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Content

Executive Summary

Climate change has become one of the most pressing issues of our time, and its impact is being felt all over the world. One of the most significant consequences of climate change is the displacement of people due to its effects. The Middle East and North Africa (MENA) region is particularly vulnerable to climate change, and it is expected that it will be one of the most affected regions in the world. The MENA region is home to some of the world's most fragile ecosystems, and its inhabitants are already facing numerous environmental challenges such as desertification, water scarcity and heatwaves. These challenges are expected to worsen in the coming years, and it is predicted that the MENA region will experience more frequent and intense weather events, such as droughts, floods and storms, as a result of climate change. Consequently, climate-induced internal displacement is becoming an increasingly critical issue in the MENA region. It is estimated that millions of people in the region are at risk of being displaced due to the effects of climate change, such as rising sea levels, water scarcity and extreme weather events. This displacement can have severe social, economic and environmental consequences for the affected individuals and communities, and it is essential to develop policies and strategies to address this issue. Hence, the study delves into the complex and multifaceted issue of migration, specifically internal migration, which is caused by climate change and its effects on the well-being of households. The primary focus of the study is on the MENA region, where climate-induced migration has become a significant concern. The study comprises five chapters that offer empirical evidence, policy analysis, legal and policy frameworks, and recommendations for policy-makers to better understand and address the problem of climate-induced migration and displacement.

Chapter 1 examines the impact of internal climate change-induced migration on food insecurity, unemployment and wages of households in Egypt and Jordan. Using household-level data, the study finds that climate-induced migration increases rural-to-urban migration, leading to more people competing for fewer jobs in urban areas, resulting in higher unemployment, lower wages and higher food insecurity.

Chapter 2 assesses the prospects and challenges of European Union (EU) Migration Cooperation programmes with the southern neighbourhood, and in particular with Morocco and Tunisia, in light of the climate change and forced displacement nexus. Taking as case studies the existing financial and migration cooperation programmes with Tunisia and Morocco, the chapter highlights the lack of today's EU action to address displacement and migration related to climate change and environmental degradation in the region. It addresses specific policy recommendations to the EU in the framework of future migration partnerships with Tunisia and Morocco and highlights innovative tools and solutions to be included that help decrease climate vulnerability and enhance climate resilience and adaptation capacities of affected communities.

Chapter 3 explores climate-induced internal displacement in the MENA region under the international legal and policy prism. It highlights the need for a regional framework

based on international standards adjusted to the needs of the MENA region. It examines the case study of Egypt to explore how international standards can be successfully implemented in the region. The chapter also explores the gender aspect of climate displacement and provides recommendations on how to reduce the vulnerability of women and girls in the MENA region.

Chapter 4 explains how climate change has been affecting the Sahel region for decades, giving rise to ecosystem deterioration, desertification, famine, poverty, state weakness, military coups and population displacement. The chapter compares the situation in Sahel with that of North African countries and concludes that both regions are interlinked and affected. The chapter recommends measures to be implemented in North African countries to avoid a potential worsening of the situation.

Chapter 5 provides a set of recommendations that inform public policy-making to mitigate and adapt to climate change impacts and protect the most vulnerable in the MENA region. The chapter highlights the interlinkages between climate change and internal displacement and examines the climate initiatives being implemented by the region's governments. The chapter identifies the relevant stakeholders and actors - such as government institutions, regional organisations and political and economic unions and civil society organizations (CSOs) and local non-governmental organizations (NGOs) - and proposes a set of economic, social and environmental recommendations to tackle stress points in an already prone region.

The study emphasises the need for a holistic approach to tackling the root causes of migration. These factors are often interconnected with other drivers of insecurity, such as poverty, conflict and environmental degradation. Therefore, it is crucial to understand the interplay between these factors and develop comprehensive strategies that take into account their multidimensional nature. It also provides policy-makers with recommendations for developing long-term adaptation and resilience mechanisms for affected communities. These recommendations aim to spur sustainable development at all levels, from local to national, by empowering communities to adapt to the adverse effects of climate change and enhancing their capacity to cope with future challenges.

In summary, the study underscores the urgency of addressing the problem of climate-induced migration in the MENA region and calls for concerted efforts by policy-makers, academics, CSOs and other stakeholders to develop innovative solutions to this complex challenge.

Introduction

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Within the context of climate change, environmental migration is defined as "temporary or permanent displacement due to natural disasters, drought, crop failure, and human-made changes to habitat" (Simonelli, 2016; Daoudy, Sowers & Weinthal, 2022). However, it is useful to consider herein the broader concept of migration. It is defined by the United Nations (UN) International Organization for Migration (IOM) as movement across an international border or within a state away from habitual places of residence, regardless of legal status, whether the movement is voluntary or involuntary, the causes for the movement, or the length of the stay (2019). In this report, migration is used to signify internal migration.

In recent years, there has been an increasing focus on the link between climate change and migration, particularly in the context of internal displacement. However, it is essential to note that climatic drivers cannot always be disentangled from other migration drivers, such as economic, political and social factors. This complexity makes it challenging to identify and quantify the impact of climate change on migration patterns. As a result, some of the findings in the literature on climate-induced migration take into account migration patterns more broadly. While this approach can make it difficult to isolate the impact of climate change on migration patterns, it provides a more nuanced understanding of the factors that drive migration in the Middle East and North Africa (MENA) region. By taking a more comprehensive approach to understanding migration patterns in the MENA region, researchers can develop a more nuanced understanding of the factors that contribute to displacement. This approach is particularly important in this region, where complex and interrelated factors often drive migration.

The main objective of this study is to provide policy recommendations and a policy brief to national-level policy-makers in the MENA region and policy-makers in the European Union (EU) member states to adapt to and mitigate the impacts of climate change on internal human displacement. To achieve this goal, the study group focused on four main topics: the impacts of climate change on forced displacement and well-being; EU cooperation policy with the southern neighbourhood; internal displacement under the international framework; and the relationship between climate change, internal displacement and state fragility in the Sahel region. Addressing these topics is crucial for developing a comprehensive approach to mitigating the impacts of climate change on forced displacement and well-being, and for ensuring that EU cooperation policy effectively supports these objectives. By learning from the experiences of regions like the Sahel, policy-makers can inform effective policy recommendations for other regions facing similar challenges.

To address the aforementioned objectives, the study group followed a rigorous methodology consisting of the following steps: 1) Literature Review: the study group conducted an extensive review of relevant literature, including academic papers, reports and policy briefs, to understand the current state of knowledge regarding the impacts of climate change on forced displacement and well-being, as well as best practices in policy responses to these issues; 2) Data Collection: the study group collected data from various sources, including international organisations, governments, and non-governmental organizations (NGOs), to assess the current situation regarding internal displacement, climate change and state fragility in the MENA region and the Sahel; 3) Data Analysis: the study group analysed the collected data to identify key trends

and patterns related to climate change, internal displacement, and state fragility in the MENA region and the Sahel; 4) Case Studies: the study group conducted case studies to examine the impact of climate change on internal displacement and well-being in specific regions of the MENA and Sahel regions; 5) Policy Recommendations: based on the findings from the literature review, data analysis and case studies, the study group developed a set of policy recommendations for national-level policy-makers in the MENA region and policy-makers in EU member states. These recommendations were designed to adapt to and mitigate the impacts of climate change on internal human displacement and to promote the well-being of affected populations; and, finally, 6) Policy Brief: the study group developed a policy brief that summarised the key findings and policy recommendations in a concise and accessible format, suitable for dissemination to policy-makers and other stakeholders.

The Impact of Climate Change-Induced Migration on Well-being

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Introduction

A wide range of circumstances heavily impacts the decision to migrate. Unemployment, insufficient economic prospects, poverty, hunger, conflicts, climatic upheaval, and environmental degradation are potential factors of migration. However, households can use migration as a coping mechanism, dealing with income volatility and the associated risks of food insecurity, which indirectly links agriculture and migration (Etzold et al., 2014; Voukelatou et al., 2021; Demont, 2022; Obi et al., 2022).

Although human migration in response to ecological change has occurred since our species' origin (Finlayson, 2005), the recent push that anthropogenic climate change is exerting on human migration is relatively new and is gradually intensifying (McMichael et al., 2012; McMichael, 2014; Schwerdtle et al., 2018; Helbling & Meierrieks, 2022). Droughts, flooding, rising sea levels and more frequent and intense climate-related disasters are just some of the environmental changes and climatic shifts that influence human migration patterns around the world (Foresight, 2011).

In Figure 1, the relationships between climate change, migration and well-being are illustrated, which do not directly infer causality but constitute a complex interrelationship. Well-being can be defined as the quality of life and people's livelihood. There is no consensus around a single definition of well-being, but there is general agreement that well-being includes economic, psychological, emotional and social well-being, health status and life satisfaction, among others (Centers for Disease Control and Prevention, 2000; Van Lente et al., 2011; Tran et al., 2020). Furthermore, well-being includes subjective measures, such as life satisfaction and mental well-being, and objective measures, like employment and income. However, based on the objective and available data employed in this study, the analysis focuses on the economic well-being measured by labour outcomes and food security.

This chapter explores the effect of climate change-induced migration on economic well-being, measured by food insecurity and labour outcomes of households in Egypt and Jordan. Based on the surveys and the available data, we focus on the economic well-being of the respondent migrants and not on the economic well-being of the host communities. The justification for focusing on these outcomes in those particular countries lies in the available detailed micro-level household data that records in detail the households' location that can be merged with climate change indicators. Furthermore, food insecurity and labour outcomes are chosen to have consistent estimates in terms of exploring the same outcomes. Surveys in the countries explored in this chapter provide valuable information about reasons causing household migrations, such as for economic reasons or because of climate change, which is the aim of this chapter.

We should highlight that we focus on economic well-being outcomes for two reasons. First, these measures are recorded in the surveys employed in the analysis, while subjective measures are unavailable. Second, objective measures of well-being, such as income and employment, are not influenced by the perceptions, perspectives and opinions of others and, thus, can be more precise. In other words, these measures are comparable among people, while the analysis that relies on subjective well-being measures using cross-sectional data is difficult because of the different perceptions and preferences of each individual, implying that the ranking of subjective measures varies by person (King et al., 2004; Lucas & Donnellan,

2007; Knott et al., 2017). Thus, it is difficult to interpret the questions in a similar way.

Based on Figure 1, we explore the impact of climate-induced migration on three economic well-being outcomes. One option is to construct an index of economic well-being using these three variables. However, the benefits of condensing several well-being measures into a single index must be weighed against various methodological issues. It is not entirely clear that it can provide a coherent account of what an aggregate overall well-being index represents. This is because, at their most basic level, the various components of well-being represent distinct concepts (Howe et al., 2008; OECD, 2013). As we discuss in more detail in the methodology section, the unit and scale of measurements of the economic well-being outcomes are different, and they follow different distributions.

Furthermore, the sample of analysis varies across each well-being outcome. In particular, wages refer only to employed people, while the empirical analysis for employment relies on the sample of respondents who are employed or looking for a job. However, it does not include those who do not participate in the labour markets, such as students, people with impairments and retired. On the other hand, the analysis for food security includes all adult respondents in the surveys. Another issue is the relative weight to be given to various aspects or sub-dimensions of well-being also lack a clear basis (Howe et al., 2008; OECD, 2013; Greco, 2018). Moreover, exploring each economic well-being outcome allows us to disentangle the impact of climate-induced migration on each outcome. This may provide more specific insights to policy-makers about the effects of migration that are likely to vary for each outcome and, thus, imply different policy implications and approaches.

Conceptual framework

Figure 1 shows the rationale for exploring the climate change-induced migration impact on economic well-being, such as damage to crop and livestock production, job losses and wage reduction.

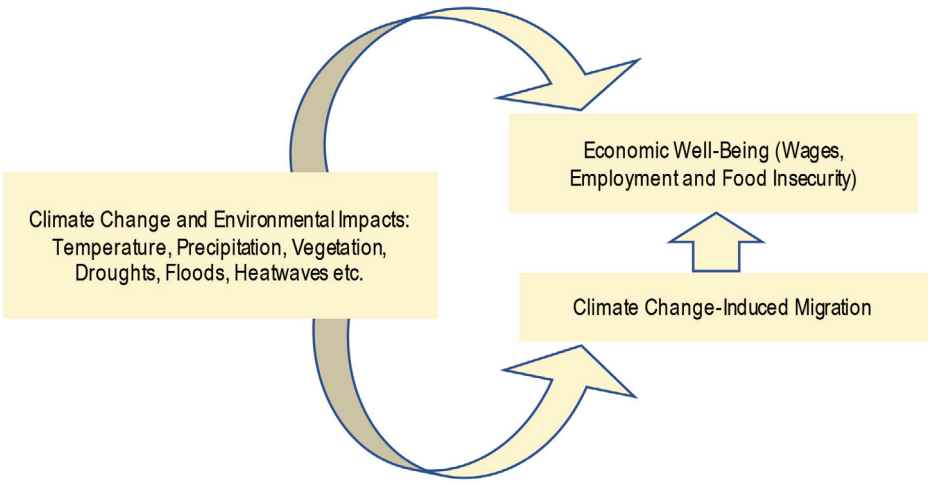
Following Figure 1, we discuss how climate change might affect economic well-being and climate change-related migration and how the latter might affect economic well-being. Food insecurity, income loss and unemployment are largely caused by climate change and especially drought in Africa and the Middle East. People may move to locations with more stable food supplies, agricultural livelihoods, and employment opportunities if they experience long-term or repeated drought or other factors, and climate change shocks that affect income and food security (Kloos & Adugna, 1989; Mendelsohn et al., 2007; McMichael, 2014).

Food insecurity, income loss and unemployment are largely caused by climate change and especially drought in Africa and the Middle East

Many research studies have shown how long-term environmental processes, especially drought, affect migration (Black et al., 2001; Ezra, 2001; IFRC, 2009a; NRC, 2011; Voukelatou et al., 2021; Demont, 2022; Obi et al., 2022). Ezra (2001) uses data from drought-affected regions of northern Ethiopia to suggest that people, especially young people, have been forced to leave their homes due to the threat of hunger. Ezra (2001) found that almost 23% migrated to urban areas because of drought and ecological degradation. Another notable example is the long-term drought and agricultural failures that plagued Syria from 2006 to 2011. More than 800,000 Syrians, including farmers and herders in rain-fed parts of the northeast, have lost their livelihoods as a result of the droughts in 2009, according to the United Nations (UN) and the International Federation of Red Cross and Red Crescent Societies (IFRC, 2009b; Erian et al.,

2010). Two to three million Syrians were living in extreme poverty by 2011, and it is estimated that one million had been seriously affected and were food insecure owing to the droughts. Because of this, people, among them many farmers, ranchers and agriculturalists, left the countryside for the cities in search of better economic opportunities (Erian et al., 2010; Femia & Werrell, 2013).

Figure 1. Conceptual framework of the relationship between climate change, migration and economic well-being



Source:https://www.wilsoncenter.org/article/reorienting-perceptions-climate-change-migration-displacement

While climate change may affect economic well-being and increase migration, climate-induced migration is also associated with adverse effects on the economic well-being of migrants and resettled populations. Climate change may affect food and water security, as well as different forms of migration, such as planned resettlement or forced displacement, also known as forced migration (IOM, 2008; Guterres, 2012; The White House, 2021).

Planned relocation is becoming more widely acknowledged as an adaptation response to the risks posed by climate change to vulnerable populations (Byravan & Rajan, 2006; Biermann, 2010; McMichael, 2014). These are most likely to be localised, intranational, and ideally voluntarily driven. Considering migration's short- and long-term effects in response to climate change risks is essential (Cernea & Schmidt-Soltau, 2006; Penz et al., 2011; Johnson, 2012). Resettlement policies typically create new vulnerabilities among resettled populations, especially among the poor, according to previous evaluations of the outcomes of "development-forced displacement and resettlement" (Cernea, 1997; Cernea & Schmidt-Soltau, 2006; Warner et al., 2008, 2010; Cao et al., 2012).

Stal (2011) describes a case study of planned resettlement in Mozambique's Zambezi basin as a strategy to deal with flood risk through planned resettlement in 2001 and 2007, but food and economic security became more difficult to maintain in the migrated areas. After evacuating those affected by floods, the government placed them in temporary housing and then tried to find permanent homes for them. The resettlement

communities were established near flood-free areas with easy access to essential services like schools and hospitals, as well as agriculturally productive low-lying fertile areas. In contrast, the areas that were protected from flooding have experienced drought and water scarcity, making it impossible for people who migrated there to raise crops and maintain their food and economic security. Migrants have experienced a drop in their food security and living standards, and these communities required government and international aid to survive (Stal, 2011).

When people are forced to leave their communities, they may find that their specialised expertise is no longer useful in the places they migrate. Furthermore, overexploitation of natural resources can result in a lack of potable water, soil degradation, deforestation, pollution and possible epidemics in areas where people migrate, where adequate infrastructure is not available, and where they are directly dependent on the environment for survival, affecting their economic well-being adversely (Warner et al., 2010)

As mentioned earlier, most migrants are moving from rural areas to urban centres, and this trend is particularly strong in low-income countries (Adamo, 2010; Guterres, 2012; McMichael, 2014). Agricultural activities and livelihoods are negatively impacted by climate change events like flooding, water shortages and drought, which will lead to an increase in the already high rate of rural-urban migration (IPCC, 2021). Climate change has directly contributed to rural-urban population migration in search of improved possibilities, such as access to education, health services and better employment opportunities (Lu, 2010; Naudé, 2010; Scheffran et al., 2012; Bryan et al., 2014; Chen et al., 2019; Lyu et al., 2019). In fact, climate change has already begun to amplify rural-urban migration in poorer parts of the world (Helbling & Meierrieks, 2022).

However, while urban areas may provide various advantages for improving living standards, they may also expose people to other risks (Foresight, 2011; McMichael, 2014). Migrants seek to settle into complex new contexts with potentially limited financial and social capital, which may lead to unemployment and limit their capacity to access services, and decent jobs, implying low wages (Lu, 2010; Bryan et al., 2014; Chen et al., 2019).

