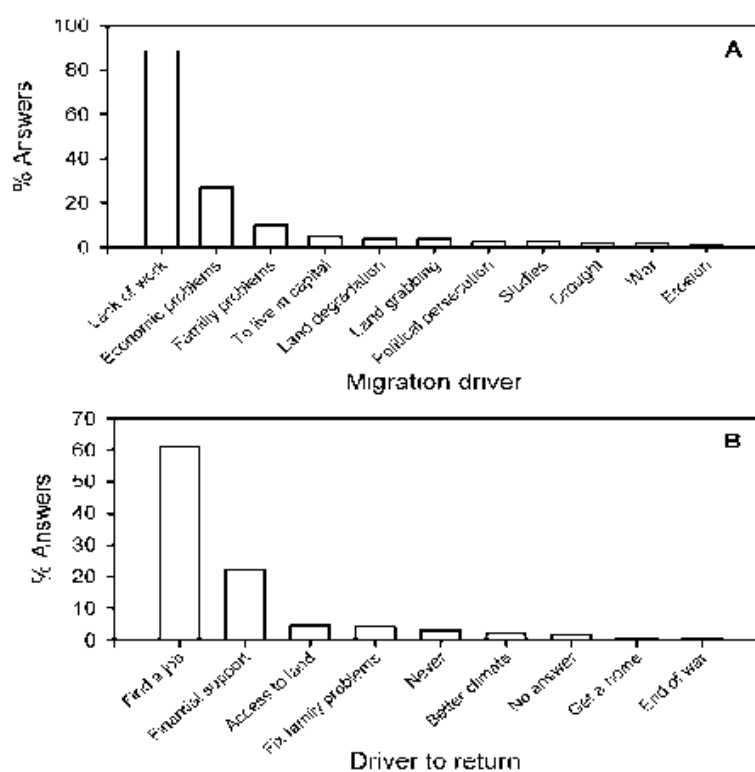


Figure 4. Migration et return drivers
(Source: Field Survey, 2017)

The vast majority of the respondents (85%) thought that climate was changing. Of those who answered affirmatively, 67% thought that weather was warmer than before, 65% thought that it rained less and, on the contrary, 35% thought that it rained more. 24% of the respondents said the weather was cooler than before.

Only 4% believed that dust storms were more frequent, and just 1% pointed to increasing torrential rains (Figure 5A). The results of the test (Mann-Whitney $U = 2684.000$, $P < 0.0001$) show a significant difference between the sexes in terms of perceptions of climate change. 34% more men than women thought that the climate was changing in their hometown (Mann-Whitney test, $U = 2684.000$, $P < 0.0001$) (Figure 5B), and 62% more respondents from arid and semi-arid zones thought that it rained less than those from humid zones.

Living in Dakar: diversifying livelihoods

Most of the respondents (86%) believed that their situation had improved after migrating to Dakar. Before migrating to Dakar, 26% of the respondents had no income from subsistence agriculture, and only 10% earned more than 1000000 CFA francs yr^{-1} (Figure 6A). After migration, 35% of the respondents had an income exceeding 1,000,000 CFA francs yr^{-1} (Figure 6B). Salaries before migrating were positively correlated with salaries after migrating to Dakar. Migrants who were in a more favorable economic position before migrating tend to fare better. This suggests that the process of accumulating resources continues throughout the migration trajectory.

When asked about the time they intended to stay in Dakar, 82% did not know. Those immigrants who had already stayed for longer in Dakar wanted to keep staying longer and they expressed more frequently that they did not know how long they will stay in the capital than those who had been for shorter periods in Dakar ($Q = +0.251$, $P < 0.0001$, $n = 231$). The majority (80%) of the respondents were long-term migrants who stayed in Dakar for longer than 1 yr. When asked if the respondents wanted to emigrate internationally, the answer was affirmative in 61% of the cases in which 74% wanted to migrate to Europe. The percentage of people between 41-60 yr old who wanted to migrate to African countries bordering Senegal (12%) was higher than for the other age intervals (c. 2%) (Kruskal-Wallis, $\chi^2 = 12.372$, d.f. = 4, $P < 0.05$; U-test, $P < 0.05$).

