

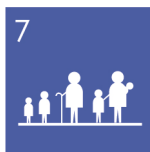
## 26.

## Migration induced by climate change and environmental degradation in the Central Mediterranean Route

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ADVERSE DRIVERS



VULNERABILITIES

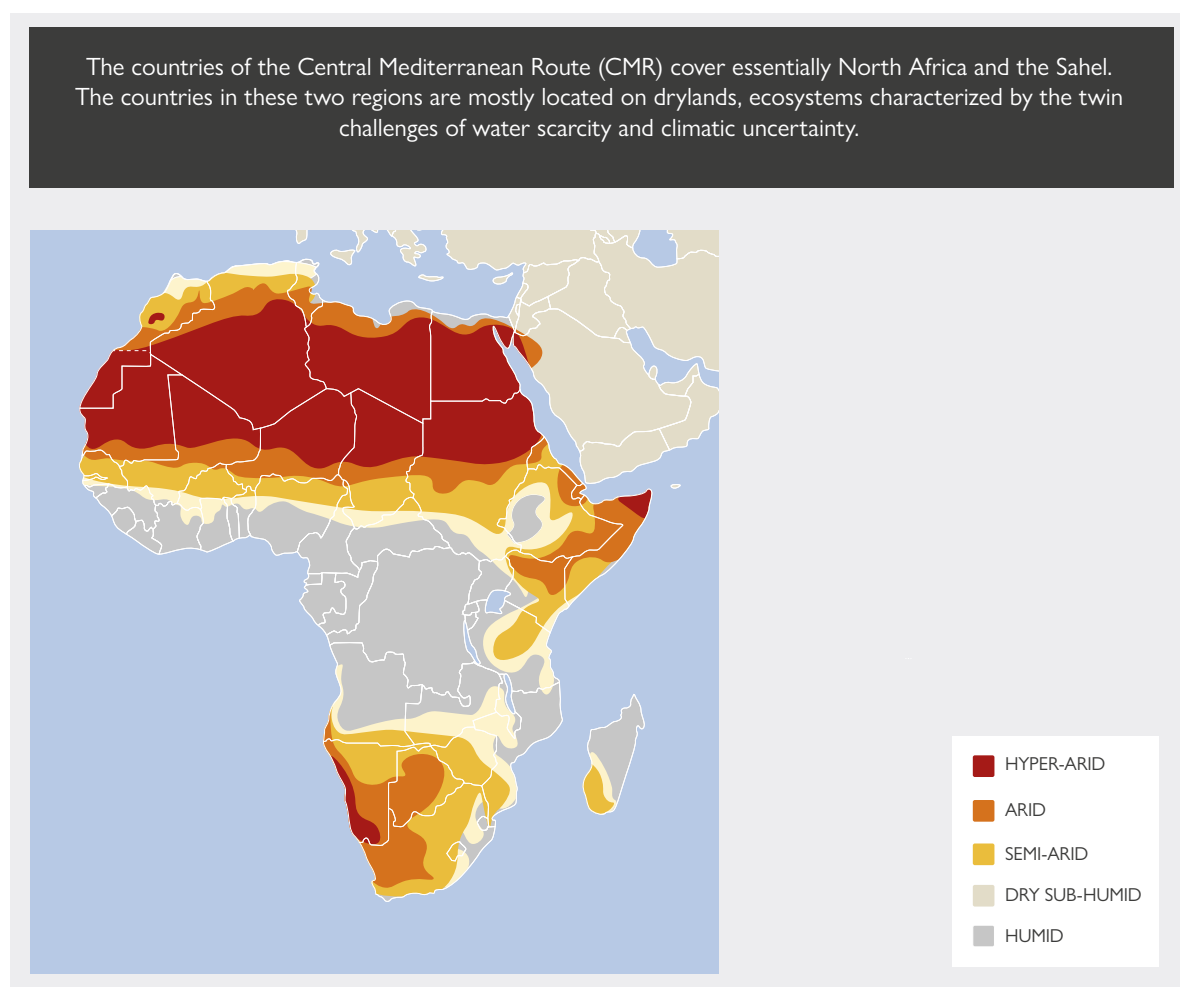
**Abstract:** This chapter investigates the role of climate and environmental factors in driving migration in countries on the Central Mediterranean Route. It uses a literature review to frame the complexity of these linkages, including how climate influences conflict and how conflict drives migration. Land degradation, land tenure insecurity and lack of rainfall are major drivers of environment-induced migration, and land fertility and productivity are key “pull” factors. These results indicate that the European narrative framing migration on the Central Mediterranean Route as primarily “economic” often overlooks key factors, such as climate and environmental drivers of migration. Understanding of the changing climate and environment should be expanded, and initiatives to create income opportunities through land and ecosystem restoration – such as the IOM Initiative on Sustainability, Stability and Security described in the chapter – should be supported.