Urbanisation is associated with under-nutrition, poor health and low levels of well-being, especially for females, large families with children, farmers and low-wage workers, who have an inadequate human capital background, low educational attainment and are typically characterised by high unemployment rates (Satterthwaite et al., 2010; McMichael, 2014). Hence, urbanisation leads to high increases in population, implying that more people compete for fewer jobs, thus leading to a higher propensity for unemployment. Furthermore, in cities, the poor frequently inhabit areas of poor-quality land where they can grow almost no food and lack the financial resources to purchase adequate food supplies. Local and national governments often ignore poor urban settlements, leading to poor infrastructure and high unemployment and underemployment (Campbell, 2010; McMichael, 2014). Our study focuses only on migrants who migrated because of climate change. In this case, the sample also includes farmers, who have completed low educational attainment, or young people with less working experience, implying that they are more vulnerable and less competitive in the labour market (Zohry, 2002; Hatab et al., 2022).

Climate change has directly contributed to rural-urban population migration in search of improved possibilities, such as access to education, health services and better employment opportunities

Literature review

Current and future climate change impacts vary on a regional, national and global scale. Countries, regions, communities and households will experience different effects from climate change on their livelihoods, food and water security, ecosystems and infrastructure. This section briefly discusses earlier studies and provides insights into the impact of climate change in Egypt and Jordan, with particular attention to migration and economic well-being.

Egypt

Nearly half of Egypt's population lives in the Nile Delta, making it the largest urban area in the country (Abdrabo & Hassaan, 2020). Agricultural, fishing and industrial activities can all make use of this strategic location, with agriculture accounting for 40%, fishing for 50%, and industry for 60% of the total (Abdrabo & Hassaan, 2015). But Egypt, particularly the Nile Delta, is vulnerable to several environmental risks, most notably rising sea levels and drought. Nine out of ten scenarios using three different global circulation models predicted long-term decreases in Nile flows of 10%-90% by 2095 (Strezpek et al., 2001; EEAA, 2010). The projected increase in temperature is blamed for a decrease in the production of major crops, such as rice, by 15% by 2050 and 36% by 2100. This will increase food insecurity and lead to a loss of income (Abou-Hadid, 2006, 2009; EEAA, 2010). Warming due to climate change will cause a reduction in productivity and increase water needs (Eid & Ouda, 2006, Mostafa et al., 2021). This is because shorter growing seasons are associated with lower crop yields. Higher temperatures contribute to this problem by reducing the number of days wheat can accumulate the necessary number of growing degree days. However, high temperatures may cause grains to become weakened, causing a reduction in the weight of grains. Wheat yields are predicted to drop because of climate change, particularly the anticipated increase in temperature. Compared to today's conditions, average yields will be 8.6 and 11.1% lower in 2050 and 2100, respectively. In the face of climate change, wheat's water needs will rise from around 6% in 2050 to nearly 12% in 2100 (Mostafa et al., 2021). This will lead to a rise in the general level of prices, which leads to a decrease in per capita food consumption (KCAL per capita per day), and thus, a reduction in food security by around -1.7% and -3.8% during 2030 and 2050, respectively (Nassr et al., 2021). Climate change will further decrease income as the study by Eid et al. (2007) found that by 2050 an increase in the temperature of 1.5°C and 3.6°C will lead to a reduction in net revenue per hectare by $1,453.41 and $3,488.18, respectively. Other scenarios project that agricultural production will decrease by 8 to 47% by 2060, with reductions in agriculture-related employment of up to 39%. Furthermore, welfare losses in agriculture are estimated to range between 40 and 234 billion Egyptian pounds (EGP) in 2060 (UNDP, 2013).

The scenarios project a rise of 0.5 metres in sea level could displace 2-4 million Egyptians by 2050 and encourage migration from the coastal zone to other areas (Ministry of Foreign Affairs of the Netherlands, 2018a; Mostafa et al., 2021; Jungudo, 2022). In Alexandria, a loss of 32,000 jobs would occur at the height of 0.18 metres and a loss of 195,000 jobs at the height of 0.5 metres (EACH-FOR, 2008; Wodon et al., 2014). By 2050 it is expected that the productivity of two

major crops in Egypt – wheat and maize – will be reduced by 15% and 19%, respectively, which will further reduce food security and increase migration of 6-7 million people (EACH-FOR, 2008; Wodon et al., 2014; Mostafa et al., 2021).

The study by Hatab et al. (2022) shows that rural-urban migration is associated with a negative impact on welfare by 2.4%. Their study uses a composite index composed of household assets and resources as a proxy for welfare and economic well-being. Wodon et al. (2014) found that climate change and extreme weather events increase temporary and permanent internal migration in a sample of Middle East and North Africa (MENA) countries, including Egypt. Youssef et al. (2017) show that, if an increase of one month with temperature is above the 95 percentile of temperature distribution increases, the number migrants from those areas increases by 3.31%. However, these studies either do not distinguish whether migration is caused by climate change or other reasons or do not explore the impact of climate-induced migration on economic well-being, expressed by food security, income and employment.

Jordan

Jordan is characterised by an arid climate and has limited arable land accompanied by a scarcity of water resources. Studies show that an increase of the temperature by 1, 2, 3 and 4°C reduces the yield of barley, respectively, by 14%, 28%, 38% and 46% (Al-Bakri et al., 2011; Dixit et al., 2018; Ministry of Foreign Affairs of the Netherlands, 2018b).

The study by Al-Bakri et al. (2013) explores the impact of climate change, land use changes and population growth in certain areas, also coming from migration, on water scarcity and food security. In their study, land use changes refer to intensive urbanisation caused by migration and population growth at the cost of irrigated and rain-fed lands (FAO, 2010). This is a particular problem in Amman, where more than half of the country's population lives. Workers and families in communities where agricultural income has fallen are migrating to urban centres. As droughts and other adverse effects of climate change become more common, climate migrants move to urban and metropolitan areas, especially in the capital city of Amman, where more secure water sources exist. Because of this, in 2018, rural-to-urban migration increased, with about 15% of the country's farmers leaving their lands or diverting their use from agriculture to other uses (UNDP, 2019; Hagood, 2020).

According to the findings by Al-Bakri et al. (2013) using climatic scenarios, a 2°C increase in air temperature would increase the net irrigation amount for potato and squash by 23%, whereas the combined impacts of increased air temperature and land use change would decrease the total production of most irrigated crops by 27%. Climate change will raise the need for irrigation water by 14% in 2030 and 28% in 2050. Without improving irrigation efficiency, the average decrease in water use efficiency (WUE) would reach 9% and 17% by 2030 and 2050, respectively (Ministry of the Environment, 2006; Al-Bakri et al., 2008, 2013; Jordanian Ministry of Water and Irrigation, 2016). These shifts can be attributed to lowered precipitation and rising temperatures, as they increase the amount of water needed to sustain agricultural growth. This will put more pressure on water resources, and farmers might abandon the cultivation of important crops like wheat, maize, rice and olives (Al-Bakri et al., 2011, 2013).

While there are numerous studies that explore the effect of climate change on mi-

gration and economic well-being, including food security (Al-Bakri et al., 2008, 2013; Dixit et al., 2018; Hagood, 2020; Qtaishat et al., 2022), and the impact of economic well-being on migration and of migration on well-being (Zohry, 2002; Herrera & Badr, 2012; Hatab et al., 2022), to the best of our knowledge, there is no study exploring the effect of climate-induced migration on the economic well-being in Egypt and Jordan.

Methodology

The empirical analysis relies on the Ordinary Least Squares (OLS) method for wages and the Logit model for the binary outcomes of food security and unemployment. The OLS method is a common technique for estimating the coefficients of linear regression equations that describe the relationship between one or more independent variables and a dependent variable, which is the outcome of the investigation, such as wages explored in this chapter. Similarly, the Logit model is used when the outcome studied is a binary variable, implying that it takes two possible values. For instance, in this chapter, unemployment takes a value of 1 if the respondent is unemployed and 0 if she is unemployed. These methods have been used to explore the determinants of food insecurity, wages and unemployment. Determinants include climate change and population mobility (Beyene & Muche, 2010; Zezza et al., 2011; Hossain et al., 2015; Himali, 2020; Mekonnen et al., 2021; Ngepah & Conselho Mwiinga, 2022). Various demographic and socioeconomic individual and household characteristics are considered, such as age, education level, employment status, marital status, place of residence, and whether the household resides in a rural or urban area.

The empirical analysis relies on detailed micro-level data from household surveys in Egypt and Jordan

The empirical analysis relies on detailed micro-level data from household surveys in Egypt and Jordan. Based on the data available for Egypt, we will derive the data from the harmonised Integrated Labor Market Panel Surveys (ILMPS) in 2006, 2012 and 2018, and for Jordan in 2010 and 2016 (OAMDI, 2019).[1]

These surveys are merged with the Geographic Data of the Demographic and Health Survey (DHS), which include information on the precipitation, temperature and Enhanced Vegetation Index (EVI), among other weather conditions (https://dhsprogram.com) used as proxies for climate change (Raleigh et al., 2008; Wodon et al., 2014; Kaczan & Orgill-Meyer, 2020). According to the geographical reference recorded in these household surveys, the weather data is mapped at the governorate level.

The surveys employed in this study are based on a two-stage cluster design, whereby the Primary Sampling Units (PSUs) are selected by stratified random sampling. In Egypt and Jordan, the sample is selected from the Central Agency for Public Mobilization and Statistics (CAPMAS).[2] The LMPS in Egypt collected information from 37,140 individuals and 8,349 households in 2006, 49,186 individuals in 12,060 households in 2012, and 62,231 individuals and 15,746 households in 2018. For Jordan in 2010, there were 25,953 individuals in 5,102 households, and 33,450 individuals and 7,229 households in 2016.

Climate change indicators

The empirical analysis employs four climate change measures: the average surface

[1] These surveys are available for research and academic purposes from the ERF NADA Portal (http://www.erfdataportal.com/index.php/catalog)

[2] For more details, see http://www.erfdataportal.com/index.php/catalog/158

temperature, precipitation, the Diurnal Temperature Range (DTR), and the EVI.

The average surface temperature measures the temperature at the Earth's surface. We employ the surface temperature because it is relatively easy to be understood by the policy-makers and, more importantly, is a critical target for the Paris Agreement. Therefore, it is essential to include this indicator in our estimates. However, it reflects only part of the increases in energy in the global system.

For this reason, the DTR is used, which is defined as the difference between daily maximum and minimum temperature. The advantage of this indicator is that it illustrates the within-day temperature variability and reflects whether the weather is stable (Yang et al., 2013).

The third measure is precipitation, another fundamental indicator of climate change. Precipitation is any liquid or frozen water that develops in the atmosphere and returns to Earth. It takes several forms, including rain, sleet and snow (Trenberth et al., 2003).

The fourth indicator is the EVI, which reflects the vegetation change and is a vital issue in global changes involving terrestrial ecosystems. It is measured on a scale between 0 (least vegetation) and 10,000 (most vegetation). The advantage of the EVI is that it allows for monitoring and understanding of the environment, such as drought, desertification and deforestation (Bari et al., 2021).

According to the literature, higher average surface temperatures and higher DTR will negatively affect food security and, thus, increase the propensity to migrate. On the other hand, higher levels of precipitation may have an ambiguous impact on crops and food security as high levels may lead to flood risks, but may also increase the water resources, as highlighted earlier (Drine, 2011; Trenberth, 2011; Schilling, 2012; Al-Bakri et al., 2011; Wodon et al., 2014; Verón et al., 2015; Kaczan & Orgill-Meyer, 2020). However, it is critical to control climate change indicators for confounding bias (Pourhoseingholi et al., 2012) since these indicators may affect the main independent variable of interest, whether the respondent is a migrant, and the outcomes explored. Regarding EVI, based on the literature, we expected to find that high EVI will be associated with less drought-prone areas and, thus, a lower incidence of food insecurity (Kibret et al., 2021).

In panel A of Figure 2, the average monthly values of minimum, mean, and maximum temperature and precipitation in Egypt in 1961-1990 are illustrated. In panel B, the same values from 1991 to 2020 are presented. The temperature of degrees Celsius is measured on the left vertical axis, and the right vertical axis measures precipitation in millimetres (mm). The horizontal axis shows the months.

Figure 3 presents the annual mean temperature from 1901-2021, expressed by the blue line and the 5-year smooth moving average. In Figure 2 and Figure 3, it becomes clear that Egypt has experienced an increase in the average temperature of almost 2°C. We observe the same trend for the minimum and maximum temperature, while the precipitation is reduced considerably in the last 30 years compared to 1961-1990. Similarly, in Figure 4, we illustrate the climatic conditions in Jordan in 1961-1990 and 1991-2020, and in Figure 5, we present the average and 5-year smooth moving average temperature.

Figure 2. Monthly Climatology of Minimum Temperature, Mean Temperature, Maximum Temperature and Precipitation in Egypt

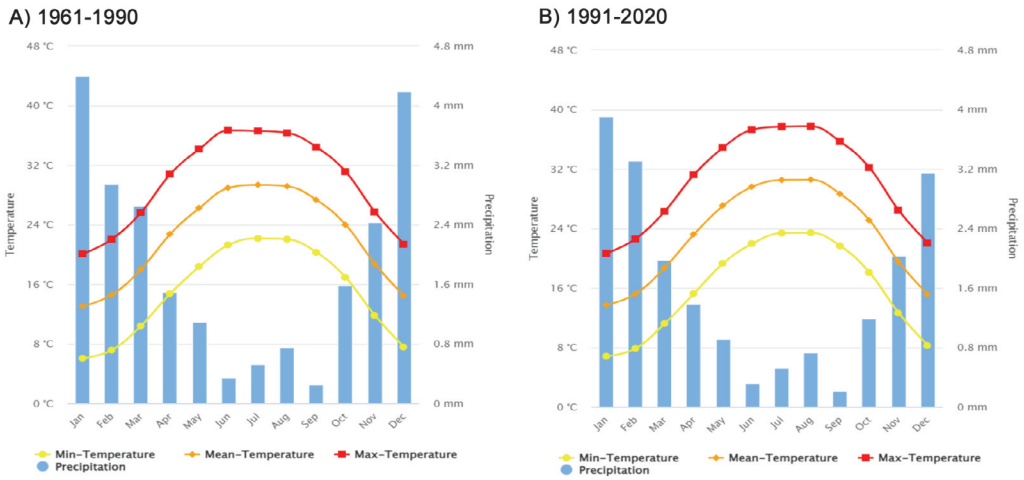


Figure 3. Observed Average Annual Temperature of Egypt 1901-2021

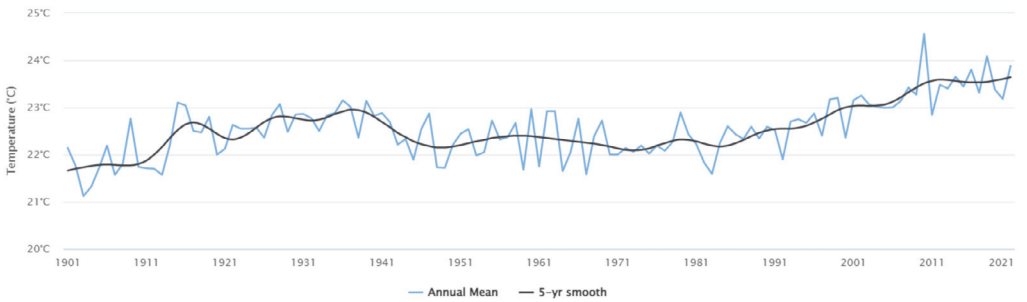
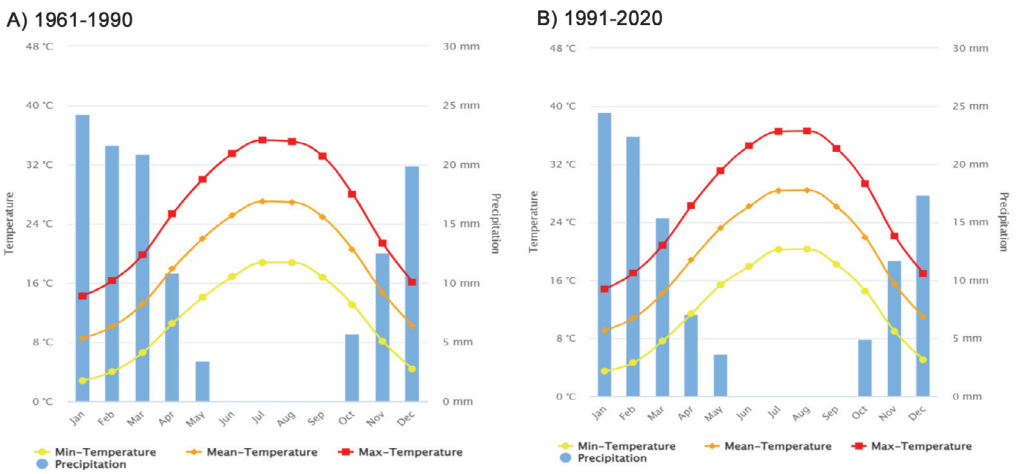
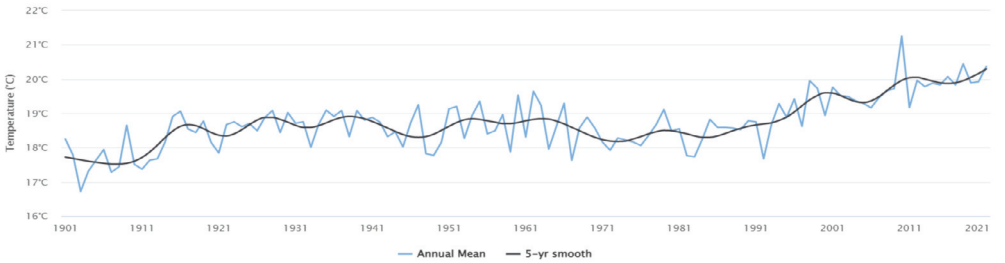


Figure 4. Monthly Climatology of Minimum Temperature, Mean Temperature, Maximum Temperature and Precipitation in Jordan



Source: World Bank https://climateknowledgeportal.worldbank.org/country/egypt/climate-data-historical

Figure 5. Observed Average Annual Temperature of Jordan 1901-2021



Source: World Bank https://climateknowledgeportal.worldbank.org/country/jordan/climate-data-historical

Results

Climate change affects food security and population mobility as people move to areas where food supplies and employment opportunities are potentially more available. However, the migration pattern is usually a rural-urban migration (Adamo, 2010; Black et al., 2011, 2013; Henderson et al., 2017; Kaczan & Orgill-Meyer, 2020). Given the high urbanisation, which leads to high population growth, climate change-induced migration may also contribute to food insecurity in relocation and settlement areas. Thus, the expected results are an increase in food insecurity, unemployment and poverty caused by population mobility and climate-induced migration.