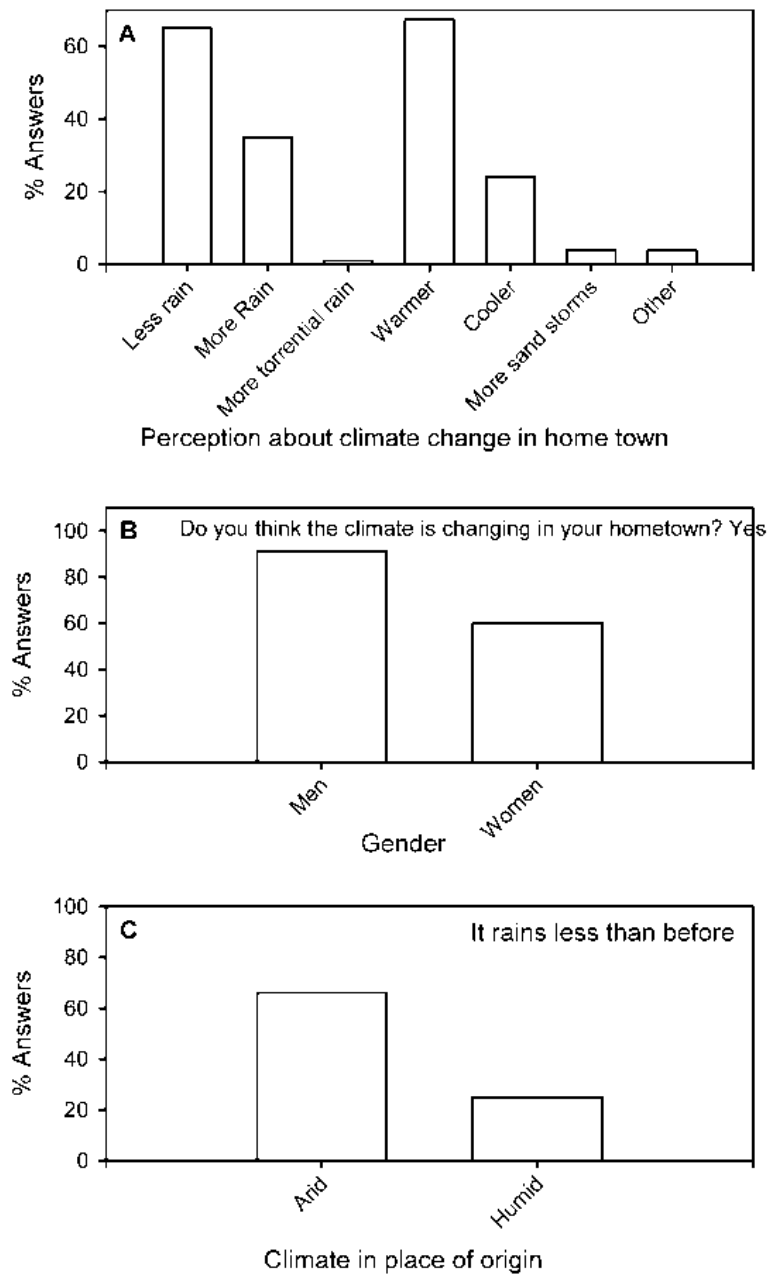


Figure 5. Perception about climate change
(Source: Field Survey, 2017)

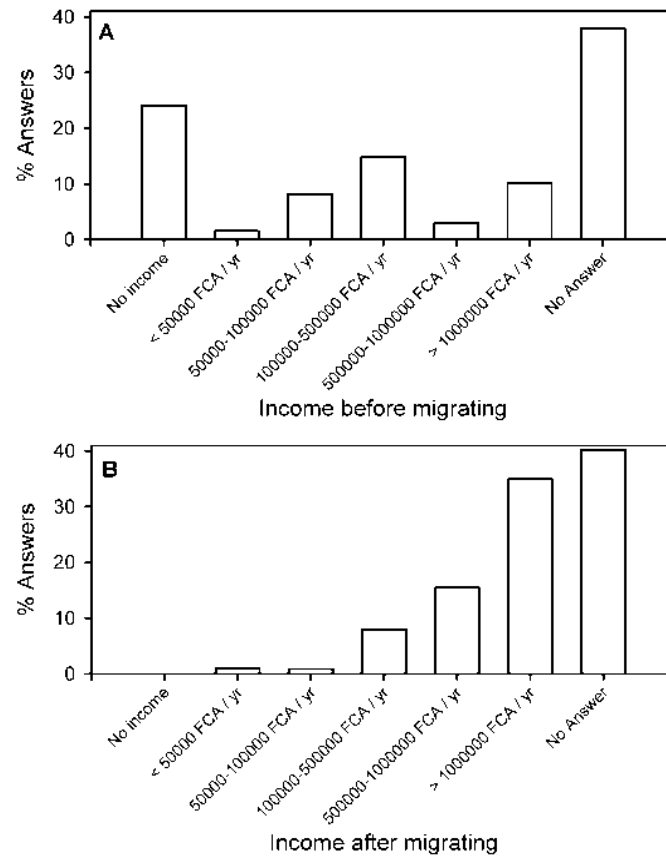


Figure 6. Income before and after migrating
(Source: Field Survey, 2017)

The informal sector offers young migrant populations opportunities for socio-professional integration. The residential and entrepreneurial paths of migrants are deeply marked by the weight of community logic. The village or even regional community structures the economic integration networks of the migrants surveyed in Ouakam. Many of them build their entrepreneurial careers within the community's solidarity networks and then break away from them or become independent. They are active in a wide variety of sectors, from personal services (car washers) to food trade and informal transport. Migrants from peanut-growing regions favour activities related to agriculture, drawing on the skills they have acquired in their new activities. These include the sale of peanut straw and/or

agricultural products (Photo 1), and horse-drawn transport (Photo 2) in Ouakam District, 2024.