### 26.1. Introduction: climate and environmental conditions in the Central Mediterranean Route

The countries of the Central Mediterranean Route (CMR) essentially cover North Africa and the Sahel, a surface of 6,000 km from west to east and 3,000 km from north to south. The countries in these two regions are mostly located on drylands, ecosystems characterized by the twin challenges of water scarcity and climatic uncertainty. Whereas Sahelian countries are all among low-ranking countries on the United Nations Development Programme’s 2018 Human Development Index, the countries in North Africa score much higher. All the Sahelian countries, with the exception of Senegal, are listed as being of serious concern in the 2017 Global Hunger Index (Global Hunger Index, 2019).

<sup>1</sup> United Nations Convention to Combat Desertification.

**Figure 26.1.** Drylands in Africa



Source: IPCC, 2019:3–11.

Note: This map is for illustration purposes only. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the International Organization for Migration.

However, the Sahel has not always been known for its poverty. Until the twentieth century, the Sahel was self-sufficient in terms of food production, and even exported part of its harvest (Descroix et Lambert, 2018). Farmers and pastoralists have traditionally thrived in drylands by adapting lifestyle strategies, planting drought-resistant crops, and practicing water harvesting and selective irrigation to minimize the difficulties of living in conditions of distress (UNCCD, 2017).

Nomadic movements or occasional migrations have also been part of the livelihood strategies adopted by individuals or households living in drylands (Abdelali-Martini and Hamza, 2014). In West Africa, rural populations frequently use migration to cope with the seasonality of the climate (Barbier et al., 2009), sending young adults to the cities in the dry season to reduce the demands on household food supplies and in the hope they may earn money (Rain, 1999).

Part of the explanation of the misfortune falling in the Sahel has been the impact of climate change: the 25-year drought in the Sahel in 1968–1993 contributed to the collapse of rural societies (Descroix et Lambert, 2018), whose survival mechanisms have proven to be insufficient to cope with the impacts of the changing climate.

The countries of the CMR are particularly vulnerable to climate change because of their heavy reliance on rain-fed agriculture, which contributes 40 per cent of the combined Sahelian gross domestic product (GDP) and employs more than 70 per cent of the labour force in the Niger, Burkina Faso, Mali and Chad (Sartori and Fattibene, 2019).

Temperatures in the region have been rising. Since 1950, weather stations in West Africa have measured an increase of around 1°C across the region (Morice et al., 2012), and in the Sahel the change is higher – 1.5 to 2°C. Monthly temperature records show that the warmest months of the year – April, May and June – have experienced even greater increases in temperature of up to 3°C (Guichard et al., 2015). According to Niang et al. (2014), average temperatures in the region are projected to increase between 1.5°C and 4°C by mid-century, compared with the period 1986–2005. The number of heatwave days each year is also projected to increase significantly by 2050, especially in the western Sahel (Vizy and Cook, 2012).