In Table 1, the results of the regression estimates are provided. In the first column, the probabilities of food insecurity are reported. In particular, food security is taking the value of 1 if any household member did not have enough food to eat and 0 otherwise. Therefore, in panel A in Egypt, the estimate of 5.18% shows that climate change-induced migration increases the probability of having a household member hungry by 5.18% more than those who were not migrants. The same applies to the other estimates, where average temperature and DTR increase the probability of food insecurity by 3.76 and 13.57%, respectively.

On the other hand, precipitation and EVI decrease the incidence of food insecurity, as described earlier in the section on the characteristics of climate change indicators for the reasons discussed in the previous sections, by 1.74 and 1.26%, respectively. Similar concluding remarks are made for Jordan but the size of the incidence changes. For instance, climate change-induced migration has a significantly higher impact on food insecurity in Jordan at 24.53%. It should be mentioned that in terms of statistical analysis, precipitation and the EVI have an insignificant effect on food insecurity in Jordan. The same interpretation is given to the estimates for unemployment, where we report the probabilities. Thus, climate change-induced migration in Egypt increases the likelihood of unemployment by 2.79%. In other words, this estimate can be interpreted as showing that a person who migrated because of climate change is more likely to be unemployed than a non-migrant by 2.79%. Similarly, migration increases the incidence of unemployment in Jordan by 4.67%.

On the other hand, the interpretation of the estimates for wages differs. The results show that those who migrated to Egypt because of climate change earn 9.15% less than non-migrants. The effect is significantly higher in Jordan, where people who migrated earn less by 23.20%. Similarly, average temperature and DTR have a

Climate change affects food security and population mobility as people move to areas where food supplies and employment opportunities are potentially more available.

negative impact on wages, as discussed earlier, which may reduce the livestock and agricultural productivity in rural areas and may lead to harmful workplace environments in urban areas, such as people in non-climate-controlled facilities and workers performing their jobs outdoors and working for low wages (Seppanen et al., 2006; Oliveira et al., 2021). Moreover, climate change affects the output of labour-intensive industries by reducing labour productivity via heat stress (Somanathan et al., 2021) and, consequently, lowering wages. Food insecurity also increases for the reasons discussed in the previous section, as climate change reduces agricultural productivity and, thus, food production. In urban areas, a higher population movement creates a higher demand, accompanied by a lower supply because of climate change. This market disequilibrium leads to a sharp increase in food prices, putting an extra financial burden on households (Essl et al., 2019).

Table 1. Impact of Climate Change and Migration on Wages and Unemployment in Egypt and Jordan

Panel A: Egypt	**Food Insecurity**	**Wages**	**Unemployment**
Climate Change-Induced Migration	5.18%	-9.15%	2.79%
Average surface temperature	3.76%	-1.53%	0.38%
Precipitation	-1.74%	1.01%	-0.75%
DTR	13.57%	-1.88%	3.12%
EVI	-1.26%	0.52%	-0.12%
Panel B: Jordan	**Food Insecurity**	**Wages**	**Unemployment**
Climate Change-Induced Migration	24.53%	-23.20%	4.67%
Average surface temperature	4.17%	-0.78%	0.52%
Precipitation	-0.86% (n.s.)	1.24% (n.s.)	-1.13%
DTR	11.83%	-2.15%	3.75%
EVI	-0.62% (n.s.)	0.23%	-0.18%

Source: Authors' calculations. (n.s. denotes non-significant)

Policy recommendations

Mitigating and addressing the impact of climate change-induced migration on well-being requires specific actions and adequate resources.

- Expanding international partnerships in the field of confronting climate change and enhancing social cohesion, such as the proceeding with the initiative "Climate-Refugee Connectedness", which was presented at the 27th Conference of the Parties of the UNFCCC (COP27) with the aim of giving priority to financial support to countries hosting refugees that assume the burden of climate change.
- Financial assistance to rural people affected by drought. Moreover, financing programmes to combat desertification will encourage them to stay in their places of residence, develop the capacities of local communities and expand their knowledge, especially of mayors, on digital, green and circular economy issues, to improve environmental indicators of sustainable development.
- Egypt and Jordan should prepare a national atlas of illnesses and deaths resulting from extreme events due to climate change, where environmental and social conditions interact to support or harm human health (UN Environment Program. 2019, p. 15).
- It works in coordination with national

environmental observatories and regularly provides decision-makers (e.g., ministries of the environment, health and agriculture) with the latest information examining forms of environmental degradation and their short- and medium-term effects.

- Egypt and Jordan should encourage the adoption of a social and solidarity economic approach by accompanying small farmers and vulnerable groups and the initiative of local authorities to reduce the informal economy in the agricultural sector through the transition to the cooperative system.
- The promotion of sustainable ecotourism based on energy efficiency, nautical activities and infrastructures is an opportunity for Egypt and Jordan. This is because it will support rural economies to create economic and social safety nets since the climate affects agricultural production and incomes. Moreover, it constitutes an essential source of income for the residents of these regions and local communities, which suffer from an increase in migration of young people due to climatic factors, especially women artisans.
- It is necessary to conduct an independent assessment of how to benefit from the services of the National Observatory to monitor, assess and manage climate risks in the fragile areas of the Nile Delta on the North Sinai coast and the northwestern coast of Egypt, as it is expected that 5 million citizens will migrate to other regions within Egypt (Anadolu Agency, 2018). Following the digital interactive geographic maps of the areas affected by the increase in internal migration (rural/urban) due to environmental degradation will provide comprehensive information to local decision-makers regarding the social situation related to climate, and how to improve the infrastructure of these areas.
- The Egyptian authorities must take more action to protect coral reefs and strengthen legislation to prevent poaching, as well as work to regulate and monitor oil and gas exploration activities. This while working to provide green jobs for women working in aquaculture and raising awareness in coastal communities along the shores of the Dead Sea of the need to preserve coral reefs as ecosystems, which in turn protects these communities from many environmental crises, whether related to rising temperatures or rising sea levels.
- If Jordan wants to mitigate the effects of climate change, including reducing carbon emissions to less than 14% in 2023 and 31% by 2030 (Almamlakatv, 2022), it will need to increase funding for climate change projects. The private sector could also contribute to mitigating climate change effects, through its local institutions. This could be done by increasing the volume of subsidised loans to small and medium-sized enterprises (SMEs) and businesses where the private sector should invest in the areas of water and renewable energies (€40 million is still not enough to materialise the green growth projects put in place to ensure the creation of a resilient health and social system).
- Pilot sectoral compliance committees should be established whose role is to implement green growth projects. For example, the creation of a fund for waste recycling projects financed by the EU and/or Gulf Cooperation Council (GCC) countries within the framework of Jordan's international partnerships and managed by governance committees that would encourage the production of biogas from landfills, in particular the supply of electricity to refugee camps.
- The conditions of local communities in the northern governorates of Jordan, which are known to house the majority

of Syrian refugees working in agriculture, should be improved through the "My Land" project, which is funded by the World Bank (WB) in the amount of $125 million during the implementation period (2022-2027 (and this can only be done through strengthening partnerships between the public and private sectors in the implementation of this project, with the relative involvement of civil society in climate-friendly and water-saving agricultural training programmes for about 30,000 agricultural families, which will provide economic opportunities for 3.6 million refugees, including 1.3 million Syrian refugees (World Bank, 2022).

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Prospects and Challenges of EU Migration Cooperation with the Southern Neighbourhood (Tunisia and Morocco): The Climate Change-Internal Displacement Nexus

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Introduction and methodology

Climate change poses a "threat to human well-being and the health of the planet" (Intergovernmental Panel on Climate Change - IPCC, 2022) and, according to the Sixth Assessment Report of the IPCC entitled "Climate Change 2022: Impacts, Adaptation and Vulnerability" nowadays about 3.3 billion people are living in countries with high human vulnerability to climate change. For example, last year disasters due to natural hazards caused 23.7 million internal displacements worldwide (Internal Displacement Monitoring Centre - IDMC, 2022), while in its report from September 2021, the United Nations (UN) Secretary-General High-Level Panel on Internal Displacement identified disasters and the adverse effects of climate change as the major source of new internal displacements each year. In this context, it is expected that three out of four displacements induced by climate change will take place within countries, mainly due to people's lack of economic resources to migrate across borders (Clement et al., 2021).

In addition, the World Bank (WB)'s Groundswell Report from 2021 predicted real negative scenarios in which up to a maximum of 216 million people worldwide could be forced to move within national borders by 2050. No country will be immune to the internal displacements of climate migrants. The WB Groundswell Report presented three scenarios of possible internal migration scenarios in the North Africa region and, in all of them, internal displacement due to climate change is expected to raise in the region by 2050. In a pessimistic scenario, internal displaced migrants will reach to 19 million, while the realistic scenario predicts a displacement of 9.9 million and the most sustainable scenario projects 4.5 million climate-induced internal displacements by 2050.

Given the existing problem of forced displacement and its relation to climate change, environmental degradation and natural disasters, this chapter aims to carry out a detailed analysis of European Union (EU) funding tools and mechanisms, as well as migration cooperation programmes with Tunisia and Morocco, in order to draw conclusions on whether the EU takes into account the intersection of climate change and forced displacement in the programming, design and implementation of its strategic priorities for migration cooperation with both countries.

The objectives of this chapter are therefore twofold. On the one hand, it provides a comprehensive analysis of the EU communications, working documents and guidelines that lay the foundations for better holistic planning and inclusion of the climate change and internal displacement nexus in EU foreign policy and cooperation, with a particular focus on migration. On the other hand, the chapter vertically compares these EU strategic lines and tools with the association partnerships and cooperation programmes on migration that currently exist with Tunisia and Morocco, in order to extract some conclusions on the application of the described theory to the real practice. In addition, some remarks will be made detailing the EU's priorities for mutually beneficial partnerships for the future with Tunisia and Morocco, notably in the framework of the new Multi-Financial Framework 2021-2027 (MFF 2021-2027).

Finally, conclusions will be drawn on both analyses while results will be compared in order to draw a specific set of policy recommendations addressed to the EU advocating for a further external action effort to address displacement and migration related to climate change and environmental degradation within the existing migration partnerships with its southern neighbourhood partners Morocco and Tunisia.

An overview of EU tools and financial mechanisms: the intersection of climate change and forced displacement on policy planning

EU migration policy was first managed through the Global Approach to Migration and Mobility (GAMM) and associated policy instruments such as different Mobility Partnerships with its southern and eastern neighbours, including Morocco and Tunisia. In September 2020, the European New Pact on Migration and Asylum was adopted, and the Joint Communication on a Renewed Partnership with the Southern Neighbourhood (hereinafter the New Agenda for the Mediterranean) was launched in February 2021 with the aim of setting strategic principles of cooperation with the southern neighbourhood, mainly around the digital and green transitions, but also on migration cooperation, security, rule of law, and democracy. Based on these two newly adopted instruments, the EU is now encouraging more systematic efforts to coordinate action with neighbouring countries on migration governance and policy. To strengthen this coordination, the development of migration collaborations is envisaged as tailor-made agreements that encapsulate the political priorities of both partners and EU countries.

According to the New Agenda for the Mediterranean, in its first priority linked to cooperation on migration policy and governance with southern partners, the EU recognises its aim of "jointly addressing the challenges of forced displacement and irregular migration and seizing the benefits of legal migration efficiently and effectively, through comprehensive tailor-made and mutually beneficial partnerships, protecting migrants and refugees' rights, in line with the European New Pact on Migration and Asylum" (European Commission, 2021, p. 3).

Paradoxically, the New Agenda for the Mediterranean in its Chapter 4 dedicated to "Migration and Mobility" does not devote any heading to the issue of migration and forced displacement due to environmental degradation and climate change, which is shocking, given the numerous studies and data present nowadays on the topic and its adverse consequences for the future of the region. On the contrary, the text repeatedly refers to the need to support partners' capacity for effective migration and asylum governance, including border management, as well as for the intensification of cooperation on effective return and readmission. Moreover, space is also given to the need to fight human trafficking mafias and tackle the causes of irregular migration based on sustainable development challenges, and to foster a stable social and economic future that offers real opportunities especially for young and women. This also includes the need to develop legal pathways to Europe through continued efforts on resettlement and enhanced labour mobility partnerships.

The New Agenda for the Mediterranean in its Chapter 4 dedicated to "Migration and Mobility" does not devote any heading to the issue of migration and forced displacement due to environmental degradation and climate change

In this same line, the new Pact on Migration and Asylum aims to "build trust and better define responsibilities among migration actors" (European Commission, 2020, p. 1). Externally, it is proposed to deepen cooperation with neighbouring countries through the enactment of new "mutually beneficial partnerships", which aim to share responsibilities with neighbouring countries in migration management, while strengthening mutual trust between partners. Supporting partner countries in the southern neighbourhood in the processes of strengthening migration governance and adequately developing their

migration management capacities is a pivotal element in the mutually beneficial partnerships that the EU intends to develop. It is true that the European Commission (EC) mentions in the text that different development cooperation programmes and new mutually beneficial partnerships should take into account the issues of education, energy, agriculture, employment, adaptation to climate change and the environment in a holistic way, although it does not specifically mention the human mobility and climate change nexus.

The Council of the EU Conclusions on the EU approach to forced displacement and development (2016) highlighted that environmental disasters and climate change represent key drivers to consider when addressing forced displacement in policy and decision-making processes. In the same line, the Joint Communication of the European Commission entitled "A Strategic Approach to Resilience in the EU's External Action" (2017) outlines the concept of the EU's resilience in its external cooperation mechanisms and recalls the necessity to design EU policies and tools that encompass how migratory patterns respond to different complex interactions, including climate change and environmental degradation. In this line, it encourages the EU's external action tools and mechanisms to further focus on addressing the root causes of irregular migration and other structural pressures, including security outbreaks, demography and socioeconomic development, but also climate change adversities and the long-term consequences of forced displacement. The text also calls for the necessity to foster self-reliance, support host communities, develop protection mechanisms and basic services to the displaced migrants to provide them with dignity, as well as to strengthen the EU framework programme for research and innovation on this interconnectivity (European Commission, 2017).

In addition, the 2021 EU Strategy on Adaptation to Climate Change "Forging a climate-resilient Europe" states that climate change adaptation strategies, programmes and projects must be designed in a way that is sensitive to drivers of instability to reduce climate-related displacement risks and highlights the necessity to better understand and manage the interlinkages between climate change, security and mobility (McMahon et al., 2021). This same narrative is expressed by the European Green Deal (2019), which mentions that efforts must be redoubled among all nations so that the adverse effects of climate change do not exacerbate other drivers of insecurity, such as conflict, migration or food insecurity. In this same line, the Commission Staff Working Document entitled "Addressing displacement and migration related to disasters, climate change and environmental degradation" of July 2022, which was published to coincide with the start of the EU Presidency of the Platform on Disaster Displacement (PDD), also acknowledges climate and disasters among the root causes of displacement and calls for the necessity to incorporate the climate change and forced displacement nexus on prevention, preparedness and response policy planning and implementation.

On the financial side, the EU has launched the new Neighbourhood, Development and International Cooperation Instrument – Global Europe (NDICI-GE), which amounts to 79,462 billion euros. Under the Multiannual Financial Framework (MFF) 2021-2027, the NDICI-GE has both fighting climate change and addressing migration and forced displacement challenges as two of the key strategic policy areas for it related mechanisms. Nevertheless, the intersection between both of them together, and not separated in different financial envelopes, is much more complicated to find in reality on the ground. For instance, 10% of the financial envelope will

be devoted to programmes related to better management and governance of migration and forced displacement with neighbouring countries, while 30% of the overall budget will be dedicated to climate adaptation policies – around 23.8 billion euros – (European Commission, 2022).

Addressing disaster and climate-related displacement from a different angle: research projects, humanitarian action and civil protection

On the basis of the above-mentioned EU communications, tools and mechanisms, in parallel the EU has been giving an increasing importance these last years to the need to collect accurate, reliable and evidence-based data and information as a means to understand the future scale and dynamics of displacement and migration caused by climate change and environmental degradation in different parts of the world, with a special focus on neighbouring regions such as North Africa.

The research budget and activities for investigating the consequences, factors and characteristics of the nexus of forced displacement and climate change and environmental degradation has been increased in this direction. This task is mainly carried out by the EC's Directorate-General for Research and Innovation, which is currently funding several projects addressing the intersection of migration and climate change, and the Commission's Knowledge Centre on Migration and Demography (KCMD), which depends on the EC Joint Research Centre. Funding under the Horizon 2020 and the new Horizon Europe programme on this strategic nexus is also important in numbers and total number of funded activities (European Commission, 2022).