Their presence is visible through the ways in which they occupy public space. By appropriating the interstices of the city through undeclared entrepreneurial activities, these migrants engage in daily negotiations of their presence in the city. These practices of misappropriation and privatisation of public spaces keep these migrants in a state of precariousness and insecurity vis-à-vis the municipal authorities. Those who are in formal spaces and pay the daily tax of '100 Fcfa' are relatively spared from administrative hassles, while other occupants of public space are frequently evicted. These were some representative comments added by respondents at the end of the survey: "we could work in the fields if we had more means and help", "We have the knowledge about how to cultivate the land but we have no means", "I come from a very fertile area but the lack of rain has lowered the crop yields", "If agriculture went well I would return to my town", "I would like to have land and means for agriculture to return to my town", "the soils are running out, and water salinization is also a problem", "there is an ambition to work in rural areas with tractors but we do not have access to them", "land is lacking in rural areas, especially for large families", and "Dakar is only a temporary place on my journey".



Photo 1. Peanut straw is a highly prized resource for urban livestock farming. Sold in sacks, it provides additional income for producers. Most of the production comes from the peanut-growing region
(Ly et al, 1998)

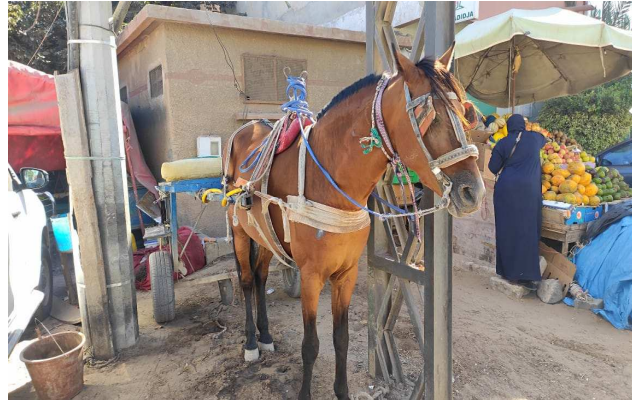


Photo 2. The draft horse used in agricultural activities and rural trade is mobilised for horse-drawn traction. It still plays a fundamental role in the marketing of agricultural products, the supply of inputs and consumer products, and the transport of people (Ly et al, 1998)

4. Discussion

The link between migration and climate change is highly complex. The alarmist discourses of the 1990s, which dominated research (Mérenne-Schoumaker, 2025), are now less prevalent. They have given way to a holistic approach to environmental migration, which is increasingly considered an adaptation strategy to climate change and a means of diversifying livelihoods (Bruning, 2021). The results of our research reflect this complexity and highlight the diversity of causes of environmental migration.

While the interviewees considered that the climate was changing in their place of origin – that the weather was warmer and rainfall had decreased – socio-economic causes such as lack of job opportunities were the main motivations cited. In the context of semi-arid zones, faced with the omnipresence of risks, seasonal migration has always been an alternative for diversifying income sources. These seasonal movements have now become permanent due to land degradation, which reduces agricultural yields and provisioning services in fragile Sahelian ecosystems (Sonneveld et al., 2016). These findings are confirmed by ANSD (2023) data, which indicates that interregional (internal) migration is higher among individuals working in the primary sector, in agriculture (4.6%)

and forestry (4.6%). These are populations from the semi-arid rural areas of Senegal, threatened by drought episodes.

This land degradation is linked to a sharp increase in minimum temperatures, more frequent heatwaves, and a decrease in rainfall since the mid-20th century (Tidiane et al., 2017). Furthermore, land access issues have emerged partly due to steady population growth in Senegal, particularly since the 1970s (Lo, 2014). In this context, the lack of job opportunities was the dominant migration factor, which explains why people from wetter areas also chose to migrate.

However, most respondents worked only in subsistence and poorly paid agricultural jobs due to a lack of opportunities. The emigration of labor from rural areas, as recorded in our study, is common in national and international migration. It results from intertwined environmental, demographic, and socio-economic factors, such as lack of financial resources, investment, and industrialization (Naude, 2010; Cohen et al., 2013; Sterie, 2020). These results confirm the multi-factorial nature of environmental migration reasons. Migration decisions are the result of an accumulation of crises faced by rural populations and the need to improve household adaptation, thus confirming Brüning's (2021) conclusions on the consequences of migration for adaptation strategies to coastal erosion in Senegal.