The implications of this warmer temperature for rainfall are less clear. A significant increase in climate variability is expected. This means more frequent droughts and heavy rainfall events (IPCC, 2014), disrupted planting and cropping seasons, and hence lower yields and falling household income. In Ghana, land degradation decreased agricultural incomes by USD 4.2 billion between 2006 and 2015, and poverty increased by 5.4 per cent in the same period, due to various factors, including land degradation. The annual cost of land degradation was estimated at about 0.5 per cent of GDP in Tunisia and Morocco (IPCC, 2019) and up to 20 per cent in Burkina Faso (UNCCD, 2017). Some studies found that climate change impacts on migration by reducing crop yields (Cai et al., 2016) and GDP per capita (Cattaneo and Peri, 2016).

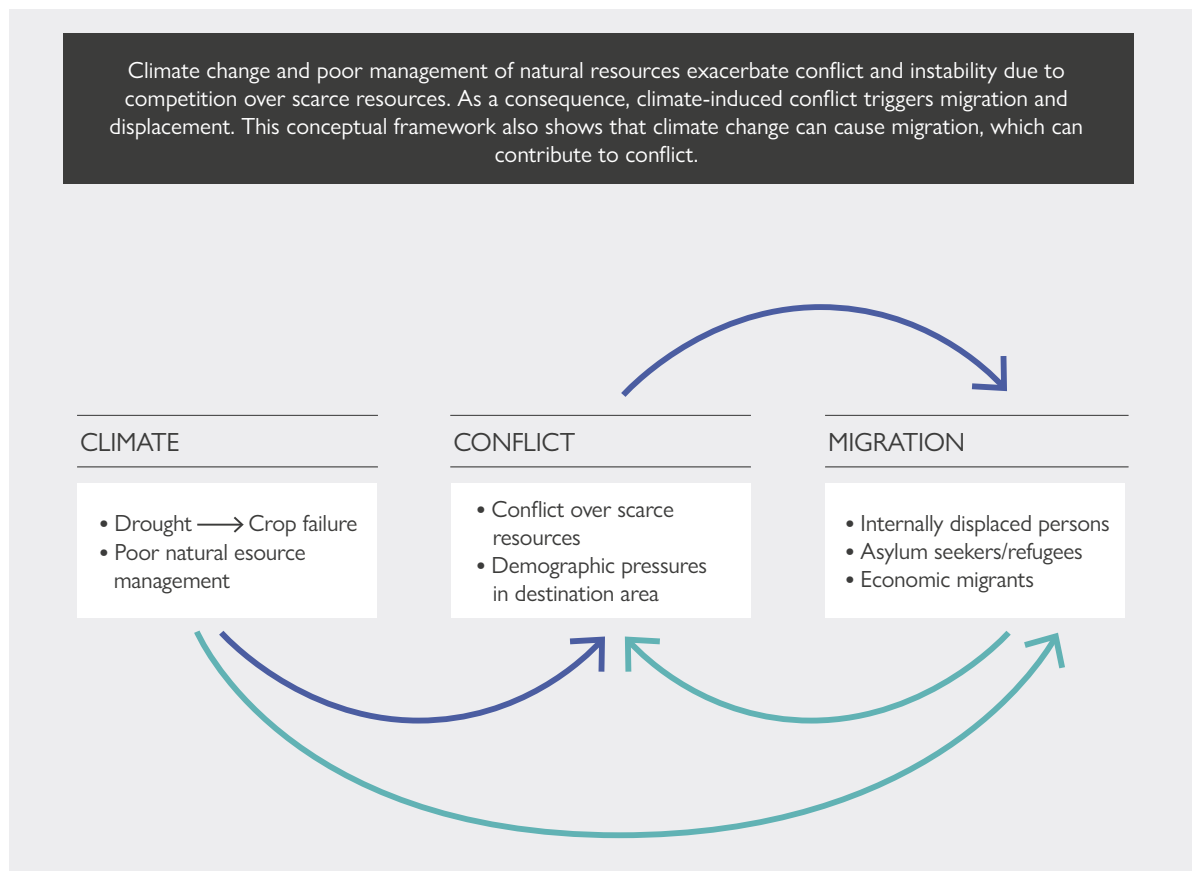
The idea that climate and environmental factors are drivers of migration has been accepted and incorporated in international documents and frameworks on migration, such as the Global Compact for Safe, Orderly and Regular Migration. However, the general lack of understanding of the complex relationships between environmental changes, conflict and migration remains a major challenge. This also includes the measures to address it. Yet, increased understanding is crucial, and action is needed. After a brief review of the literature on climate change, environment and migration (section 26.2) and a description of the main problems related to this phenomena in the countries of the CMR area (section 26.3), I propose land restoration as a measure to address the issue and describe how the African countries have taken action with an intergovernmental initiative (section 26.4).