For instance, the Horizon 2020-funded HABITABLE project (2020-2024), which is led by the Hugo Observatory for Environment, Migration and Politics at the University of Liège, aims at better informing the current interlinkages between climate change impacts, migration and displacement patterns, and to better anticipate their future evolution. In this same line of research, the EC developed the Climate Change Induced Migration (CLICIM) Project, which aims to provide evidence through different research projects and publications on the nexus between climate change and population dynamics in Africa. From the beginning of the project in 2020, CLICIM has already produced various reports. For instance, the report entitled "Population exposure and migrations linked to climate change in Africa" (McMahon et al., 2021) predicted that there would be around 212 million people exposed and vulnerable to climate change[3] (11% of total population) in the entire African continent by 2070, being the largest exposed populations in Western Africa and Northern Africa (McMahon et al., 2021). Moreover, final projections showed that in North Africa about 95 million people would experience a reduction in agricultural productivity of more than 20% by 2070, which would considerably affect people's livelihood and could lead to a large number of internal displacements (McMahon et al., 2021). In this line, the authors of the report called for strengthened efforts from the EU on the integration of the climate change, adaptation and migration policy nexus into cooper-

The EU has been giving an increasing importance these last years to the need to collect accurate, reliable and evidence-based data and information

[3] Considering different scenarios based on the socioeconomic evolution of societies and on climate change impacts on agricultural productivity.

ation and development policies to protect exposed and vulnerable communities (McMahon et al., 2021).

Moreover, the EU has also started to pay greater attention to forced displacement linked to climate-induced disasters such as earthquakes, tropical cyclones, floods or hurricanes aiming at better informing humanitarian responses and better coordinating civil protection mechanisms and disaster preparedness on the ground (European Commission, 2022). In this respect, the EU has increased its technical, funding and data collection capacities in this direction. For instance, the Commission Implementing Decision on the financing of humanitarian aid actions from the 2022 general budget of the EU allocated a total of €1.8 billion to address situations affected by forced displacement, prompted by both conflicts and climate and environmental-related disasters (European Commission, 2021e), compared to the total €1.6 billion allocated in the previous period 2014-2020 (European Commission, 2022). Moreover, one of the four priorities that have been set for the period 2021-2024 in the Humanitarian Implementation Plan is climate resilience (European Commission, 2022).

In this line, the Commission's Disaster Risk Management Knowledge Centre (DRMKC), which is part of the Joint Research Centre (JRC), has successfully developed the INFORM Climate Change Risk tool, which forecasts climate and demographic projections and the risk of humanitarian crises with the aim to inform decision-making processes on disaster risk reduction and adaptation mechanisms (European Commission, 2022). In the same line, through the Enhanced Response Capacity, DG ECHO dedicates part of its budget to support initiatives that seek to increase the capacity of the humanitarian response. Key focus areas for DG ECHO's action on disaster displacement include supporting disaster preparedness, but also research and data collection activities and fostering forecasting tools and modelling of displacement risks. A large number of projects linking data analysis to climate-related displacement have been developed in the framework of the 2021 EU's Humanitarian Implementation Plan derived from the 2021 Commission Implementing Decision. Aiming at better understanding of the climate change and mobility nexus and at improving the availability, quality, use of data and analysis of human mobility in the context of natural crises, these types of examples remain key to further develop efficient strategies and operational responses on the benefit of the wider humanitarian system and civil protection response (European Commission, 2022).

Even though it is true that the EU humanitarian budget, operability and research action towards disasters caused by climate change has grown over the years, nevertheless it is also true that the EU's civil protection and humanitarian scope of intervention is broader in terms of the nexus climate-induced forced displacement that is the subject of study in this chapter, which includes not only disaster displacement but also displacement induced by slow-onset climate variations and their negative consequences in the long term. Humanitarian action encompasses both responses – early-warning and preparedness mechanisms –, while focusing its attention on the most immediate needs of the crisis; however, it does not focus on the long-term strategies to address, curb or anticipate the negative effects of climate change. Thus, the nexus climate change and human displacement also needs to be analysed from the perspective of migration policy, and the policy recommendations of this chapter will move forward on this direction.

A look into the EU's migration cooperation frameworks with Morocco and Tunisia

From the perspective of migration cooperation policy, little or very little progress has been made by the EU in incorporating the climate change-forced displacement nexus into their migration cooperation frameworks with the Southern Neighbourhood, including Tunisia and Morocco.

EU-Morocco cooperation framework and strategic priorities on migration policy

Morocco maintains long-lasting relations with the EU on migration, but also bilaterally with Spain and France (Hadji, 2021; Ferdaoussi, 2021). Morocco, like Tunisia, has experienced the transition from country of origin to become one of the most important transit and destination countries in the North African region, mainly of influxes of immigrants from Western Africa and the Sahel.

In 2000, the first EU-Morocco Association Agreement was concluded, with a broader scope for greater cooperation in other policy and strategic areas, while in 2006 France, Spain and Morocco initiated the Rabat Process and set the stones for the first Euro-African dialogue on development and migration. Subsequently, in 2013 the EU and Morocco signed the Mobility Partnership, which led to greater visa facilitation (Carrera et al., 2016), while in 2019 the EU-Morocco Joint Declaration laid the foundations for a future and sustainable relationship between the two partners, especially in terms of green and digital transition, but also on issues of cooperation in mobility and migration.

As with Tunisia, an EU Council Document on mutually beneficial partnerships between the two partners called "Operationalization of the Pact – Action plans for strengthening comprehensive migration partnerships with priority countries of origin and transit: Draft action Plan Morocco" was leaked in February 2022. According to this document, the areas of cooperation in which the EU will join forces in the coming years are centred around eight thematic blocks: 1) protection and support to transit and host countries; 2) strengthening asylum and reception mechanisms and frameworks; 3) addressing the root causes of migration; 4) strengthening migration governance and management; 5) supporting the fight against human trafficking; 6) improving the readmission, return and facilitation of visas; 7) strengthening labour mobility policies and legal mobility channels to Europe; 8) cooperation with European agencies and combating human trafficking; and 9) strengthening South-South regional cooperation (Council of the EU, 2022b). In addition, Morocco is requested to update its National Strategy for Immigration and Asylum (NSIA), aiming to foster better integration of sub-Saharan immigrants held in Morocco and their inhumane living conditions (Lowe et al., 2020), as well as the reintegration of Moroccan migrant returnees. Although the NSIA was first launched in 2014 and supposed an innovation in relation to its neighbouring countries Tunisia and Algeria, today it has been reported and criticised by numerous agencies and civil society organizations (CSOs) on the ground due to constant failures in its implementation, the lack of preparation of law enforcement officials, and the lack of fund mobilisation (Badre, 2021). In addition, even though according to United Nations High Commissioner for Refugees (UNHCR) around 15,000 asylum seekers are nowadays in Morocco, Morocco has not put in place any legal framework to help

From the perspective of migration cooperation policy, little or very little progress has been made by the EU in incorporating the climate change-forced displacement nexus into their migration cooperation frameworks with the Southern Neighbourhood

advance asylum applications due to the lack of operability of the NSIA.

As described, no single mention is made in the Council Document about the nexus of climate change and forced mobility, not even on the priority related to addressing the root causes of irregular migration, which are primarily socioeconomic, education, protection, and job creation (European Commission, 2022b).

At the level of financial mechanisms, the new framework of the MFF 2021-2027 is the one that will maximise the maximum financial assistance towards the North African region and Morocco in particular. For the new MFF 2021-2027 scheme, continued support to migration governance and management is expected, potentially through a new budget line called Budget Support Programme for Morocco, and enhanced action will be made to fight against human trafficking mafias and on police and cross-border cooperation. In the case of Morocco, the priorities will also focus on the reintegration of returned Moroccans, as well as on the development of a joint Talent Partnership, although negotiations are still ongoing and are pending finalisation within the Multiannual Indicative Programme 2021-2027 for Morocco (European Commission, 2021b). Other financing mechanisms for cooperation programmes on migration such as the EU Emergency Trust Fund for Africa (EUTF), the Asylum, Migration and Integration Fund (AMIF), the Border Management and Visa Instrument, as well as the Internal Security Fund, may provide external funding for migration actions under certain conditions. In addition, Morocco has recently been included in the Team Europe Initiative on the Western Mediterranean/Atlantic Migration route.
Since its inception in 2015, the EUTF has nearly distributed €900 million to Libya, Tunisia, Morocco, Algeria and Egypt (North Africa Window) through nearly 40 programmes, amounting to an equivalent to 31% of the EU's Official Development Assistance budget in the region (Zardo, 2021). In the case of Morocco, the majority of the projects implemented in the country have been mainly dedicated to the pillar aiming at supporting the actions of the Moroccan authorities in managing migratory flows, amounting to up to 188 million out of a total budget of 238 million allocated to Morocco. For instance, the biggest programme in terms of funding receives €101.7 million to support the actions of the Moroccan officials and authorities on strengthening an integrated border-management system (European Commission, 2021d, May).

For the current period of 2021-2022, which marks the start of the MFF 2021-2027, Morocco has already received through the Multi-Country Migration Programme for the Southern Neighbourhood around 60 million to develop stronger return schemes through the "Supporting Sustainable Protection, Return and Reintegration in Africa" Programme, and has received around 5 million for the THAM III Programme, which focuses on the areas of labour mobility and labour migration management in North Africa.

Thus, we can easily observe that in terms of cooperation programmes on development and migration between the EU and Morocco, very little or almost no incidence of specific programmes of adaptation to the adverse effects of climate change by displaced populations are strategically prioritised.

EU-Tunisia cooperation framework and strategic priorities on migration policy

Tunisia has become a strategic partner and powerful ally of the EU in the last decade.

On the one hand, because of the reluctance and geopolitical tensions with other neighbours in the region, such as Morocco and the recent crisis with Spain in 2021, or the long-lasting tensions with Algeria and Libya. On the other, due to its triple feature of country or origin, transit and destination, which places the country in a privileged space for cooperation dialogue with the EU on issues of border management and the fight against human trafficking.

The Discussion Document of the Presidency of the Council of the EU on the implementation of the New Migration Pact in Tunisia (2021) sets out the EU's strategic bases for cooperation with the Tunisian neighbour on migration and for the development of mutually beneficial partnerships and future financial and political cooperation on migration. According to this document, for the EU, cooperation in the field of integrated border management, including the strengthening of migration governance capacities and the training of its migration officers, are key strategic priorities in these new mutually beneficial partnerships, and should be further developed and promoted with the Tunisian country with a view to preventing irregular immigration to the EU, human trafficking and the proliferation of criminal organisations. In addition, this document urges Tunisia to adopt its national asylum law, which was drafted in 2017 but is still pending parliamentary validation, as well as to develop a robust national protection system for migrants in transit. This condition is highly criticised by the international community and agencies on the ground, which are responsible for providing basic services and protection to migrants deprived of aid by the government.

In addition, attention to returns and readmissions in recent years is still very present in the justification of the New Compact on Migration and Asylum (Veron, 2022). In this line, the EU-Tunisia Mobility Partnership Agreement of 2014 provides for the opening of negotiations for readmissions in exchange for a visa facilitation agreement. Today, the EU has committed to deepening its migration partnership with Tunisia under the 2018-2020 EU-Tunisia Strategic Priorities, which are currently being updated, and which will take a step beyond the 2014 Mobility Partnership.

In this same line of specificity of the new relationship in migratory cooperation between EU and Tunisia Council of the EU has produced the document entitled "Operationalisation of the Pact – Action plans for strengthening comprehensive migration partnerships with priority countries of origin and transit, Draft Action Plan for Tunisia" of February 2022. It states that Tunisia is a key country on the Central Mediterranean migration route, and that it will therefore continue to support the country with various financing and European cooperation mechanisms in the coming years. As in the case of Morocco, the same eight strategic points on which this new, mutually beneficial partnership should revolve are taken into account, especially with an emphasis on border management.

Overall, since 2011 the EU has doubled its financial assistance to Tunisia totalling around €3 billion, with more than €2 billion allocated in grants. In addition, since 2011, bilateral financial assistance under the Neighbourhood Instrument has amounted to €7.1 billion in Tunisia, and the EUTF allocated a total of €91 million in programmes for Tunisia through the North Africa financial window (European Commission, 2021c, May). Under the EUTF, the most funded programme – totalling €32 million – is the border management programme for the Maghreb

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region, followed by the Progress Migration Tunisia programme, which seeks to support the implementation of the Tunisian National Strategy on Migration, and was endowed with €12.8 million. This cooperation programme focuses mainly on improving Tunisia's migration governance and management capacities, providing socio-economic opportunities for young Tunisians, providing protection to relocated and returnees, and enabling diaspora investment opportunities in the country (European Commission, 2021c, May).

At the level of migration cooperation frameworks, the EU's progress in this area has been minor, if not almost non-existent

While for the next cycle of the MFF 2021-2027, continuity in the thematic cooperation programmes between the EU and Tunisia is foreseen, an integrated approach to diaspora mobilisation and EU-Tunisia labour mobility is added. In addition, Tunisia is expected to benefit from the Multi-Country Migration Programme for the Southern Neighbourhood with additional financial support in the areas described.

Currently for the period 2021-2022, Tunisia received 25 million for border management actions within the framework of the Project "EU Support for Border Management Institutions in Libya and Tunisia" to support the training and empowerment of the Maritime Coordination and Rescue Centres and the Libyan and Tunisian coastguards. It also received about $5 million for labour mobilisation programmes in the North African region under the THAMM III Programme.

Again, as in the case of Morocco, not a single point on aid or cooperation on climate change adaptation and human mobility, nor on protecting the needs of those climate-induced internally displaced people, is further mentioned in the described EU Council documents and strategic frameworks for EU-Tunisia cooperation.

Conclusions and policy recommendations

The analysis of the EU's cooperation mechanisms on internal displacement and climate change can be carried out from a number of policy angles, including humanitarian, sustainable development, climate change adaptation, research, agricultural programmes, and migration policy, among others.

In terms of funding research projects that analyse and provide a better understanding of the climate change-human mobility nexus, the EU has made considerable efforts in this regard. In the same vein, we have described the EU's increased interest in improving data collection and analysis on natural disasters and forced displacement in order to provide better civil protection and humanitarian action outcomes on the ground. Even though it is true that some disaster preparedness could have been better at the EU level, this does not imply that there has not been a growing interest in research as a tool to better inform and predict future human displacements due to natural disasters and to anticipate their humanitarian consequences, which shows modest but real progress, which is not the case with migration and cooperation policy.

At the level of migration cooperation frameworks, the EU's progress in this area has been minor, if not almost non-existent. On the EU side, there is a constant externalisation of migration policy (Cuttitta, 2020), the recurrent practice of visa conditionality in terms of return and readmission cooperation (Veron, 2022) and the large mobilisation of economic and financial resources from neighbourhood cooperation towards border management, the fight against mafia trafficking and institutional support to Tunisian and Moroccan authorities on mi-

gration governance to control irregular migratory flows. As many critics point out, this practice turns long-term border management into a pure externalisation of the EU's migration and asylum policies, allowing it to create shared management systems in the field of foreign policy (Fathi, 2020).

In this respect, it is urgent to take into account the above-mentioned strategic EU tools and communications, as the EU should incorporate the climate change-migration-human mobility nexus when planning, designing and implementing all types of policies, including migration policy. As the EC document on "A Strategic Approach to Resilience in the EU's External Action" outlines:

"A resilience approach to migration means designing policy to reflect how migratory patterns respond to the complex interaction between demography, institutional and democratic weaknesses, economic and social imbalances, violent conflict, environmental degradation and climate change" (European Commission, 2017, p. 10).

And here is where the intersection between climate change and environmental degradation more clearly meets migration policy planning and implementation. Because today climate-induced displacement occurs mostly internally within countries does not mean that it will not become transnational in the near future, especially as climate variations continue to worsen and displacement projections continue to increase. Moreover, the Sahel and Western Africa are nowadays two of the regions most affected by climate change. Thus, if greenhouse gases continue to grow and little action is directed at mitigating the harmful effects of climate change at all levels, while pressures on natural resources keep increasing (World Bank, 2021), and population growth remains on the rise (McMahorn et al., 2021), the Sahelian and Western African populations will be among the most exposed and vulnerable to climate change effects between 2050-2070. Based on the predictions made by the WB and other related literature, these phenomena of extreme climate vulnerability will be able to forcibly displace millions of people in the region, either internally or across borders. This could become an additional challenge to countries of transit or destination, such as Tunisia and Morocco, as the arrival of a large number of climate-induced migrants from neighbouring regions could exacerbate the pressure on water and agricultural resources, and would put serious pressures on cities' services, resources and planning.

This shift of paradigm is of utmost necessity so the EU can pave the way and lead the international community and migration stakeholders in this strategic direction. Different types of innovative tools and solutions on the intersection between climate change and mobility should be considered for building new coherent and mutually beneficial migration partnerships between the EU, Tunisia and Morocco:

1) The EC should foster the mainstreaming of mobility and displacements considerations in the context of climate change across EU policies, strategies and programmes related to migration cooperation with the southern neighbourhood. The EC should go beyond pure acknowledgment in strategic documents of climate change and environmental stressors as potential triggers for migration and displacement, and focus on the development of concrete actions and programmes addressing this issue through its neighbourhood and external cooperation dimension on migration policy.

In this sense, the EC and the Council of the EU should envision a new relationship in migration cooperation with Tunisia and Morocco. To this end, the 2018-2020 EU-Tunisia Strategic Priorities should be further updated to incorporate this strategic priority in future policy and financial cooperation on migration affairs, and the 2019 EU-Morocco Joint Declaration, which defines the partnership priorities between both partners and covers migration and mobility, should also be reformulated. In the meantime, and on the basis of the future EU comprehensive migration partnerships with priority countries of origin such as Tunisia and Morocco, the Council of the EU and the EC should include in their respective action plans for strengthening the future migration partnerships a new thematic action line on the Climate Change and Human Displacement Nexus that helps advance the policy and programme negotiations towards this end.

Accordingly, EU funding on migration cooperation with the southern neighbourhood, such as the Multi-Country Migration Programme for the Southern Neighbourhood or the EUTF, among others, should further incorporate a strategic pillar of climate-induced displacement so that Tunisian and Moroccan authorities are able to develop programmes and activities that help respond to future risks, decrease vulnerability, and enhance climate resilience in their respective territories.