Most respondents did not directly link their migration to environmental causes, but rather to socio-economic ones. However, although land degradation and climate change were not the main perceived migration factors, immigrants in Dakar believed, as previously reported by Mertz et al. (2008), that the climate was changing. In this sense, Voss (2021) reported that most Senegalese farmers perceived substantial environmental change, amplifying ongoing agrarian transformation processes, increasing dependence on non-agricultural livelihoods, and migration of youth in particular. Smallholder adaptation strategies to drought include techniques to improve fertility, conserve water, manage trees, and increase livestock (Tiffen & Mortimore, 2002). However, these adaptation strategies are undermined by poverty, poor health, rural unemployment, household adaptive capacities, and inadequate village infrastructure in the Sahel (Mortimore & Adams, 2001; Tschakert, 2007). In this context, land degradation can indirectly influence migration decisions from arid zones by affecting socio-economic factors, as previously recorded, for example, in Guatemala (Sivisaca et al., 2015) and southwestern China

(Shi et al., 2019). As confirmed by Mérenne-Schoumaker (2025), drought is a slower process that, by deeply affecting the population by reducing harvests, does not necessarily lead them to migrate immediately, but it is the recurrence and multiplication of events that push them to flee. The African continent remains the most vulnerable, with 22.8% of the displaced in 2022 (Mérenne-Schoumaker, 2025) due to higher risks (hazards + vulnerabilities).

Analyzing the environmental causes of migration also poses a methodological challenge. The livelihoods approach allows for linking economic vulnerability and ecological crises. Analyzing income levels and perceptions of environmental change in rural areas was a privileged entry point. Discourse analysis showed that perceptions of climate change varied according to the immigrants' place of origin in Dakar. The vast majority thought the climate was changing, but there were differences between the perceptions of people from arid and semi-arid areas and those from wetter areas. Most interviewed immigrants from arid and semi-arid areas thought the climate was changing because it rained less. However, relatively more people from wetter areas thought the climate was not changing, and most of those who thought it was changing believed it rained more.

The profile and stated motives show that migrants integrate both individual logics of social advancement and strengthening the resilience of family members who remained in the areas of origin. We recorded a low percentage of female migrants (17%), and they traveled accompanied by their family more often than men. Traditionally, Senegalese women do not migrate as they are responsible for domestic work (as recorded in our study), although the number of migrating Senegalese women has increased as they have greater marital independence than most African women (ANSD, 2013). Willekens et al. (2017) recorded a higher migration rate for men than for women in the Dakar region. In this context, migration for Senegalese people is a collective decision made by the extended family as a strategy to fulfill family obligations (Azam & Gubert, 2006; Moreno-Maestro, 2012). We found that, despite 61% of respondents being married, most of them (69%) migrated alone, which can be explained by the fact that men are traditionally expected to earn money for the family. Remittances help maintain the link with the community and prevent food insecurity.

At the spatial level, the Dakar metropolis is strongly influenced by migratory behaviors in terms of human mobility, but also of goods in a dynamic and reflexive interaction (Sakho, 2014). Thus, the strong interaction between Dakar and Senegal's regions occurs through internal migration and entrepreneurial activities occupying public space. The opportunities offered by the Senegalese capital for diversifying rural household income sources make Dakar the receptacle for the majority of internal migration. The migration balance between 2008 and 2013 was negative for all Senegalese regions, except for Dakar (ANSD, 2013). In 2023, Dakar recorded a migration balance of +20.7%, followed by Diourbel and Thiès, with +4% and +1.1% respectively (ANSD, 2023), areas that are becoming increasingly attractive. In this context, our data recorded signs of the current rural exodus, as the vast majority of respondents (79%) stated they believed their hometown was severely depopulating, and they knew many immigrants in Dakar. We only recorded Senegalese regions with higher emigration to Dakar, such as Diourbel, Fatick, and Thiès, located near the capital in the "Peanut Basin," affected by desertification (ANSD, 2015). The French colony introduced large peanut (**Arachis hypogaea* L.*) plantations in the 19th century (Ministry of Agriculture, 2008). On the other hand, immigration to Dakar from other countries was dominated by Guinea-Conakry (12% of respondents), where over 40% of the population lives below the poverty line (Oficina de Información Diplomática, 2017).

Our research conclusions support the idea that the Dakar region, due to its position, is a crossroads for internal and sub-regional mobility, as an area of arrival, departure, and transit. Migration is described as a social fact inseparable from Senegalese reality (Liza Rives & Lama Kabbanji, 2012; PNMS, 2018). The country faces multiple structural vulnerabilities such as low productivity, limited human capital, and a high level of informality (World Bank, 2024). These structural constraints are reinforced by exogenous shocks that continue to fuel both internal (from rural areas to cities) and international migration of a significant portion of youth with multiple profiles and migratory projects (Marei et al., 2018). Between 2008 and 2013 alone, about 50,000 people left Dakar to undertake international migration (ANSD, 2013). In this sense, most respondents in our study were engaged in a broader migratory project than simply moving to

Dakar. Furthermore, most did not know exactly how long they would stay in Dakar, probably because they had to work in precarious jobs to save enough money before international migration. Despite this, migration within Senegal's borders is higher than migration abroad (ANSD, 2013; Linares, 2003). In our study, older people who had lived in Dakar longer wanted to stay longer or emigrate to neighboring countries. Some people waiting to resume their journey in Dakar may ultimately stay in the Senegalese capital or redirect their routes towards the Global South (Zuluaga, 2015). Furthermore, most respondents in our study expressed a desire to return to their place of origin, but savings and investments were considered a prerequisite for return (Hernandez-Carretero, 2015).