## 26.2. Climate change, environment and migration: methods and challenges

According to the Intergovernmental Panel on Climate Change (IPCC) (2014), climate change and variability are expected to aggravate poverty, food insecurity, inequalities, violence and conflicts. The interplay between climate, conflict and migration is complex and the scientific literature on this is still in its infancy, and provides mixed results. On one side, Beine and Parsons (2015) included violence and climate change variables in their model on migration and found that the increase in the incidence of violence corresponds with higher migration flows. Reuveny (2007) analysed 38 cases since the 1930s in which environmental changes triggered mass migration, and concluded that 19 of them resulted in some form of conflicts due to competition over scarce resources.

While it was relatively easy to find evidence that migration is influenced by conflict, finding evidence that climate change and environmental pressure induce migration through conflict was a difficult task (Abel et al., 2019). Based on the literature on the relationships between climate and conflict, as well as between conflict and migration, Abel et al. (2019) designed a framework (Figure 26.2) that shows the interplay of conflict and climate change on migration.

**Figure 26.2.** Conceptual model of climate, conflict and migration



Source: Abel et al., 2019.

Figure 26.2 describes how climate change and poor management of natural resources exacerbate conflict and instability due to competition over scarce resources. As a consequence, climate-induced conflict can trigger migration and displacement. This conceptual framework also shows that climate change can cause migration, and both can contribute to conflict. For Abel et al. (2019), it is crucial to analyse the causality structure of the relationship between climate, conflict and migration in two steps: by first looking at how climate influences conflict and then at how conflict drives migration.

While describing their conceptual model, Abel et al. (2019) also warn about the challenges encountered in the literature on climate change/environment and migration. In particular, they underline that most of the macrolevel studies use linear models where the drivers of migration (such as climate, political factors, economic conditions and conflict) are assessed simultaneously. Then, the specific impact of climate change on migration is isolated, often using multivariate models (Piguet, 2010).

A key challenge for measuring climate and environmentally induced migration is the general lack of empirical data (Gemenne, 2011). Climate change science and research on migration are often difficult to compare, due to scalar mismatches (aggregate relationships are a focus of empirical migration findings, as opposed to local, small-area climate predictions), temporal mismatches (migration models tend to be static, whereas climate models tend to be dynamic), and treatment of forecasting (probabilistic models are rare in migration research, but common in climatologic research), according to Raleigh et al. (2008). A common research method to identify possible environmental “signals” in migration patterns is to combine environmental datasets with existing census data comparing the timing of changes in environmental conditions with the timing of migration movements of individuals and households (Fussell et al., 2014).

Other concerns relate to the framing of the research. For example, Gemenne (2011) highlights that the importance assumed by climate change on the international agenda has overshadowed the research on other types of environmental drivers. As a result, many studies assume that what holds true for migration driven by climate change also applies to other environmental drivers. Furthermore, the bulk of the literature on the topic focuses on three main aspects: the weight of environmental factors in the migration decision, the number of people who could be displaced, and the legal and humanitarian problems posed by these new flows of migrants (Gemenne, 2013).

Finally, projections are also based on problematic assumptions, as most of them just consider the numbers of people who would be leaving an area “at risk” as a proxy for the number of potential migrants (Ionesco et al., 2017).