2) In this context of proposed actions, the EC, together with the Moroccan and Tunisian authorities, should design and formulate joint solutions in the framework of the new migration partnership and priorities to curb, mitigate and address the direct impacts of climate change on the region so that people do not have to migrate as a consequence of adverse climatic and environmental drivers and their future negative consequences at all socioeconomic levels. According to the IOM's (2021a) "Institutional Strategy on Migration, Environment and Climate Change 2021-2030", this is particularly important before all feasible alternatives that made livelihood and habitability possible have been exhausted, especially making migration a choice by building climate resilience in rural and urban affected communities. In parallel, the EC should also promote migration as an adaptation strategy in extremely climate-vulnerable Tunisian and Moroccan territories by creating ways in which people can migrate safely as a way to cope with climate change-related challenges.

To be more precise, some innovative tools and solutions derived from these two proposed thematic action lines could be further developed to address these phenomena-related challenges. In this respect, actions and programmes fostering climate adaptation policies, resilience-building, enhancing adaptation capacities, strengthening the capabilities of rural communities to manage their resources and output, and empowering farmers and rural stakeholders to participate in determining and implementing national policies of adaptation and disaster risk reduction should be present in the future negotiations between the EU, Tunisia and Morocco, and yet fully incorporated into the new strategic migration partnerships.

To support climate change adaptation practices that help to minimise and tackle displacement related to the negative effects of climate change, the EC could work with Tunisian and Mo-

roccan counterparts to design ecological restoration activities to reduce negative environmental drivers, to include pastoralist, indigenous and rural communities in decision-making processes related to natural resource management and mobility, and to foster the development of new green infrastructure and the implementation of conservation and biodiversity projects in Tunisia and Morocco aimed at employing vulnerable communities severely affected by climate change.

For instance, and according to the IOM's Toolkit "Integrating Migration into Environment and Climate Change Interventions", some programmes and actions under the new revised migration partnership could also be directed towards building awareness of migration as an adaptation strategy to climate change with partner governments, civil society, academia and the business and media sector. In the same line, working with national academic institutions to foster additional research and data analysis that helps better understand the role of environment and climate change as a driver of migration in Tunisia and Morocco more specifically would also be key to establish targeted climate change adaptation and resilience-building measures.

3) Moreover, enhanced skills partnerships, circular migration schemes and regular migration pathways as a potential migration management tool in the context of climate change could be further developed between the EU countries, Morocco and Tunisia for communities negatively affected. This would help to generate opportunities for people to migrate while fostering migration as adaptation strategy and building community resilience to climate change adversities.
Moreover, the EC should address the long-term development challenges by linking humanitarian action, development cooperation, environmental policy and migration cooperation, which is crucial to ensure a holistic approach to disaster and climate-related displacement in the region. Increased efforts should be made by the EC to address the needs of populations trapped and unable to move for monetary or other impediments.

4) Last but not least, fostering research activities and projects through the JRC and the new Horizon Europe programme to collect qualitative and quantitative data on migrant groups' climate vulnerability in Tunisia and Morocco would also help include potentially affected groups in disaster risk reduction and planning, as well as in future climate change adaptation policies and migration frameworks.

The promotion of research, data collection and analysis on climate-related displacement would enable a better understanding of the multiplier threat of climate change on human mobility with the aim to inform effective policy and operational programmes on the climate-induced displacement nexus with the southern neighbourhood.

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Internal Displacement under the International Framework: the Way Forward

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Introduction

Undeniably, climate displacement has been one of the widest academic debates since the 1970s-1980s (Foresight Migration, 2011). Different areas in the world are affected differently and by various forms of environmental phenomena. However, this chapter will focus on one aspect of climate migration: internal displacement and specifically in the Middle East and North Africa (MENA) region, which is one of the regions most affected by climate change phenomena combined with years of conflict.

In the mid-1990s it was reported that approximately 25 million people globally had been forced from their homes due to environmental degradation (Myers, 2005). Based on data from the Internal Displacement Monitoring Centre (IDMC), in 2021, 38 million internal displacements were recorded at a global scale (Figure), showing a constant rise from the previous year (Figure). Based on the infographic below, 30.7 million internal displacements were caused by disasters.

Figure 1. New displacements (IDMC)

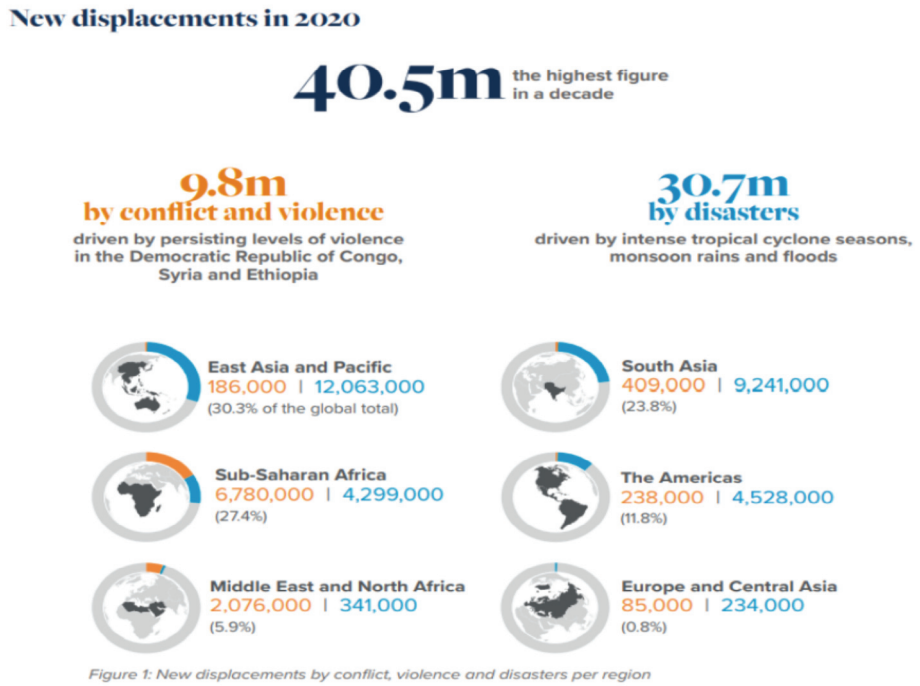
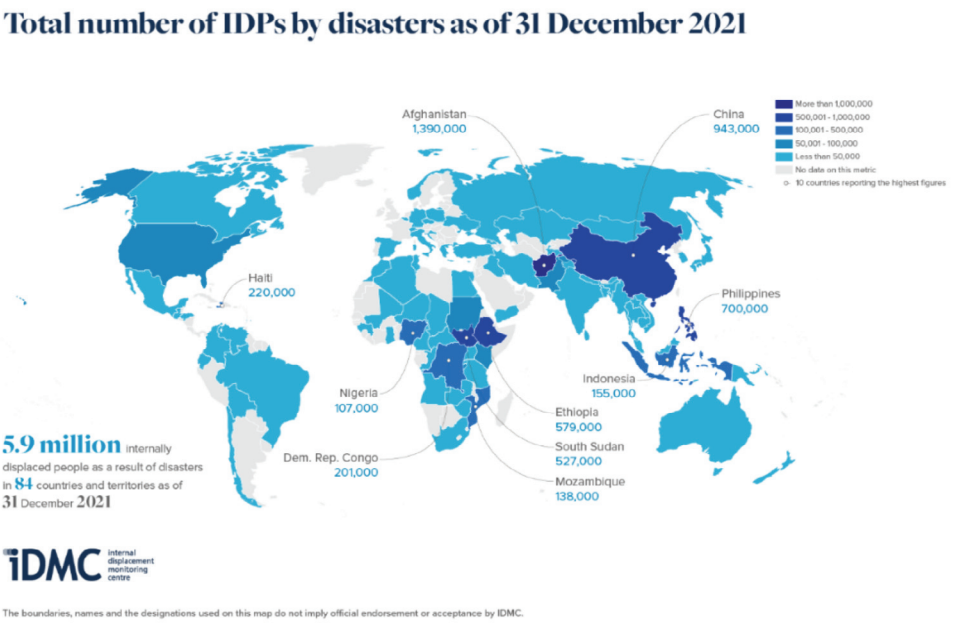


Figure 1: New displacements by conflict, violence and disasters per region

Source: IDMC, 2019

As the report mentions, the paradox is that 2021 was the year with the lowest internal displacements in the region. However, this is not indicative as, in general, there has not been a systematic monitoring of internal displacement (Durell, 2018). Apart from the lack of detailed data, an important impasse is the lack of a concrete legal and policy framework at an international scale. As mentioned by Oli Brown, "the problem is that so far there is no 'home' for the forced climate migrants in the international community, both literally and figuratively" (Brown, 2007).

Figure 1. Total number of IDPs (IDMC)



Source: IDMC, 2021

The aim of this chapter is to assess the existing international legal and policy instruments, and examine how they can be implemented at a regional and national level. What is the current state of art regarding climate-internal displacement at a global level? This chapter focuses on the MENA region, which is presenting gaps in the implementation of the international standards. As a region that has been affected by political tensions, war, and instability, it seems that climate-induced displaced persons are subject to the "vagaries of politics" (UNHCR, 2009).

The first section analyses the main international legal instruments in order to examine potential prospects and impasses and assess how they can be successfully implemented accordingly in the MENA region. In addition, from an international policy perspective, important steps and incentives have been created by United Nations (UN) agencies and other organisations at an international level. Thus, the question to be answered is how they can be successfully implemented at a regional level. In this section, a gender aspect will also be included.

The second section delves into a national analysis with the example of Egypt and its approach towards climate-induced internal migration. This section focuses on what is missing from the regional legal and policy frameworks and analyses how incentives can be created in order to better address this phenomenon. Lastly, conclusions will be drawn based on the analysis of the above sections in order to draw concrete recommendations that will address the detected challenges.

For this chapter a desk review is applied. Specifically, it consists mainly of a legal and normative analysis of the existing international instruments in order to provide a cogent evaluation of the international framework. The case study of Egypt will complement the aforementioned analysis

The game changer was the Uruguay round of trade negotiations under the General Agreement on Tariffs and Trade (GATT)

and will provide a clear example of the situation in one of the countries of the MENA region. Findings from the legal and policy analysis will allow conclusions to be drawn and recommendations to be made on how to better implement international standards at a regional level.

International legal and policy framework[4]

General background

The climate change and displacement nexus traces back to the 1970s-1980s when "mobility emerged as the human face of climate change" (World Bank, 2018). As underlined by Piguet (2013), climate-induced displacement constitutes "a complex product of interactions between nature and society." As a multi-dimensional phenomenon, in order to examine its legal and policy advancements, it is important to take into consideration various factors.[5] Specifically, this section will evaluate the legal and policy instruments relevant to climate migration. A gender perspective[6] will also be included in this analysis as it is considered a vital factor in understanding the causes of climate migration.

In addition, there is a wide variety of legal and policy scholarship around climate-induced displacement. Nevertheless, the lack of a universally accepted definition of this notion and the debate around the protection that climate displaced people should receive has led to a significant stagnation. Although there is no concrete legal framework that entirely protects persons who cross borders due to environmental degradation, steps have been taken in the case of Internally Displaced Persons (IDPs) and are discussed in the following sub-sections. Overall, the present section's desk research will examine and assess some positive aspects and impasses of the most important international legal and policy instruments in order to draw relevant conclusions and recommendations.

International legal instruments: positive aspects and impasses

The first major step that the United Nations Commission on Human Rights (UNCHR) took was in 1992, due to the growing number of IDPs at a global level. Specifically, it passed a resolution for the appointment of a special representative on internal displacement, which later on led to the adoption of the Guiding Principles. This soft law document codifies the states' human rights obligations including the right to life, family and private life and dignity (Leighton, 2010). On the one hand, it offers a cogent approach towards internal displacement as it addresses all phases of internal displacement and defines the notion of IDPs. Moreover, it recognises that specific attention should be paid to the health needs of women, who need to be

[4] The present section will examine the most important international legal and policy instruments in order to assess potential positive aspects and impasses. Due to the limitation in word count, the analysis of these instruments will focus on specific aspects.

[5] Due to the limited word count, it is not possible to include an in-depth analysis of the socioeconomic and political factors that affect climate migration. Therefore, this section will address the gendered dimensions of climate displacement as the persistence of inequalities, cultural norms, and the women's limited involvement in decision-making processes in the MENA region may limit their ability to migrate or restrict their adaptation capacities (Gemenne, 2015).

[6] It is important to underline that existing literature and reports regarding the climate change-migration and gender nexus will be examined, as little empirical research has been done on how women are affected by climate-induced internal displacement.

protected from any form of violence, including gender-based (Principles 11 and 19). On the other hand, the non-binding nature of the document creates an impasse as states[7] cannot be held accountable if they do not apply these Principles.

Furthermore, the United Nations Framework Convention of Climate Change (UNFCCC) is one of the few sources of hard law which acknowledges the vulnerability of all countries to climate change. It is considered as a vital document for climate migration as it underlines that displacement ends when displaced persons find a durable solution. For IDPs, this means that they no longer have specific assistance and protection needs that are linked to their displacement, and no human rights violation takes place. It also recognises that the gender dimension of climate change will affect men and women at different levels (UNFCCC, 2008). However, a criticism that many scholars express is that it does not include a concrete definition of many terms related to climate change; this creates a confusion regarding who can be characterised as an IDP or whether the displacement can be seen as forced or voluntary.

The Global Compact for Safe, Orderly and Regular Migration constitutes the first intergovernmental agreement addressing all dimensions of international migration. It is examined in this section due to its importance as a solid basis for the adoption of measures that can address the challenges arising from climate change. Although it has been characterised as "a catalogue of actions that has not been fully implemented at any level" (Pécoud, 2021), its "cooperative character" brings together actors from the international, regional and national arena within the "umbrella framework and guide strategic planning" (Refugee Law Initiative, 2019). In addition, it underlines the importance of protecting women and girls due to their vulnerability at facing gender-based violence during and after displacement.

Lastly, the Nansen Initiative Protection Agenda has served as a ricochet for novel measures, such as the Platform on Disaster Displacement (PDD). It focuses on the identification of effective practices and building a concentrated approach regarding the protection of persons displaced due to climate events. It constitutes a "pre-soft law initiative" (McAdam, 2017) aiming at building political consensus. Although it is another soft law instrument, it is seen as a highly important legal framework which promotes a bottom-up process that aims at addressing the needs of displaced people due to climate change. What is of extreme interest is the suggestion of mapping historical migration movements, which will enable the identification of communities that are at a risk of potential displacement in the future (paragraph 43). From a gender perspective, it focuses on the importance of data collection, and recognises that climate disasters exacerbate pre-existing vulnerabilities for different groups of people, including women.

International policy instruments: positive aspects and impasses

From a policy perspective, there is no UN entity that is specifically devoted to addressing displacement related to climate change (PDD, 2018). Thus, a question that arises is how can international policy instru-

The Global Compact for Safe, Orderly and Regular Migration constitutes the first intergovernmental agreement addressing all dimensions of international migration

[7] As mentioned by Weiss (1977), only a specific number of states has integrated the Guiding Principles in their legal frameworks. A significant example are the states that have ratified the Kampala Convention, which is built upon these Principles.

ments be transferred at a regional level or create a solid basis for the development of regional and national initiatives?

The Cancun Climate Change Adaptation Framework constitutes the first formal agreement that establishes guidelines and principles in order to minimise the consequences of climate change. It was adopted at the Climate Change Conference of the Parties (COP16). Specifically, it invites all state parties to enhance action on adaptation, taking into consideration specific national and regional priorities. It is considered as an important policy instrument as it underlines the need to strengthen international cooperation in addressing the effects of climate change. From a gender perspective, the Framework notes that it is important to include a gender aspect in order to achieve effective action towards climate change.

However, the adoption of the Cancun Framework was followed by a large debate around its outcome. One side supports the significance of it in "keeping the hope alive for a global climate change deal" (Brown, 2011), while others characterised it as a failure to create global initiatives. Despite its significance regarding adaptation and state cooperation, it is seen by many scholars as another failed attempt to address climate change and its consequences, including displacement. Its contribution is undeniable; nevertheless, it does not provide any solution to the already existing impasses that are still persistent. Another limitation is that there is no guidance on how to implement the principles and guidelines that are included in the framework. Therefore, although the Cancun Framework "fills in some of the missing architecture needed for a global solution" (Brown, 2011), they still present some limitations that minimise their contribution.

Moreover, the Platform of Disaster Displacement (PDD) is the successor of the Nansen Initiative and aims to follow up the work started by the Nansen Initiative and implement the recommendations of the Nansen Agenda. It makes a number of suggestions regarding the international approach in addressing internal disaster displacement. It offers greater clarity compared to the previous ones as it provides a concrete terminology of notions relevant to internal displacement. Another significant achievement of the PDD (PDD report, 2017) was to include disaster displacement in global policy responses in the field of migration and implement it in several regions. It is the only up-to-date instrument that has promoted the role of regional organisations, such as the Southern Common Market (MERCOSUR), in addressing climate displacement.

In addition, it recognises the existing impasses of the international legal framework and underlines that the insufficient implementation of the international instruments led to the current protection gap. In its 2020 report (PDD, 2020), the PDD recognises that women and girls are more susceptible to gender-based violence during displacement. What is missing from this instrument, as well as from the majority of the policy frameworks, is a better coordination between different stakeholders and governments in order to have a better implementation of their proposals.

Lastly, the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework or Framework) is the successor of the Hyogo Framework for Action 2005-2015 and is a vital policy instrument which aims to help countries to minimise disaster risks and reinforce their resilience and preparedness. It comprises seven priorities, emphasising mainly the importance of disaster risk management. An important achievement of the Framework that

needs to be underlined is that it has drawn attention to the gender prism of climate displacement. As already seen through the analysis of this section, all the instruments that are examined provide a gender aspect. However, the Sendai Framework promotes a clear understanding of the vulnerabilities that women face in the context of climate disasters. Despite highlighting the importance of the gender prism in climate change, the lack of a definition of the notion of gender and in the absence of a discussion on gender equality, the Framework's impact is rather limited.