Adaptation strategies depend both on the mobilisation of community networks for socio-professional integration and on skills acquired in the regions of origin. Serer migrants, originally from the peanut-growing region, are more involved in horse-drawn transport and the sale of agricultural products. Others occupy completely different jobs that do not require a high level of skill. These findings overlap with those of Ndiaye et al. (2024) on informal sector workers, some of whom mobilise their cultural capital and know-how in their new activities in the city, while local inter-village solidarity networks facilitate the settlement of newcomers in the Dakar region.

These findings, based on data from 2017, remain relevant today and reflect a growing trend of migration from rural areas to cities. Data from the latest population census (RGPH) on internal migration over the last five years (since 2018) confirm this trend, with Dakar playing a significant role (accounting for nearly 46.9% of recorded arrivals over the last five years) as a destination, and work being one of the main reasons for migration (30.7%) (ANDS, 2025).

5. Conclusion

Our study highlights a significant process of internal migration from rural areas of Senegal to Dakar. This out-migration has been concentrated mainly in arid and semi-arid regions. A variety of factors have driven migration to Dakar, primarily due to the socio-economic situation and

the irregularity of agricultural yields from one year to the next. In light of our findings and against the current backdrop of climate change and desertification, soil degradation could play a major role among the factors driving migration. This migration links rural areas facing agricultural crises with urban areas offering opportunities for integration into the informal sector. Migrants achieve remarkable integration into Dakar's urban economy by mastering the trade in agricultural by-products. These migration-generated resources meet the needs of families in the countries of origin and also help sustain the dream of an international migration project. The diversity of the areas of origin reflects a widespread social phenomenon in Senegal. This internal mobility could constitute a first step towards international migration. There is every reason to believe that Dakar, by virtue of its geographical location, serves as a point of departure, a destination and a transit point for migration to the Maghreb countries and Europe.

Policies focused on funding agricultural projects that incorporate best practices for biodiversity conservation and carbon sequestration could promote development in rural areas. All these climate change adaptation measures would increase employment opportunities in rural areas and should help to stem the rural exodus observed in Senegal. Against a backdrop of multiple crises and a return to normal rainfall patterns in the Sahel, a broader study could provide a better understanding of the link between climate change, the degradation of agricultural resources and migration.

References

- ANSD – Agence National de la Statistique et la Démographie, 2013, *Recensement Général de la Population et de l'Habitat, de l'Agriculture et de l'Elevage*. Ministère de l'Economie, des Finances et du Plan, République de Sénégal.
- ANSD – Agence National de la Statistique et la Démographie, 2015, *État des lieux des liens entre migration, transferts et résilience au changement climatique au Sénégal*. Ministère de l'Economie, des Finances et du Plan, République de Sénégal.
- ANSD – Agence National de la Statistique et la Démographie, 2023, *Recensement Général de la Population et de l'Habitat, de l'Agriculture et de l'Elevage*. Ministère de l'Economie, des Finances et du Plan, République de Sénégal.
- Azam, J. P., & Gubert, F. 2006, Migrants' remittances and the household in Africa: A review of evidence. *Journal of African Economies*, 15, 426-462. <https://doi.org/10.1093/jae/ejl030>