## 26.3. Climate and environmental change-driven migration in the Central Mediterranean Route

Reviewing the case studies in the countries of the CMR, it appears that long-distance and international migration tend to decrease during drought because of people’s reduced ability to invest in long-distance migrations during slack periods (Henry et al., 2004a) or because they hope to return home once rain is back. This was confirmed by studies in Burkina Faso, where people from drier regions are more likely to engage in temporary and permanent migration to other rural areas (Henry et al., 2004b); and in Mali, where migration during drought was limited to short-distance rather than international destinations (Findley, 1994). The study of Bleibaum (2009) on two villages in Senegal’s Peanut Basin demonstrated that the richest village had individuals who migrated to larger cities or Europe, and for longer times, while in the poorer village, people migrated seasonally only to the cities. All the interviewees coming from dry areas said that they would have left (for the cities or abroad) if life in the village – which depended on agriculture – was no longer possible, while those living near the river, where irrigated agriculture was possible, said that they would have stayed.

In the Niger, Senegal and Benin, migration often occurs in fragmented journeys, where crossing the border is only one step of the longer itinerary. To diversify the incomes and sustain the families, households send one of their members to the city, with the aim of receiving remittances to cope with the disruption (Jonsson, 2010). According to Afifi (2011), environmental degradation has a considerable impact on migration in the Niger. Although seasonal migration is part of the culture of the Niger, long-term and permanent migration is becoming more frequent, due to the effects of climate change. Migrating to Europe is not a common dream for the people of the Niger. They generally prefer to stay on their land but, when environmental conditions deteriorate, rural youths are left with no choice other than moving elsewhere to live and work. According to Mounkaila (2002), it is a chronic food deficit that would lead to the permanent abandonment of an environmentally degraded area. It is a last resort solution because immobility would result in death from starvation.

Guinea, the Gambia, Côte d’Ivoire, Nigeria and Senegal, as coastal countries, are also highly vulnerable to environmental changes in the form of coastal erosion, soil salinization and land degradation. Senegal ranked as the world’s eighth most at-risk country in terms of sea-level rise (Amara et al., 2019). While a growing number of fishermen had to leave their homes and equipment because of the rising sea, mass outmigration of youth in the surrounding dry areas often leads to land abandonment (Foresight, 2011; Hunter and Nawrotzki, 2016). In Nigeria, according to a 2011 study, the homes of 9.7 million people could be affected by sea-level rise in 2050 (Wheeler, 2011).

However, the main climate-induced risk relevant to Nigeria is due to the decreased economic opportunities. A total of 60 per cent of Nigeria’s population and three quarters of its unemployed are under 30 years of age. Evidence suggests that disenfranchised young people who lack resources and economic opportunity are more likely to join violent non-State groups (Langer and Ukiwo, 2011) such as paramilitary forces. Nigeria has also witnessed how the climate-migration dynamics contribute to increasing violence and conflicts. The shrinking of Lake Chad has become a threat for over 15 million Nigerians living in the area and about 10 million others living outside Nigeria’s shores (Akubor, 2017). Abbass (2012) argued that the exacerbation of vulnerability and conflict in Northern Nigeria is both a product of the impact of climate change and drought leading to competition between farmer and pastoralists

for grazing and farming land. The changes in the environment and the scarcity of resources worsened pastoralists' relationship with farmers as well as the intensity and magnitude of pastoralists' movement southwards. This exodus in search of pasture land caused widespread conflicts and violence (Akubor, 2017).

Ghana's environment has been severely affected by climate change in the past 10 to 15 years, and has experienced an increased frequency of natural hazards, which in turn have intensified migration from the drier northern regions to the richer southern lands (Sow et al., 2014) and towards urban areas. Despite a higher cost of living, Kumasi and Accra attract migrants, due to perceived employment and education opportunities (Paone and Richmond, 2017). While many migrants perceive their decision to migrate as an economic and food security choice, the initial drivers are related to land degradation and climate change impacts (Warner et al., 2012). There is evidence that when farmers control water availability with irrigation systems, produce more money per tilled acre, migration propensity decreases (Bawakyillenuo and Alfred, 2013).