The preceding examination of the international instruments has shown that they offer a solid basis that can support further action regarding climate displacement at the international arena. They have made important steps in the conceptualisation of this complex phenomenon, both at a legal and policy level. Notwithstanding, the non-binding character of the legal instruments and their vast scope constitute a barrier in developing a legal status for people who are migrating due to climate change. Accordingly, the lack of a clear guidance on how to implement the principles and guidelines that are included in the policy instruments broadens this impasse. Moreover, what needs to be taken into consideration is that the situation from country to country differs significantly; hence, the implementation of the international legal and policy frameworks should take into consideration the needs and capacities of each region.
To conclude, climate-induced internal displacement is a phenomenon that is in constant flux, and each region will face different challenges. As underlined in the Cooperative for Assistance and Relief Everywhere (CARE) report[8] (CARE, 2020) "the climate extremes exacerbate existing inequalities, vulnerabilities, and negative gender norms." Brown (2008) mentions that phenomena such as domestic abuse, trafficking and forced prostitution tend to increase during displacement, making women and girls more vulnerable. Addressing gender-based violence in this context becomes more complicated due to the lack of a concrete legal status of displaced persons as a result of climate change. Therefore, what is needed is more cogent and cohesive frameworks that will address climate mobility case by case.

A national approach of climate-induced internal displacement. The case study of Egypt

An overview of climate-induced internal displacement in the MENA region

Moving from an international to a regional perspective, complemented with the example of Egypt, the question that arises is how the international standards can be better implemented at regional and national levels to help build a robust framework that would better address climate-induced internal displacement in the MENA region. The second section of this chapter will firstly give an overview of the situation in the MENA region and will delve in depth into the case of Egypt, and the progress that has been made regarding climate-induced internal displacement.

As already underlined, climate migration is a multifaceted phenomenon, and it is im-

The preceding examination of the international instruments has shown that they offer a solid basis that can support further action regarding climate displacement at the international arena

[8] CARE International is a global network fighting poverty and injustice. It places its focus on the rights of women and girls who often experience hardships in a different way to men and, therefore, require specialised approaches.

portant to understand the scale of internal climate displacement in order to take proper measures (Groundswell, 2018). As relevant results have shown in the Internal Displacement Monitoring Centre (IDMC) report (2022), 233,000 persons were internally displaced in the MENA region during 2021, due to climate disasters. The predominant impact of internal migration in the MENA region is urbanisation, which in the case of climate displacement also adds an additional pressure to urban infrastructure.

Based on a report on water scarcity (ESCWA, 2015), the region is facing significant environmental challenges, such as air pollution, water shortages and land degradation. The International Organization for Migration (IOM, 2015) underlined in its report that one issue that the MENA region is facing is the lack of data and relevant research, which leads to a "knowledge deficit". Complementary to this deficit is the lack of political willingness which is proved through the small number of countries that have ratified international and regional frameworks on IDPs, despite being the region with the largest number of IDP at a global scale. This lack of political willingness regarding climate change is also triggered by issues such as wars and economic turmoil, which are perceived as more pressing in the region.[9] Although climate-induced internal displacement is a major issue that the MENA region is facing, only a few states have adopted and implemented domestic policies.[10]

The case study of Egypt

The case of Egypt[11] is a challenging one due to the country's geographical position and its political developments (IDMC, 2021). Specifically, the Arab Spring gave rise to internal displacement that happened in the country until the end of 2019. Also due to a series of terrorist attacks in North Sinai, the government proceeded with housing demolitions, which triggered new internal displacements. As underlined in the IDMC report (2021), the impacts of conflict, on the one hand, and natural disasters, on the other, "have become increasingly intertwined and contribute to making displacement chronic and protracted."

Egypt is examined as the central case study of this chapter as it is a country that is severely affected by climate threats, such as sea level rise and droughts (Ullah, 2012). The main challenges that the country is facing are water shortages and desertification. Egypt is particularly vulnerable due to its dependence on the Nile River and its large agricultural base (EACH-FOR, 2009). As underlined by the WB's latest report (2022), extreme weather events will aggravate Egypt's vulnerabilities. Climate change will also increase the uncertainty regarding the disposal of water resources, especially due to the impact it will cause to the River Nile. The majority of people residing in the Nile Delta migrated from rural areas to Cairo due to land degradation, which caused poverty and unemployment (Afifi, 2009).

[9] For instance, Yemen is facing major waves of internal displacement due to conflict and violence, and the addition of climate hazards, such as heavy rainfall and floods are deteriorating the situation fast (IDMC, 2019).

[10] Some significant examples (UNHCR, 2021) are: the establishment of the Green Building Council in Kuwait, the development of a high-level national committee to address climate change, and the work of the WANA institute, which promotes evidence-based policy in Jordan, and the promotion of collaboration between academia, organisations and various stakeholders in the framework of addressing the ongoing crises, including climate-induced internal displacement in Lebanon.

[11] This chapter will use the results from the fieldwork that was conducted in Egypt in the framework of the EACH-FOR Project. This case study is available at: http://www.each-for.eu/

Before examining the issue of climate-induced internal displacement and how it is dealt by the Egyptian authorities, it is interesting to mention the way that the country is dealing with climate change under the legal and policy prism.

Specifically, Egypt is party to a number of important international instruments, such as the UNFCCC, the 1951 Refugee Convention and the Kyoto Protocol. It is crucial to also underline the 2015 revision of Law 105 (Environmental Protection Law), which reinforces the fight against climate change (World Bank, 2022). In previous years the country has adopted various policy measures to address climate change, enhance policy dialogue, and build national capacity.[12] In addition, it is important to mention that significant efforts have been made from the government of Egypt through various proposals on reducing the effects of climate change. For instance, the first National Strategy for Climate Change Adaptation and Disaster Risk Reduction was adopted by the Egyptian government in 2011, while the most recent one, which was launched ahead of COP27, is Egypt's National Climate Change Strategy.[13]

However, the lack of political willingness and the level of awareness regarding internal climate displacement, which remains at low levels, is a barrier in dealing with displacement. (Jäger & Frühmann, 2009). The state does not yet recognise climate displacement as a major problem and does not give high priority (EACH-FOR, 2009); this also leads to a limited amount of data regarding disaster displacement (IDMC, 2021). Specifically, one of the challenges regarding internal displacement in the country is that providers of relevant data do not often include information about how and for how long people were displaced; thus, it is still difficult to have a precise number of IDPs (IDMC, 2021). For instance, the heavy floods in March 2020 led to the displacement of 8,400 persons in Egypt,[14] and the response of the Egyptian Red Crescent Society (ERC) was immediate. However, in most cases, either limited research has been conducted on climate-induced internal displacement or relevant results are not accessible to the public.

The lack of political willingness and the level of awareness regarding internal climate displacement, which remains at low levels, is a barrier in dealing with displacement

As underlined by Afifi (2009), there is still "silence about this issue from policy makers" and a low level of engagement from the country's authorities. Also, he underlined that climate-induced migration is generally seen as economic migration. For instance, the focus has been placed on internal migration from the South to the North of Egypt, but without being termed

[12] Some examples are Egypt's Action Plan for Dealing with Climate Change, Strategy and Policy Measures for Adaptation to Climate Change in Egyptian Agriculture, National Strategy for Adaptation to Climate Change and Disaster Risk Reduction, and Climate Change Adaptation Strategy (World Bank, 2021). Moreover, the National Climate Change Strategy 2050 (NCCS) is one of the most vital developments in Egypt's climate policies (World Bank, 2022).

[13] This strategy aims at "consolidating all aspects of climate change in one document" that will provide a solid basis for any national action (NCCS 2050, 2022). An important aspect of this strategy is the promotion of the cooperation of all sectors of Egyptian society, while it underlines important weaknesses, such as the limited application of the legal and policy framework that need to be addressed in order to have a full implementation of this initiative.

[14] This figure was obtained from the IFRC Emergency Plan of Action for the flash floods in Egypt and it includes the number of persons who were sheltered in the evacuation centres in Cairo, Beni Suef, Giza and Faiyum (IFRC, 2020).

as climate-induced migration caused by water shortages and desertification. The majority of actions taken by the national authorities to date are focusing on limiting the impacts of climate change in general, without specifically targeting climate-induced displacement. As mentioned earlier in this chapter, the lack of definitional clarity does not allow for concrete action on this issue.[15]

Nevertheless, the Egyptian authorities have taken some important steps that if supported with the relevant legal and policy framework can offer significant solutions to internal displacement. Specifically, in Alexandria, the most vulnerable city to climate events in Egypt, the government is building coastal defences in order to prevent sea-level rise from leading to displacement (Mixed Migration Centre, 2023). Secondly, the International Organization on Migration (IOM) in collaboration with the Egyptian government has scheduled to develop a project to address the impact of sea-level rise on human movement in the country by 2024 (UNDP, 2011). Furthermore, Egypt is part of the League of Arab States Council, which in collaboration with UNHCR has adopted ministerial decisions regarding support for IDPs (UNHCR, 2022). Lastly, Egypt is also part of the MENA Civil Society Network for Displacement, an incentive that the civil societies across the region have undertaken to prevent and respond to the needs of displaced persons.

Overall, Egypt has made impressive progress in addressing climate change by strengthening its role as a regional leader. In contrast, addressing climate-induced internal displacement remains at a primitive stage; uncoordinated actions, lack of legal framework and limited awareness characterise the actions of the Egyptian authorities. Undeniably, fighting climate change goes hand in hand with addressing displacement, but more concrete steps need to be taken. Lastly, the limited availability of data regarding legal and policy actions also is a barrier.

Conclusions and policy recommendations

Despite its long history with different forms of migration, the MENA region seems to be challenged by the modern patterns of displacement due to climate change. Based on the Outcome Report of the UNHCR (UNHCR, 2021), it is foreseen that climate change will increase the risk of floods and reduce crop productivity in the region, resulting in water scarcity and desertification.

This section advocates for the adoption of a regional framework that will be adapted to the needs of the MENA region and will be drawn from existing international agreements, such as the UNFCCC or the Guiding Principles. The core of this agreement would be the inherent rights of IDPs as set out in the Guiding Principles. This would include movement-related rights, such as the ability to travel freely within the territory of a state or be able to decide where to settle. As underlined by Kälin (2010), IDPs "should also be able to exercise these rights on an equal basis with others and without discrimination." Therefore, at the core of this agreement is the freedom of movement and the principle of voluntar-

[15] The fact that Egypt has ratified the Kampala Convention but has yet to include a definition of IDPs in its national legal framework is indicative of the reason why there is a lack of concrete actions from the authorities regarding climate-induced internal displacement.

iness.[16] These principles are connected with other important rights, such as the right to life, food and water or family life.

In addition, important examples of existing frameworks, such as the Kampala Convention[17] or CARICOM, should be taken into consideration. Through the establishment of an appropriate legal framework with clear definitions relevant to climate displacement, the incorporation of international guidance, a regional framework that would accommodate the region's needs can become a reality (Maru, 2009). It is important to underline that the rising of climate challenges that the region is facing and the economic losses that it will face from water scarcity (World Bank, 2010) are some of the reasons that can incentivise MENA countries to sign a regional framework. It has been characterised as one "of the least prepared regions" (UNEP, 2017) regarding climate displacement. As mentioned in Article 38 of the Arab Charter on Human Rights (2004), "every person has the right to an adequate standard of living […] which ensures the right to a healthy environment." Therefore, this can also incentivise governments to take the appropriate measures to ensure the protection of the rights of IDPs.

In order to have a successful implementation of the international legal and policy frameworks, a better coordinated collaboration between the UN, regional organisations and national governments is deemed necessary. To date there is no international legal instrument that explicitly protects people who flee environmental threats, while the development of a new international treaty has been highly criticised.[18] Therefore, a regional agreement can contextualise the international norms at a regional level, and address the issues that are arising from climate displacement in the MENA region. By addressing the types, causes and consequences of internal displacement in the region, more coordination can be achieved at a regional and national level. As the Kampala Convention does, it covers all the phases of displacement as well as the states' obligations (Maru, 2009). Overall, by thoroughly formulating the responsibilities of states, agencies and organisations, more institutional clarity can be achieved. As underlined in the report of the UN Secretary-General's High-Level Panel on Internal Displacement (2021), the development of a regional framework will strengthen the quality of institutional engagement, build internal capacities, and promote more systematic action.

By addressing the types, causes and consequences of internal displacement in the region more coordination can be achieved at a regional and national leve

What is needed in the case of the MENA region is a legal framework that would aim at implementing international standards for preventing internal displacement,[19] promoting and reinforcing

[16] As mentioned by Kälin (2010), this principle includes the protection from any involuntary movement, the freedom to choose to flee to another part of the country, and the non-refoulement principle.

[17] The Kampala Convention is designed to address the challenges of the African Union (AU). All the Northern African countries have ratified this convention; however, some MENA countries have not. Nevertheless, this does not mean that they will not ratify a similar framework which will address the challenges that the MENA region is facing in particular.

[18] The core argument of this criticism is the inability of a new international treaty to address the concerns of particular communities.

[19] What is interesting in the case of the MENA region is thatm although most of the countries have adopted national laws regarding the fight against climate change, not all of them have implemented international standards in their national frameworks. For instance, Jordan does not make any reference to IDPs and has not implemented any of the Guiding Principles nationally. Even Egypt has ratified the

regional and national measures to prevent and minimise the consequences of climate-induced internal displacement, and "providing for obligations and responsibilities of State Parties" (Kampala Convention, 2012) in order to protect the fundamental rights of IDPs. Developing a regional framework for the protection of IDPs is vital as it can foster a coherent development of norms and standards across the region that will also lead to their national implementation (Olawuyi, 2022).

Furthermore, this framework should embed internal climate displacement in "green and inclusive development planning" (Groundswell, 2021). Specifically, the Groundswell Report showed that internal displacement can be limited if integrated in development planning. Thus, this recommendation invites regional leaderships to address climate-induced internal displacement as an adaptation strategy and include it in development planning. This also includes an early and sustainable response[20] that would preempt a climate catastrophe from happening. It is often the case in the MENA region that leaderships are waiting for a climate disaster to take place and then act; hence, a regional framework would increase political willingness and would reinforce preventive mechanisms.

A second recommendation focuses on adaptation and resilience. Increasing awareness and reinforcing education on the consequences of climate change is a vital step in the promotion of adaptation. The majority of people in the MENA region are not aware of climate migration as a concept; thus, they are not aware of their rights and how they can be protected (Refugee Studies Centre, 2008). Together with awareness, training of regional and national authorities[21] is of high importance (Cohen & Bradley, 2010). An important example is the case of the authorities in the Philippines, which without relevant training would have not been prepared to respond in receiving IDPs after Typhoon Durian (Cohen & Bradley, 2010). So it is equally important to strengthen people and authorities' capacities in order to adopt appropriate policies. The promotion of a cohesive legal and policy framework will, therefore, reinforce the adaptation and resilience of these communities and will reassure the protection of the rights of displaced persons.

Taking into consideration some good practices from the AU, what is missing from the MENA region is "the institutional elements of state regulation" (Kalin, 2010). Specifically, it is not sufficient to only adopt a binding legal framework, but this needs to be combined with the relevant institutional elements that will provide protection to people displaced internally.[22]

Moreover, from a gender perspective, it is deemed necessary to **raise awareness** regarding inequalities and gender discrimination that can occur during climate displacement as the first and most important step. Projects such as

Kampala Convention but does not yet refer to any of its laws in the protection of IDPs.

[20] The early and sustainable response is underlined in the Guiding Principles as Principle 1.

[21] By authorities, the author means government authorities, border enforcement, community leaders, military forces and the private sector.

[22] An example of a good practice adopted by Uganda is the creation of the Department of Disaster Preparedness and Refugees in the Office of the Prime Minister, which is a central mechanism for internal displacement.

"Understanding the Nexus of Migration, Gender, Climate Change, and Agriculture in Tajikistan" should also be promoted more in the MENA region taking into consideration the socioeconomic and political scenery (IOM, 2019). This project is relevant as it put at the forefront the importance of the gender aspect in climate migration. Specifically, it made clear that climate change impacts will be exacerbated by underlying factors of vulnerability, such as existing gender roles. The collaboration at a national, regional and international level contributed to the success of this project. Lastly, through mapping and analysis, this project strengthened the understanding "of the extent to which the migration, environment, and climate change nexus is integrated into existing laws and policies related to environmental degradation […] and human mobility in Tajikistan" (IOM, 2019). Complementary to raising awareness, the participation of women in the decision-making processes in disaster management would also be a vital development (Desai & Mandal, 2021).

It is also important to develop an **institutional structure,**[23] where international, regional and national mechanisms can work closely in the areas of environment, displacement and protection of women and girls. Lastly, making gender mainstreaming a standard practice would help in the development of relevant policies. Undeniably, minimising the consequences of climate-induced internal displacement in the promotion of gender equality will be a challenge for the international and national arena. The reinforcement of gender-specific expertise on climate-induced displacement is of the utmost importance. Specifically, this refers to developing policies that would pay special attention to vulnerable groups, including women and girls.[24] This would include trainings for humanitarian assistance personnel, non-governmental organizations (NGOs), and government ministries.

Overall, the international legal and policy approach towards climate-induced internal displacement can be seen as relevant but not sufficient. Since climate displacement is a multi-faceted phenomenon, the legal and institutional response should be congruous. Until today, climate-internal migrants cannot benefit from any appropriate protection under international law since they do not fulfil the relevant legal conditions. This is the reason why this chapter proposes the adoption of a regional framework in the case of the MENA region instead of an international one. Climate-induced internal displacement is a central phenomenon in the MENA region that has grave effects for the social, economic and political life of the region. Therefore, a regional framework could put climate-induced internal displacement at the forefront of the regional agenda. "[Internal] mobility is emerging as the human face of climate change" (Groundswell, 2021) and the MENA region should be prepared to develop the relevant tools to address this phenomenon successfully.

[23] As mentioned earlier in the case of Egypt, some steps regarding the development of institutional structure have already been taken in the collaboration of the IOM and the Egyptian government in order to address the impacts of sea-level rise to human mobility.

[24] A significant example that needs to be highlighted is the case of Cuba, where hurricane awareness programmes are mandatory at schools. This also includes teaching coping strategies to women in order to be able to survive disasters (Cohen & Bradley, 2010).