- Black, R., Bennett, S. R. G., Thomas, S. M., & Beddington, J. R. 2011, Migration as adaptation. *Nature*, 478, 447-449.
- Beauchemin, C., Sakho, P., Schoumaker, B., & Flahaux, M. L. 2018. From Senegal and Back (1975–2008): Migration Trends and Routes of Migrants in Times of Restrictions. In C. Beauchemin (Ed), *Migration between Africa and Europe*. Springer.
- Belhabib, D., Koutob, V., Sall, A., Lam, V. W. Y., & Pauly, D. 2014, Fisheries catch misreporting and its implications: The case of Senegal. *Fisheries Research*, 151, 1-11. <https://doi.org/10.1016/j.fishres.2013.12.006>
- Brandt, M., Romankiewicz, C., Spiekermann, R., & Samimi, C. 2014, Environmental change in time series – An interdisciplinary study in the Sahel of Mali and Senegal. *Journal of Arid Environments*, 105, 52-63. <https://doi.org/10.1016/j.jaridenv.2014.02.019>
- Brüning, L. 2021, Typologie des conséquences de la migration sur les stratégies d'adaptation à l'érosion côtière au Sénégal. *Population*. 76(3), 519-544. <https://doi.org/10.3917/popu.2103.0519>.
- Bulik, K. J. D., & Colucci, E. 2019, Refugees, resettlement experiences and mental health: a systematic review of case studies. *Jornal Brasileiro de Psiquiatria*, 68, 121-132. <https://doi.org/10.1590/0047-2085000000235>
- Capozzi, F., Di Palma, A., De Paola, F., Giugni, M., Iavazzo, P., Topa M., Adamo P., Simonetta, G. 2008, Assessing desertification in sub-Saharan periurban areas: Case study applications in Burkina Faso and Senegal. *Journal of Geochemical Exploration*, 190, 281- 291. <https://doi.org/10.1016/j.gexplo.2018.03.012>
- Castillo, J. M. 2011, *Migraciones ambientales. Huyendo de la crisis ecológica en el siglo XXI*. Virus Editorial.
- Cattaneo, C., Beine, M., Fröhlich, C. J., Kniveton, D., Martinez-Zarzoso, I., Mastrorillo, M., & Schraven, B. 2019, Human migration in the era of climate change. *Review of Environmental Economics and Policy*, 13, 189-206. <https://doi.org/10.1093/reep/rez008>
- Cohen, I. S., Spring, U. O., Padilla, G. D., Paredes, J. C., Ibarra, M. A. I., Lopez, R. L., & Diaz, J. V. 2013, Forced migration, climate change, mitigation and adaptive policies in Mexico: some functional relationships. *International Migration*, 51(4), 53-72. <https://doi.org/10.1111/j.1468-2435.2012.00743.x>
- Commune de Ouakam, 2016, *Plan de Développement Communal 2016-2021*. Commune de Ouakam.
- Diatta, M. A., & Mbow, N. 1999, Releasing the development potential of return migration: The case of Senegal. *International Migrations*, 37, 243-266. <https://doi.org/10.1111/1468-2435.00072>
- Epule, E. T., Peng, C., Lepage, L., & Chen, Z. 2014. The causes, effects and challenges of Sahelian droughts: a critical review. *Regional Environmental Change*, 14, 145-156.
- Fall, P. D. 2017, Rural migration and transformation of space in the hinterland of Fatick. (Senegal). *Revista Internacional de Estudios Migratorios*, 7, 101-122.
- Faye, J., Dansokho, M., Oumar, C., & Dièye, P. N. 2007, Implications structurelles de la libéralisation sur l'agriculture et le développement rural au Senegal (1950-2006). *Rural Struct Banque Mondiale/IPAR*. Retrieved May 23, 2021, from http://hubrural.org/IMG/pdf/ruralstruct_rapport_senegal_1007.pdf
- Food and Agriculture Organization, 2020, *Characteristics, patterns and drivers of rural migration in Senegal*. <https://doi.org/10.4060/ca2510en>

- Gueye, C., Fall, A. S., & Tall, S. M. 2015. Dakar, Touba and the Senegalese cities network produced by climate change. *Current Opinion on Environmental Sustainability*, 13, 95-102. <https://doi.org/10.1016/j.cosust.2015.02.009>
- Haladyna, T. M., & Downing, S. M. 1989, A taxonomy of multiple-choice item-writing rules. *Applied Measurements in Education*, 2, 37-50. https://doi.org/10.1207/s15324818ame0201_3
- Henry, S., Boyle, P., & Lambin, E. F. 2003, Modeling inter-provincial migration in Burkina Faso, West Africa: the role of socio-demographic and environmental factor. *Applied Geography*, 23, 115-136. <https://doi.org/10.1016/j.apgeog.2002.08.001>
- Henry, S., Piche, V., Ouedraogo, D., & Lambin, E. F. 2004, Descriptive analysis of the individual migratory pathways according to environmental typologies. *Population and Environment*, 25, 397-422. <https://doi.org/10.1023/B:POEN.0000036929.19001.a4>
- Herrmann, S., Diouf, A. A., & Sall, I. 2020, Beyond bioproductivity: Engaging local perspectives in land degradation monitoring and assessment. *Journal of Arid Environments*, 173 : UNSP104002. <https://doi.org/10.1016/j.jaridenv.2019.104002>
- Hernandez-Carretero, M. 2015, Renegotiating obligations through migration: Senegalese transnationalism and the quest for the right distance. *Journal of Ethnic and Migration Studies*, 41, 2021-2040. <https://doi.org/10.1080/1369183X.2015.1045462>
- IPPC – Intergovernmental Panel on Climate Change. 2018, Summary for Policymakers. In V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea et al. (Eds.), *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. World Meteorological Organization. Retrieved May 24, 2021, from <https://www.ipcc.ch/sr15/chapter/spm/>
- Koubi, V., Spilker, G., Schaffer, L. & Bohmelt, T. 2016. The role of environmental perceptions in migration decision-making: evidence from both migrants and non-migrants in five developing countries. *Population and Environment*, 38, 134-163. <https://doi.org/10.1007/s11111-016-0258-7>
- Lambin, E. F., D'haen, S. A. L., Mertz, O., Nielsen, J. O. & Rasmussen, K. 2014. Scenarios on future land changes in the West African Sahel. *Geographisch Tijdschrift*, 114, 76-83. <https://doi.org/10.1080/00167223.2013.878229>
- Linares, O. F. 2003, Going to the city ... and coming back? Turnaround migration among the Jola of Senegal. *Africa*, 73, 113-132. <https://doi.org/10.3366/afr.2003.73.1.113>
- Liza R., Mélodie B. (Coord.) et Lama K (Coord.), 2012, "Chapitre 6. Les ONG dans le champ Migration et développement au Sénégal". *Fabrique des politiques migratoires et pratiques associatives en Afrique de l'Ouest : le cas du Mali et du Sénégal*, Paris : Enda Europe, p. 46-54.
- Lo, H. 2014. *Impacts changements environnementaux sur les migrations humaines : cas du Sénégal*. Institut des Sciences de l'Environnement (ISE), Université Cheikh Anta Diop.
- Mareï N., Ninot O., « Entre Afrique du Nord et de l'Ouest, les relations transsahariennes à un moment charnière », *Bulletin de l'association de géographes français* [En ligne], 95-2 | 2018, mis en ligne le 27 juillet 2019, consulté le 01 avril 2026. URL : <http://journals.openedition.org/bagf/3189> ; DOI : <https://doi.org/10.4000/bagf.3189>
- Masih, I., Maskey, S., Mussa, F. E. F., & Trambauer, P. 2014, A review of droughts on the African continent: a geospatial and long-term perspective. *Hydrology and Earth System Sciences*, 18, 3635-3649. <https://doi.org/10.5194/hess-18-3635-2014>