Sanfo and Fonta (2017) investigated the role of environmental factors on farmers' intervillage migration in 12 villages in south-west Burkina Faso, and found that land degradation, land tenure insecurity and lack of rainfall were major drivers of environment-induced migration. Almost 90 per cent of the interviewees considered productive land to be the main "pull" factor of their decisions to migrate and 74 per cent reported that land had become infertile in their own villages, compared with land fertility in the host zone. The study concludes that it is important to design policies that address adaptation and land restoration to reduce environmental degradation that puts too much pressure on farmland resources.

Land restoration and sustainable land management therefore have the potential to successfully reduce the negative impacts of climate change and environmental degradation on rural poverty – and hence on potential migration – by raising household incomes and diversifying livelihoods, creating and improving employment opportunities, and reducing gender and social inequality (IPBES, 2018:353; Adams et al., 2016).

## 26.4. Restoring degraded lands to address the root causes of migration

The root causes narrative is based on the idea that most migration to Europe is driven by economic factors; hence, an increase in economic opportunities in countries of origin will reduce migration (Fine et al., 2019). To make sure that politicians and policymakers continue to agree on investing in developing local economies and expanding opportunities for those who desire to stay, but are unable to do so, it is crucial to recognize that the root causes of migration go beyond economic factors. Climate change, environmental degradation and climate-induced conflicts are crucial drivers that compel people to migrate.

Measures linking sustainable land management with migration management policy and practice have proved to be of relevance to create positive opportunities for migrants and communities (IOM and UNCCD, 2019). Making sustainable land management and ecosystem restoration compatible with the creation of dignified and attractive employment opportunities is key for averting and minimizing climate- and environment-induced migration.

However, the working conditions in rural areas are often precarious because jobs are mostly informal, with no written contracts and little or no social protection (Deotti and Estruch, 2016). In order to retain and attract rural youth who have become increasingly disillusioned with the prospect of working in rural areas, it is essential to improve the quality of jobs, especially for those least protected, poorly remunerated, and of low status (ILO, 2017); secure their access to land; and protect their land rights.

The 3S Initiative is a renewed and determined effort to transform degraded lands in an inclusive and income-generating opportunity that creates the millions of jobs needed to foster stability and sustainable development. It is a State-led initiative launched by Morocco and Senegal at the African Action Summit by the Heads of State and Government (Marrakesh, November 2016) to bring a "voice for Africa" in the debate over the environmental drivers of migration and instability on the continent.

The 3S Initiative has two main objectives: (a) addressing climate change by increasing the area of arable land and forests in Africa, which requires investment in restoration and sustainable management of degraded lands; and (b) reducing migration pressures by creating new rural jobs in Africa through investment in agriculture, agro-industry and forestry. The focus is on employing young people, migrants, displaced populations and individuals targeted by extremist groups.

The 3S Initiative is unique in that it addresses the interlinked issues that threaten the sustainability, stability and security of the African continent: climate change and migration pressures. The 14 African countries (Benin, Burkina Faso, the Central Africa Republic, Chad, the Gambia, Ghana, Mali, Morocco, the Niger, Nigeria, Rwanda, Senegal, Zambia and Zimbabwe) participating in the 3S Initiative so far have prepared projects that address the above objectives. Foreseen are the following specific activities: restoration of agricultural degraded lands and forests; protection and management of watersheds; start-up support for individual farmers through cash grants, agricultural tools and training; transfer of land tenure rights to individual farmers; financial incentives for the creation of private enterprises in agro-industry and forestry; support for village groups to strengthen local agricultural production; and creation of eco-villages to promote ecological tourism.

Restoration efforts in drylands frequently encounter several limits, such as drought and scarce soil productivity. Since climate change projections indicate an increase of drought and more severe heatwaves in many dryland regions, ecosystems need to become more resilient to shocks, adverse weather conditions, water limitations and changing rain patterns. Technologies for reintroducing native plants and recovering critical ecosystem functions are available, but climate change projections introduce large uncertainties about the sustainability of current restoration practices. Currently, there is a lack of knowledge of adaptation limits and potential maladaptation to combined effects of climate change and desertification. Extreme forms of desertification can lead to the complete loss of land productivity, limiting adaptation options. Some adaptation options can lead to serious environmental impacts, such as irrigation causing soil salinization or overextraction leading to groundwater depletion. Economic, social and environmental sustainability is the ultimate aim of all restoration activities under the 3S Initiative, but there is no ready-made recipe. Restoration activities need an inclusive approach involving decision makers at all levels. Dialogue among multiple sectors and stakeholders is crucial to address the drivers of land degradation, improving policies, choosing restoration sites, securing tenure, supporting markets and attracting investment.