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Climate Change, Internal Displacement, and State Fragility. Toward a "Sahelisation" of the North Africa Region

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Introduction

According to the United Nations (UN), water security consists of "[t]he capacity of a population to safeguard sustainable access to adequate quantities of water of acceptable quality to maintain livelihoods, human well-being and socioeconomic development, to ensure protection against water-borne pollution and water-related disasters, and to preserve ecosystems, in a climate of peace and political stability" (UN Water, 2013).

At a glance, water security implies both economic issues (ecosystem, quality of life, and agri-food infrastructures) and political issues (people displacement, desertification, establishment of criminal organisations and state weakness) (Institute for Economic Peace [IEP], 2021). Desertification and consequent lack of water resources implies a partial or total limitation to maintain minimum supply levels for the population, and for agricultural and livestock practices for the subsistence of society (Bright, et al., 2021). The first consequence is displacement of population and the limitation or absence of provision of state services in the region, including security and control of the territory by the security forces. It follows the control of the area by criminal organisations dedicated to everything from arms trafficking to human trafficking, passing through the control of the area by Jihadist organisations, as has been increasingly happening in the Sahel for decades (García Rivero, 2022; Meché, 2021).

This situation has spilled over the northern fringe of the Sahel, namely the southern shore of the Mediterranean, giving rise to riots and protests by citizens who end up welcoming military coups d'état, showing their public support on the streets as the soldiers pass by. Tellingly, this has already been the case of six bordering countries between the Southern Mediterranean and the Sahel in the last 24 months. When most researchers, journalists and policymakers believed that coups were a thing of the past in Africa, military interventions have returned. First it was Mali in August 2020, followed by Chad in April 2021, a failed attempt in Niger in March and in Guinea in September of the same year to finish in Sudan in October, also in the same year. More recently in Burkina Faso the army again staged a coup. The fact that all these countries make up a strip from the Atlantic to the Indian Ocean and just above the Sahel strip clearly indicates that this fringe of insecurity and instability is widening, fully entering the countries of the southern basin of the Mediterranean. If a solution is not found, the insecurity problems characterising the Sahel will most probably spill over the northern neighbours, namely the Southern Mediterranean.

As a result, the best way to stop the *Sahelisation* of the Southern Mediterranean is, therefore, the maintenance of the ecosystem with a sustainable management of water resources with the capacity to fix population in a respectful relation with the ecosystem while strengthening the state capacity to control its territory (Stambøl, 2021). For all of which, an analysis of the present and future capacities, of water resources for population consumption, maintenance of ecosystem, the livestock and agricultural capacity in a sustainable way over time and respectful to the environment becomes more imperative than ever.

Against this background, this research's aim is twofold. On the one hand, it aims to analyse the historical political, economic, ecologic and demographic degradation process that has occurred in the Sahel to date; and, on the other, to analyse to what extent Middle East and North Africa (MENA) countries are undergoing this very same process at present.

Previous research[25] during decades on the issue in Africa has concluded that the main side effects of desertification is food production (agriculture, cattle raising…) limitation (Webber, Gaiser, Ewert, 2014; Alvar-Beltrán, Dibari, Ferrise, Bartoloni, & Marta, 2023), local communities conflict (Charbonneau, 2022), population displacement, migration of population to neighbouring areas where new conflict with local population may arise (Alda, 2014; Gemenne, F., Blocher, De Longueville, Gharbaoui, & Ozer, 2017), absence of state service in the deserted areas (Charbonneau, 2022) and settlement of criminal organisations, which leads to more conflict and more state weakness often leading to coups d'etat (Behrend, 2016; Freeman, 2017; Ejiofor, 2022; García Rivero, 2022).

Main findings

Food production

The most obvious impact of climate change is desertification, which has a direct impact on food production. In the Sahel region, structural environmental fragility is compounded by climate change, which worsens the weakness of the entire region. Historically, the periodic cycle of dry and rainy seasons determines agriculture and pastoralism, which much of the population in the area lives off. However, in recent times, precipitation has been characterised by unpredictability. Long-term climate tendencies evidence that temperatures are rising across the region leading to exceptional heat peaks. Rising evaporation, combined with non-optimal irrigation systems and unmaintainable logging to meet the needs of a growing population, is giving rise to more desertification of the Sahel region.

Overall, these changes modify local patterns of mobility and livelihoods across the entire region, with a negative impact on social stability. Overall, climate change seriously affects the balance that sustains this customary way of life (IOM, 2009).

Local conflict between local communities

Climate change-induced exhaustion of resources is uneven and irregular. In this context, enhanced mobility represents a valuable strategy, especially for traditionally mobile groups (pastoralists and nomads). Unfortunately, population movements frequently intensify hostilities and tensions between host communities and displaced groups, often leading to escalating violence (Koubi, 2019).

The effect of local governance in this regard is of extreme importance. According to experience in the Sahel region, the legitimacy, efficacy and influence of customary norms, local institutions, and dispute-solution mechanisms matter in making conflicts over natural resources turn towards either conflict escalation or peaceful management. In other words, migration of displaced people due to climate change may result in an escalating conflict or may be eased by local government policies (Krieger, 2022; Lacher, 2013; Mann, 2014).

In this context, the migration flows from Africa to Europe via the Sahel, the Sahara and North Africa show the complex interactions between environments, conflict management and livelihoods. However, the mixed results of existing research show some common shortcomings and highlight where additional research is most needed with more reliable and up-

[25] The list of research is abundant and only some examples are cited.

dated data to reach solid conclusions (Raineri, 2022; Buhaug, 2010; Bukari, Sow, & Scheffran, 2018; McCullough, Mayhew & Opitz-Stapleton, 2019; Theisen, Gleditsch, & Buhaug, 2013; Benjaminsen, Alinon, Buhaug, & Buseth, 2012).

Criminal organisations in the area

To make things worse, transnational networks of organised crime and terrorism have proliferated across the Sahel. Many of these groups range from human trafficking to terrorist organisations. A key actor within this sector of illegal organisations are Jihadist organisations that have spread all over the region from the Atlantic coast to Indian Ocean. The origin of these Islamist groups dates to the Algerian elections of 1991, when in January 1992 the government suspended the second round of multiparty elections, banned the Islamic Salvation Front, giving rise to a civil war, and several Jihadist organisations emerged. The main one was the Groupe Islamique Armé (GIA), being also the first major armed group to fully subordinate Jihadism to Salafism (Thruston, 2017). This group split up into two groups one being the Salafist Group for Preaching and Combat (French GSPC) which transitioned into al-Qaida in the Islamic Maghreb (AQIM) becoming the representative of al-Qaida in the region, inspiring other groups to come (Thruston, 2020). Since then, different alike-organisations have sprung all over the region (Demuynck & Coleman, 2020; Aina, 2021; Lounnas, 2018).

Jihadist groups have taken advantage of several underlying conditions, which drive local grievances across the region, including endemic poverty, inequality, high unemployment levels, illiteracy, ethnic conflict, and lack of governance (Ejiofor, 2022).

State weakness

Traditionally, authoritarian regimes in the area have aggravated unequal access aid for ostracised (generally nomadic) groups (i.e., Mali or Nigeria). The incapacity of state institutions to handle the situation worsened criminal organisations such as Jihadist groups operating in the region, often giving rise to military intervention and democratic backsliding. Moreover, there is evidence that famines that have occurred in the Sahel were less the result of mere food shortages than of inadequate food policies by authoritarian governments (Lacher, 2013; Krieger, 2022).

All these conditions together have worsened the situation as free movement is impeded for security reasons (criminal organisations in the area). Pastoralists fear being attacked by armed groups while travelling with their livestock. Hence, they need to remain close to water sources, creating tensions with other workers in the area. Finally, their livestock gets weaker and they sell it at very low prices. To make it worse, violence also considerably limits humanitarian access. (ICRC, 2020; Nagabhatla et al., 2021; Benjaminsen & Ba, 2019).

At a glance, violence, extreme temperatures and enduring droughts and floods either trigger population displacement even further than if violence were not present or obliges them to remain in their areas condemning population to starvation or death (Alda, 2014).

How these factors interact with each other. Some Sahelian examples

Although there are many studies that prove the relationship of some of the aforementioned issues (Schwarz et al., 2020; Na-

gabhatla, Cassidy-Neumiller, Francine, & Maatta, 2021; Calmon et al., 2020; Freeman, 2017; Behrend, 2016; Scheffran, Marmer, & Sow, 2012; Adepoju & Appleyard, 1996, to mention but a very few), the state of the art in this area of research lacks exhaustive and comprehensive research that includes *all the intervening factors* (conflict, population displacement, climate change, state service deterioration; military intervention; criminal organisation settlement) as there is no doubt that all these issues are intertwined. Several examples evidence it, the most notorious and recent being the conflict that began in Mali in 2012 now spilled into neighbouring countries, displacing more than 3.5 million people across the region. The situation has worsened the displacement of people in neighbouring countries due to climate change (Showler & Lecoq, 2021): severe floods have affected hundreds of thousands in West and Central Africa since August 2020, overflowing the riverbanks in Niger and affecting people across neighbouring countries like Cameroon, Burkina Faso, Ghana, Chad, Mali, Niger, Democratic Republic of the Congo or Senegal. This means that these countries receive the impact of both conflict and natural disasters and both conflict and climate displaced groups increase pressure on limited resources in the hosting area. This is the case of Mali, Burkina Faso and Niger, for instance (Tower, 2020; ICC, 2020).

To make things worse, the existence of criminal organisations – Mali, Nigeria, Chad or Burkina Faso being clear examples – obliges the displaced population to go further to avoid certain areas.[26] This gives rise to violence in the central Sahel due to competition over food and resources (IEP, 2021). Moreover, the risk persists of conflict spilling over into neighbouring countries like Guinea, Ivory Coast, Benin, Ghana or Togo (World Food Program USA, 2021).

In a nutshell, climate change, food shortage, population displacement, violence and state incapacity to control its territory against criminal organisations are clearly intertwined.

Climate change, food shortage, population displacement, violence and state incapacity to control its territory against criminal organisations are clearly intertwined

Situation of the MENA region

In this regard, the situation in North Africa is as follows: in terms of desertification the impact in North African countries' way of life is even more pronounced and this has obvious implications on migration and food security (Najem, Bitar, Faour, Fadel, & Zribi, 2020). Probably, the mixture of water and rain scarcity, high population growth, concentration of the population in certain areas, and increasing internal and external migration makes the Middle east and North Africa (MENA) region one of the most water and food stressed area in the entire planet.

The region has always relied on agriculture and climatic conditions. In fact, agriculture is the main employer in many countries but, tellingly, climate change is expected to reduce rain by at least 15% (and up to 45%) by the end of the century, while population is expected to double its current figure by 2070. In addition to increased water scarcity, climate change will increase aridity in the region, shrinking arable available lands and perturbing established agricultural patterns (Bayar & Youssef, 2014). Altogether this will trigger migration both internally and to-

[26] More than 70,000 people were displaced in the Sahel region in 2020 due to the worst floods in over a decade (UN Refugee Agency, 2020) that join the more than 2 million people displaced due to violence of organisations such as Boko Haram in the region since 2013 (Human Rights Watch, 2022; Norwegian Refugee Council, 2021).

ward other regions, mainly Europe (Waha et al., 2017).

The region has historically attracted workers from all sub-Saharan Africa to the Mediterranean coastline and Europe, often crossing through the entire sub-Saharan region. However, the above-cited side effects of climate change will increase the number of migrants and make these routes more perilous in the future. Overall, increased migration, both internal from within North African countries and external from sub-Saharan region, will concentrate in areas (mainly coastline) with less and less state capacity to provide basic services and in dispute for scarce resources with host communities.

Tellingly, the area shows a peculiarity that makes it more vulnerable to climate change. The effect of sea level rise will affect the North African coast countries much more than any other part of the world. About 7% of the MENA population is living in areas below five metres above sea level, which means that the region is exposed to the effects of sea level rise as in few areas on the planet. Hence, an increase of sea level will have a tremendous impact in productive sectors, from fishing or agriculture to tourism (Dasgupta et al., 2011). Moreover, as a last border to Europe, the North African coastline also concentrates migrants from sub-Saharan Africa on their way to Europe, increasing conflict with the host local population and affecting tourism, worsening the situation even more.

Security

Added to these challenges, there are ongoing security risks in the region, such as Jihadist organisation (i.e., Al Qaeda in the Islamic Maghreb) (Wehrey & Fawal, 2022; Sharon, Nicholson, Funk & Fink, 2018). For instance, the same territories that have attracted migrants looking desperately for a chance to enter Europe (Spanish cities of Ceuta and Melilla) have also called for the attention of Jihadist organisations such as Al Qaeda, at present spreading all over the region again.

These organisations are well aware of the state (repression) capacity in the region and, hence, in North Africa, Jihadist organisations may opt for a strategy different to direct confrontation. The already proven capacity of the state security forces in tackling Islamist terrorism in the past (i.e., Algeria in the 1990s) will push Jihadism to use different strategies to direct confrontation to the state, for instance, the Al Qaeda attempts to co-opt the Harik in Algeria or the recent relation between Polisario and Al Qaeda in the Lands of the Islamic Maghreb (AQMI) (Criezis & Wicks, 2022).

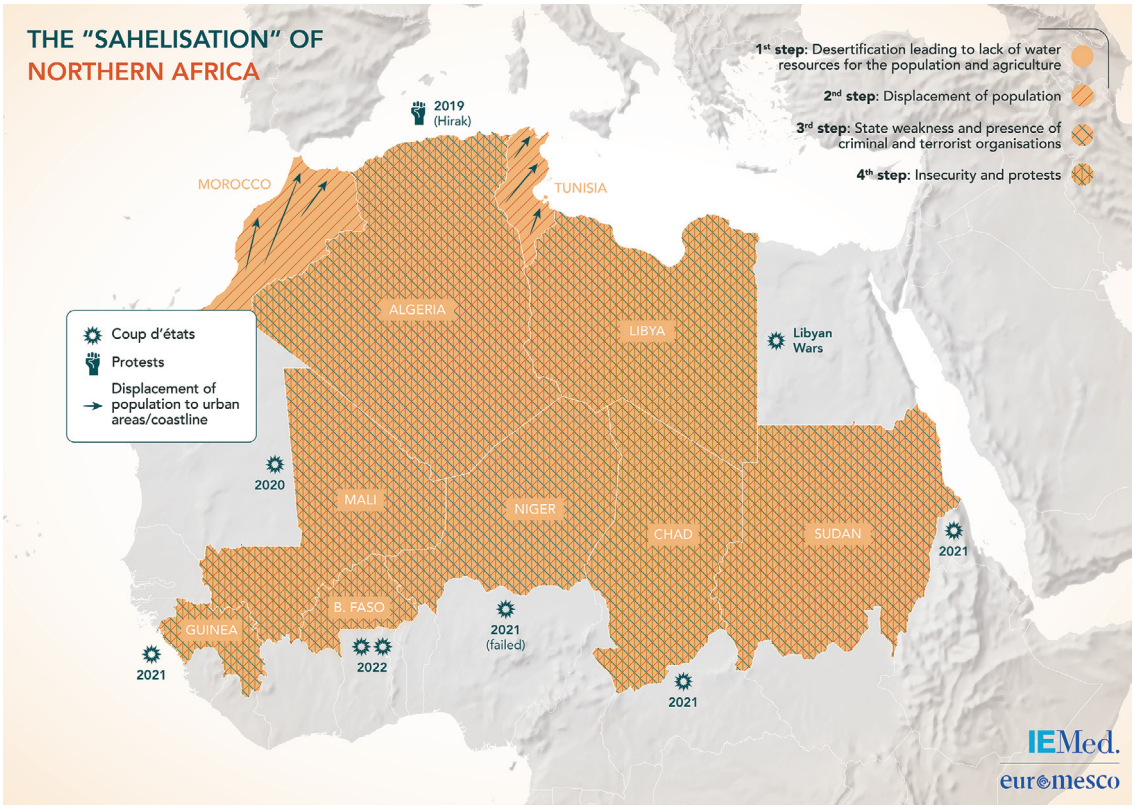
North African countries have been characterised by a strong and repressive state apparatus with relentless security forces including police and military. In fact, terrorist organisations entered Sahel as they were forced to leave their countries in North Africa region (i.e., Algeria). Hence, it is not expected that criminal organisations in the Southern Mediterranean countries will show the same high levels of success than in the Sahel, at least in countries like Morocco[27] or Algeria. However, Algeria's southern border has shown to be permeable to terrorist organisations entering from the south (Criezis & Wicks, 2022; Cantens, 2021). These security issues will certainly trigger population displacement, contributing to the deterioration of the ecosystem even more.

[27] However, it should not be surprising that authorities limit liberties and rights under the excuse of fighting terrorist organisations and criminal organisations in general, imposing limits on internal and external immigration for security reasons.

Libya, however, will be a different scenario. Since the Arab Spring, the country has become almost a complete failed state, attracting human trafficking and Jihadist organisations (Daragahi, 2021).

Overall, Jihadist groups have resulted more threatening in the Libyan-Sahel security vertical line, while, in contrast, they have been confined in Tunisia, Algeria and Morocco (Lefèvre 2014; Lounnas, 2018). This reflects a fragmentation within the North African-Sahelian line: a group of strong states able to stop those organisations, and a second one of weak or failed states (Libyan-Sahelian stripe) where terrorist have been more threatening.