- Manzano-Arrondo, V. 2000, *MAS: Muestreo Aleatorio Simple*. Retrieved May 22, 2021, from <https://personal.us.es/vmanzano/programas.htm>
- Marks, E., Aflakpui, G. K. S., Nkem, J., Poch, R. M., Khouma, M. et al. 2009. Conservation of soil organic carbon, biodiversity and the provision of other ecosystem services along climatic gradients in West Africa. *Biogeosciences*, 6,1825-1838. <https://doi.org/10.5194/bg-6-1825-2009>
- Martin-Gutierrez, S., Borondo, J., Morales, A. J., Losada, J. C., Tarquis, A. M. et al. 2016. Agricultural activity shapes the communication and migration patterns in Senegal. *Chaos*, 26, 065305. <https://doi.org/10.1063/1.4952961>
- Mérenne-Schoumaker, B. 2025. Quelles causes environnementales des migrations? Une analyse des sources. *Écologie & Politique*, 70(1), 25-38. <https://doi.org/10.3917/ecop1.070.0025>
- McLeman, R. A. 2014. *Climate and human migration. Past experiences, future challenges*. Cambridge University Press.
- McLeman, R. A. & Gemenne, F. 2018, *Routledge Handbook of Environmental Displacement and Migration*. Routledge.
- Mertz, O., Mbow, C., Reenberg, A., & Diouf, A. 2008. Farmers' Perceptions of Climate Change and Agricultural Adaptation Strategies in Rural Sahel. *Environmental Management*, 43, 804-816. <https://doi.org/10.1007/s00267-008-9197-0>
- Ministère de l'Agriculture, 2008, *État des ressources phytogénétiques pour l'alimentation et l'agriculture dans le monde*. République du Sénégal.
- Moreno-Maestro, S. 2012. Culturas africanas y migraciones: entre la imposición y la resistencia In M. K. Badi (Ed.), *África en movimiento. Migraciones internas y externas* (pp. 229-255). Observatorio sobre la Realidad Social del África Subsahariana.
- Morrissey, J. 2014, *Environmental Change and Human Migration in Sub-Saharan Africa*. In E. Pigué, & F. Laczko (Eds.), *People on the Move in a Changing Climate. The Regional Impact of Environmental Change on Migration* (pp. 81-109). Springer Netherlands.
- Mortimore, M., & Adams, W. 2001. Farmer adaptation, change and "crisis" in the Sahel. *Global Environmental Change*, 11, 49-57. [https://doi.org/10.1016/S0959-3780\(00\)00044-3](https://doi.org/10.1016/S0959-3780(00)00044-3)
- Myers, K. K., & Oetzel, J. G. 2003. Exploring the dimensions of organizational assimilation: creating and validating a measure. *Commun Q* 51:438-457. <https://doi.org/10.1080/01463370309370166>
- Naude, W. 2010. The Determinants of Migration from Sub-Saharan African Countries (dagger). *Journal of African Economies*, 19(3), 330-356. <https://doi.org/10.1093/jae/ejq004>
- Oficina de Información Diplomática, 2017. *República de Senegal (Ficha de País)* Ministerio de Asuntos Exteriores y Cooperación, Gobierno de España. Retrieved May 25, 2021, from http://www.exteriores.gob.es/Documents/FichasPais/SENEGAL_FICHA%20PAIS.pdf
- Ouedraogo, M., Zougmore, R., Moussa, A. S., Partey, S. T., Thornton, P. K. et al. 2017. Markets and climate are driving rapid change in farming practices in Savannah West Africa. *Regional Environmental Change*, 17, 437-449. <https://doi.org/10.1007/s10113-016-1029-9>
- Pravalié, R. 2016. Drylands extent and environmental issues. A global approach. *Earth-Science Review*, 161, 259-278. <https://doi.org/10.1016/j.earscirev.2016.08.003>
- Sacande, M., & Berrahmouni, N. 2016. Community participation and ecological criteria for selecting species and restoring natural capital with native species in the Sahel. *Restoration Ecology*, 24, 479-488. <https://doi.org/10.1111/rec.12337>