The countries involved in the 3S Initiative believe that social cohesion, peace and prosperity can be achieved by providing access to land and securing tenure to youth and other vulnerable groups, and by investing in the restoration of land and rural infrastructure. The secretariat entrusted to the United Nations Convention to Combat Desertification (UNCCD) and the co-chairs have devoted significant efforts to: (a) build a network of senior officials/ Sherpa (advisors to Heads of State and Government) that led the advocacy efforts and ensured that the climate change–migration nexus be considered in the international processes on migration, such as the Global Compact for Migration, the Valletta Action Plan, the Rabat Process and UNCCD Conference of the Parties decisions; and (b) build a multi-donor trust fund based in a development bank to implement the Initiative. Implementation is at the early stages. Countries are working on developing national strategies to identify the target areas and vulnerable groups as well as the road maps to create the new job opportunities.

In the framework of the 3S Initiative, IOM is implementing a community stabilization project supported by UNCCD. The project focuses on migrant reintegration and on countering radicalization through the creation of jobs related to the restoration of degraded lands and their productive base in Agadez, the Niger. Agadez was chosen as a “demonstration site” for the 3S Initiative because the region is highly affected by desertification, and its population has been surviving for years on economic activities related to migration, such as catering, transport and accommodation for the transiting migrants. Increasingly strict immigration policies have decreased the income of those offering services (such as housing, transports and the like) to the migrants, and local authorities are worried that the lack of jobs could lead to the terrorisme de prestation individuals who, out of desperation, accept to work for radicalized groups to obtain remuneration. So far, 200 hectares of land have been identified for a pilot experiment of restoration to create green jobs based on sustainable land management, reduced environmental impact and decent work conditions. Of this, 30 hectares have been restored and allocated to the selected beneficiaries (unemployed youth, former smugglers and returning migrants). Each beneficiary has received from the authorities one hectare of land to use for income-generating activities. Vegetable farming is very much dependent on season, some seasons not being as profitable as others. With that in mind, and until the end of the project, each of them receives a monthly

allowance of CFAF 60,000 for two years, the time estimated to restore the degraded lands and be able to have an income from the produce of the lands. On the same land, 500 West African migrants have been trained in sustainable land management, while residing at the IOM transit centre and awaiting return to their countries of origin. Through the technical training and the practical sessions offered on the plots of land allocated by the city of Agadez, the participants learned new skills in view of returning to their countries of origin, where central and local governments are expected to provide land concessions for the returnees who have been trained.

## 26.5. Conclusions

The political crisis around migration in Europe has prompted international development efforts to renew their focus on the relationship with African countries along migration routes. This provided the opportunity to promote strategic investments towards productive sectors and programmes, with the aim of creating new jobs. However, to make these investments work in the medium and long term, dialogue with countries of origin and transit should move beyond the “root causes” approach and consider the crucial role of climate and environmental change in the equation.

This requires considering that people might be compelled to leave their countries of origin because of their exposure to climate-related hazards and environmental degradation that affect livelihood options and increase rural unemployment. An increase in economic opportunities in countries of origin will not be sufficient to reduce migration, without the implementation of efficient policies and strategies aimed at mitigating and adapting to climate impacts and environmental degradation, including by restoring lands and ecosystems.

Tying migration management objectives with pre-existing poverty reduction programmes is not sufficient. A comprehensive approach that accounts for the need to adapt to climate change, restore the degraded natural assets and create alternatives to forced migration is necessary. If large-scale initiatives on migration, development and the environment fail to achieve their aims, security-driven approaches to migration might gain more traction, leaving many to migrate via irregular channels as the only alternative for survival.



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