- Sakho P., 2014, *La production de la ville au Sénégal: Entre mobilités urbaines, migrations internes et internationales. Thèse d'Etat sur travaux (HDR)* Volume 1. Rapport de synthèse, Université Cheikh Anta Diop.
- Sambou, A., Theilade, I., Fensholt, R., & Ræbild, A. 2016. Decline of woody vegetation in a saline landscape in the Groundnut Basin, Senegal. *Regional Environmental Change*, 16, 1765-1777. <https://doi.org/10.1007/s10113-016-0929-z>
- Shi, G., Lyu, Q., Shangguan, Z., & Jiang, T. 2019. Facing climate change: what drives Internal migration decisions in the karst rocky regions of Southwest China. *Sustainability*, 11, 2142. <https://doi.org/10.3390/su11072142>
- Sivisaca, D. C. L., Chacon-Cascante, A., Montes, I. G., & Robalino, H. J. 2015. Extreme climate events and internal migration in Guatemala, an analysis Based on the experts' perceptions. *Ciencia ergo-sum*, 22, 35-44.
- Smith, P., Calvin, K., Nkem, J., Campbell, D., Cherubini, F., Grassi G., Korotkov V., Le Hoang A., Lwasa S. 2020. Which practices co-deliver food security, climate change mitigation and adaptation, and combat land degradation and desertification? *Global Change Ecology*, 26, 1532-1575. <https://doi.org/10.1111/gcb.14878>
- Sonneveld, B. G. J. S., Keyzer, M. A., & Ndiaye, D. 2016. Quantifying the impact of land degradation on crop production: the case of Senegal. *Solid Earth*, 7, 93-103. <https://doi.org/10.5194/sed-7-1797-2015>
- Sterie, C. 2020. Analysis regarding the situation of Romanian village – case study, Tetoiu Commune, Valcea County, Romania. *Scientific Papers – Series Management Economic Engineering in Agriculture and Rural Development*, 20(3), 583-588.
- Tidiane, C., Dime, M., & Tandi-Soumelong, L. 2017. *État des lieux des liens entre migration, transferts et résilience au changement climatique au Sénégal*. PRESA, IED Afrique. Retrieved May 5, 2021, from <http://www.iedafrique.org/PUBLICATION-Etat-des-lieux-des-liens-entre-migration-transferts-et-resilience.html>
- Tiffen, M., & Mortimore, M. 2002. Questioning desertification in dryland sub-Saharan Africa. *Natural Resources Forum*, 26, 218-233. <https://doi.org/10.1111/0165-0203.t01-1-00023>
- Tschakert, P. 2007. Views from the vulnerable: Understanding climatic and other stressors in the Sahel. *Global Environmental Change*, 17, 381-396. <https://doi.org/10.1016/j.gloenvcha.2006.11.008>
- van der Land, V., Romankiewicz, C., & van der Gees, K. 2018. Environmental change and migration: A review of West African case studies. In R. McLeman, & F. Gemenne (Eds.), *Routledge Handbook of Environmental Displacement and Migration*. Routledge.
- Voss, R. C. 2021. On- and non-farm adaptation in Senegal: understanding differentiation and drivers of farmer strategies. *Climate and Development*, 0, 1-15. <https://doi.org/10.1080/17565529.2021.1881424>
- Walther, B. A. 2016. A review of recent ecological changes in the Sahel, with particular reference to land-use change, plants, birds and mammals. *African Journal of Ecology*, 54, 268-280. <https://doi.org/10.1111/aje.12350>
- Willekens, F., Zinn, S., & Leuchter, M. 2017. Emigration rates from sample surveys: an application to Senegal. *Demography*, 54, 2159-2179. <https://doi.org/10.1007/s13524-017-0622-y>
- Zuluaga, J. E. 2015. Errance and elsewhere among Africans waiting to restart their journeys in Dakar, Senegal. *Cultural Anthropology*, 30, 589-610. <https://doi.org/10.14506/ca30.4>

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