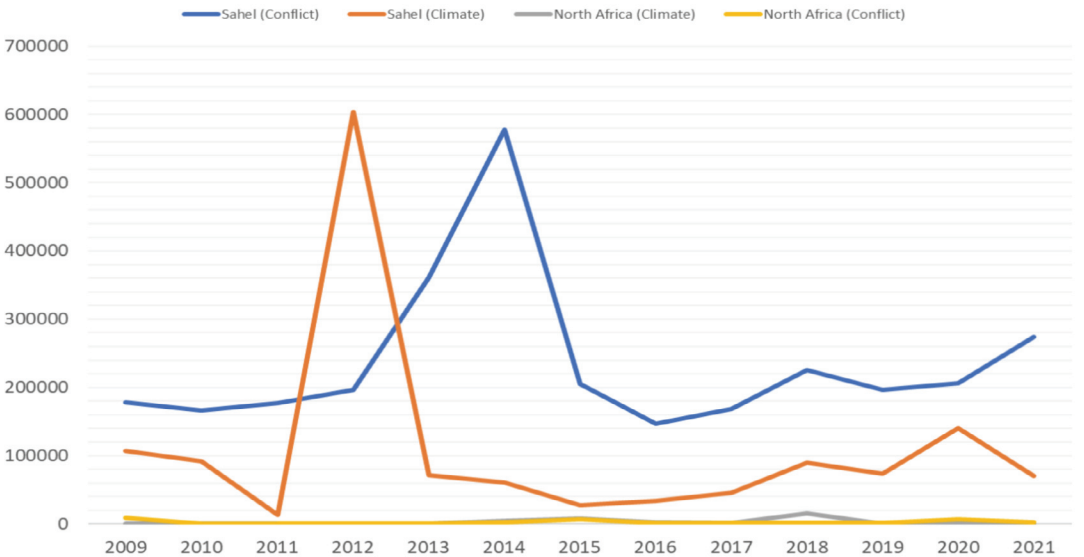
Their modus operandi does not only include violence: as mentioned above, where direct confrontation was not enough or successful, they opt for persuasion of society as happened in Algeria in 2019. Early that year, hundreds of thousands of protesters filled the streets demanding that Abdelaziz Bouteflika, in power since 1999, step down. He finally resigned in 2019. This peaceful movement was termed Hirak and kept on gaining wider social attraction. Despite their apparent united front, there were internal Islamist-Secular divisions among protesters. Jihadist organisations are behind this Islamist influence in the movement, appealing to the most disadvantaged among them, migrants, both internal and foreigners (Criezis & Wicks, 2022; Lounnas, 2018). Moreover, abandonment from host public institutions and frustration can become the breeding ground that turns migrants into potential Jihadist activists.



Evolution of the Sahel and North African population displacement compared

At this point, it seems necessary to compare the evolution of population displacement in the two regions under study to discern whether climate-induced and security-induced displacements follow parallel trends. Figures 1 and 2 below show data on internal displacement of Sahelian countries (namely, Burkina Faso, Cameroon, Chad, the Gambia, Guinea, Mauritania, Mali, Niger, Nigeria, Sudan, South Sudan[28] and Senegal) and North African countries (namely, Morocco, Algeria, Egypt and Tunisia[29]). Both figures show data since 2009 to 2021. Figure 1 shows data per year and Figure 2 shows the time-evolution growth.

Figure 1. Sahel vs North African Conflict and climate displacement (2009-2021)



Source: Aggregate country data from Internal Displacement Monitoring Centre – Norwegian Refugee Council. Labels refers to the internal displaced population in the cited year due to conflict or climate in the cited region.

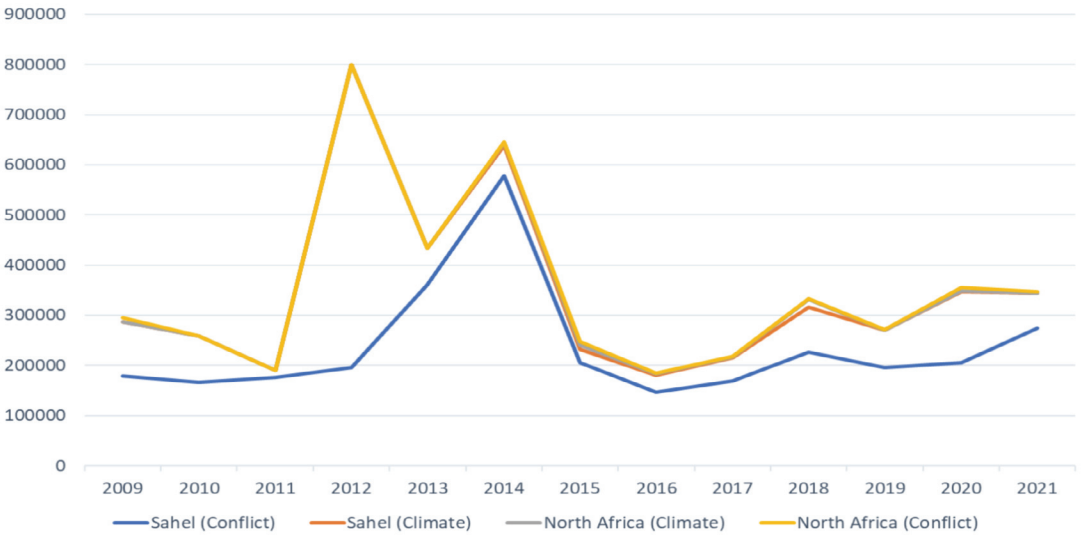
Figures show that climate displacement is higher in the Sahel. After a decline in early 2010, figures rise especially due to conflict. Both conflict-related and climate-induced displacement show lower figures in North African countries. However, Figure 1 shows per-year-data but not growth over the years. This is shown in Figure 2 below in a stacked data plot.

Interestingly, the overall picture changes and two interesting conclusions arise: on the one hand, although population displacement is higher – according to Figure 1 – due to conflict in the Sahel region, the pace growth of displacement – according to Figure 2 – is higher in North Africa (both climate- and conflict-related displacement).

[28] Sudan is often considered part of the MENA region. In this study, however, we believe it is an integral part of the Sahel region.

[29] Comparable data on the Western Sahara not available.

Figure 2. Sahel vs North African conflict and climate displacement (2009-2021) – stacked data



Source: Aggregate country data stacked plot from Internal Displacement Monitoring Centre – Norwegian Refugee Council. Labels refers to the internal displaced population in the cited year due to conflict or climate in the cited region

On the other, both climate-related and conflict-induced displacements go hand-in-hand in both regions, especially since 2013. Stated briefly, both climate and conflict effects interact with each other when triggering population displacement.[30]

In a nutshell, the trend of population displacement in both regions, in the last decade, follows similar patterns, although North Africa has been worsening at a faster pace in very recent years. To go beyond this and analyse population displacement in more detail (sequences, stages, time, reasons, and the like) and develop a highly efficient predictive tool, a data set is needed, including both country-level and individual-level data, which at present is not available. Although there are many studies aiming at predicting population displacement, there is no study, as this chapter goes to press, that includes all variables affecting population displacement and measured over a long period of time.[31]

Both climate-related and conflict-induced displacements go hand-in-hand in both regions, especially since 2013

Conclusions and policy recommendations

Most relevant issues affecting population displacement found in the Sahel region are present in North Africa, and both regions follow similar patterns (see Figures 1 and 2). Hence, it should not be surprising to witness the region following the same path

[30] For example, population displaced due to floods will most probably need to avoid certain areas when migrating due to criminal organisations (i.e., Boko Haram or the like) that control the transit and/or destination areas.

[31] Very good research on the issue can be found in the United Nations Integrated Strategy for the Sahel (2022); International Organization of Migration (IOM, 2022) or Hernández and Roberts (2020) to mention but a few. Lack of reliable, comprehensive and time-series data across the continent is an obvious limitation.

as the Sahel region. This may enhance the already in motion population displacement due to climate change.

North African countries show a peculiarity that will certainly enhance the existing problem: they are the last border to enter Europe

However, according to previous experience, military intervention is not expected. The reason being that the strength of the North African states is far more robust that their Sahelian counterparts. Moreover, the origin of Jihadist organisations present in Sahelian countries is found in the Islamist radical organisations, such as GIA expelled from Algeria into the Sahel territory. In other words, North African countries have the state capacity and experience to deal with these organisations better than security forces in the Sahel.[32] Hence, military interventions in the form of coup d'etat are not likely to occur in North African countries. However, for the sake of security and stability (to inhibit the advance of Islamist groups in the region, as at present in the Western Sahara or in the past in Algeria), North African governments could impose limits on civil liberties and political rights (even in the form of a self-coup, as happened in Tunisia in 2021).

Tellingly, North African countries show a peculiarity that will certainly enhance the existing problem: they are the last border to enter Europe. Most of sub-Saharan migration heads toward North African shore to cross the Mediterranean Sea toward Europe. Hence, problems of internal population displacement, conflict over scarce resources with limited state capacity to provide services like shelter or food and will merge with sub-Saharan migration increasing pressure over already-limited resources and a limited state capacity to handle both security and service provision.

Current episodes of hundreds of desperate migrants trying to enter through the fences into Spanish cities of Ceuta and Melilla could worsen if measures are not taken urgently.

Against this background, the following policy recommendation are made:

- Better irrigation procedures (as Egypt is implementing) to optimise the use of water.
- The use of alternative sources of energy, such as solar (as led by Morocco)
- Strengthening regional and local authorities' capacity in transit countries in Africa to deal with internal and international migrations is a must. Porous borders facilitate human trafficking.
- International assistance should be provided to North African (local, regional and national) governments as this territory will receive increasing internal migrants from North Africa and external migrants from sub-Saharan regions heading to the northern shore to enter Europe.
- Effects of climate change in the Sahel region will likely worsen the situation of North African countries: population displaced from the Sahel areas will most probably join those internally displaced within North African countries, putting more pressure on scarce resources. Hence, strengthening governance in Sahelian countries of origin of migration will help to control and manage migration flows. Both political and military cooperation with local and national Sahelian authorities through a comprehensive plan to increase democratic governance, political stability and economic growth will certainly contain migration in origin points, avoiding or

[32] This is pointed out in Figure 1: conflict-related displacement is much higher in the Sahel than in North Africa. Alternatively, should North African security forces become less efficient in the near future, the North African region will certainly follow their Sahelian counterpart's trend in this regard.

limiting at least a humanitarian disaster that will certainly affect MENA countries.

- Finally, there is no study to the author's knowledge that measures quantitatively the intertwined effect of all the issues mentioned in this chapter. Existing research, although of high quality, is not comprehensive enough to properly monitor all the side effects explained hereto. A quantitative, multilevel (individual, local, national and regional) and longitudinal data set, including all the cited factors, should be prioritised. This will provide a stronger and more accurate tool to forecast the whole process of population displacement.

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Policy Brief on Climate Change and Internal Human Mobility

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Introduction

The Middle East and North Africa (MENA) region is greatly influenced by international trends, particularly politically and economically. Additionally, many of the region's phenomena are reflections of global trends, most prominently climate change. As the latter's impacts worsen — affecting many people's rights and, in some cases, depriving them of their homes, countries, and even their lives — a growing number of individuals are seeking a more favourable environment and livelihoods. This is already occurring in different parts of the globe.

Climate change policies and disaster risk management are parts of a national, regional and international framework that must work in unison to promote climate resilience. Regulations and assistance are vital for attaining equality, outlawing discrimination, and involving and empowering vulnerable communities in climate change initiatives. Hence, the purpose of this chapter is to address and engage different key stakeholders and policy-makers at all levels to draw their attention to addressing the planet's most serious threat, their economies and societies, in an integrated manner and through a sustainable lens. It provides a holistic view of climate change phenomena, its impacts and interlinkages with displacement, in addition to providing mitigation and adaptation policies to avoid the projected alarming numbers and worst-case scenarios.

Climate change scenarios: time to face reality

Life will become more difficult for most people around the world if the Earth becomes significantly warmer this century. But how much more challenging will it be for people in the already hot and arid MENA region? The latter has been so far among those most adversely affected by the impacts of climate change. Thus, a full grasp of the varied regional scenarios and implications of climate change is necessary.

Temperature

The warming process is already evident in the MENA region, where mean temperatures are increasing on both annual and seasonal scales (IPCC, 2022). In some parts of the region, rates of change have reached unprecedented levels, increasing from 0.5°C to 1.0°C per decade, in winter and summer respectively, between 1900 and 2008 (Dogar & Sato, 2018). Climate models project a continued increase in temperatures and the number of hot days in the MENA region at rates faster than the global average, making it a hotspot of climate change (Lelieveld et al., 2016; Salman et al., 2017). Temperature seasonality is also projected to decrease in around 90% of the region according to some models, indicating a higher increase in winter temperatures than summer temperatures, especially in the northeast (Hamed et al., 2022).

Increasing temperatures and frequency of heatwaves and extreme temperature events have far-reaching impacts on economies and populations in this already dry and warm region. Heat-stress mortality risk for individuals over the age of 65 is predicted to increase up to sevenfold by the end of the century, even in middle-of-the-road development scenarios (Borghesi & Tissi, 2019; Ahmadalipour & Moradkhani, 2018).

Precipitation and water resources

Stretching across arid and semi-arid climates, the MENA region is characterised

by low precipitation (between 100 and 600 mm on average) and great spatio-temporal rainfall variability (Sofuoglu & Ay, 2020; Namdar et al., 2021). Variability is maintained within projections for the region. While a decrease in precipitation is predicted for areas bordering the Mediterranean, an increase in total annual rainfall, heavy precipitation events, and pluvial flooding is projected for areas including the Gulf, the Sahara and parts of the Sahel (IPCC, 2022). Changing or decreasing precipitation trends can also mean that a higher severity of drought can be expected, as the number of consecutive dry days is projected to increase (IPCC, 2022). Countries in the Mediterranean basin already exhibit increases in hydrological, agricultural and ecological droughts, which are projected to increase in frequency and severity (IPCC, 2022). In Lebanon, for example, an increase in the frequency and duration of droughts by almost 40% is projected across the country (MOE, 2021). This increase in aridity, along with reduction in soil moisture, is expected to further increase temperatures by limiting evaporation cooling (Lelieveld et al., 2016).

Droughts present a critical threat to the region, which is already faced with a major challenge of scarce and overexploited water resources and considered as the most water-stressed in the world (Devkota et al., 2022; Waha et al., 2017). Two thirds of countries in the MENA region exploit their groundwater resources at rates far exceeding renewable internal freshwater recharge (Devkota et al., 2022). This lends countries such as Iraq, Jordan and Lebanon high to extremely high baseline water stress, increasing their socioeconomic and hydrological vulnerability to the impacts of droughts and reduced mean precipitation (Hofste et al., 2019).

Ocean warming, sea level rise, and urban areas

Surface temperature is only one part of the challenges of climate change. Ocean and seas play a greater role in the accumulation and storage of heat, accounting for up to 90% of energy accumulation between 1971 and 2010 (IPCC, 2014). Warming waters not only have devastating impacts on ecologically, culturally and economically valuable biodiversity, such as coral reefs and fish stocks, but also contribute to sea level rise (SLR). Thermal expansion of oceans, alongside the increasing loss of glaciers and ice sheets contribute to SLR, which will continue for centuries, regardless of any major international climate action taken at this stage (Clarke et al., 2016).

Countries in the MENA region are vulnerable to SLR, with most of the region's major metropolises and urban centres located within high-risk coastal areas, and with 7% of the MENA's population living at elevations less than five metres above sea level (Borghesi & Tissi, 2019). SLR could further increase the risk of inundation and flooding of coastal areas, in addition to land erosion and salinisation of soils and coastal groundwater resources (Vitousek et al., 2017). Warmer waters also increase the risk of tropical cyclones and storm surges, compounding the impacts of SLR on coastal zones (Lambert el al., 2021). These areas are hotspots of population and economic activity, including agriculture, tourism and fishing. An estimated 20% of the MENA's coastal urban extent, 24% of the region's gross domestic product (GDP), and around 43 port cities are exposed to the impacts of SLR, including Alexandria, Algiers, Aden, Cairo, Doha, Dubai and Cairo (Lambert & D'Alessandro, 2022). SLR and storm surges have a great impact on urban infrastructure, essential public services, and economic sectors, disrupting

energy and water supply, transport, and healthcare and education services. These events would not only increase the vulnerability of coastal communities but potentially deplete the resources needed for recovery and post-disaster resilience (Lambert & D'Alessandro, 2022). The World Bank (WB) estimates that a 0.5-metre rise in sea level (as estimated globally by the Intergovernmental Panel on Climate Change [IPCC] for the end of the century) could displace nearly two million people in the MENA region (Borghesi & Tissi, 2019).

Agriculture and food security

Climate change poses a significant hazard to public health

Food security in the MENA region has long been threatened by environmental and socioeconomic factors. The prevalent dry climate, scarce water resources, irregular cropping patterns, and poor technological and knowledge levels (lack of suitable and long-term adaptation in agricultural techniques) are the key challenges facing food production systems in the region (AFED, 2009). Increased temperatures and less precipitation, for instance, will limit streams and rivers flow, slow the rate at which groundwater replenishes, and render the entire region drier. Increased frequency of floods and droughts may also result in crop failures and agricultural yield, as well as a negative impact on cattle output[33] due to variations in grazing season length and limited drinking water (Elasha, 2010; Wehrey & Fawal, 2022). According to the WB, in 2020 the MENA region had 20% of the world's critically food insecure people, which was excessively high given its 6% population share (Belhaj & Soliman, 2021).

Additional indirect impacts of climate change on food security are possible. The MENA region is a net food importer, making it the world's highest food-importing region. It imports over half of its food needs at rising costs; henceforth, food security is also reliant on its capacity to access food through global markets. Thus, to the extent that harsh and volatile climate scenarios and events impact major food exporters (e.g., decrease in global food supply and increase in global food prices), they pose a further external risk factor for the food security of this group of countries (Borghesi & Ticci, 2019; UN-Habitat, 2019). Rapid population growth along with urbanisation — particularly in the Gulf countries and the Levant — will only intensify this reliance (Asi, 2021). It is worth noting that, in recent decades, governments have made relatively little progress toward regional trade negotiations and economic integration (Ward & Ruckstuhl, 2017).

Eventually, climate change will reduce food production, raise food prices and exacerbate food insecurity, resulting in greater malnutrition rates in low-income communities, famine, hunger, and impaired child development. Over 50 million individuals are already chronically malnourished and 21.2 million are food-insecure in the region. They are concentrated in conflict-torn nations and among the region's large refugee concentrations. COVID-19 merely exacerbated these patterns (UNU-INWEH, 2017; UNDP, 2018; Wehrey & Fawal, 2022). What needs to be done is evident; what seems to be less clear is how to proceed in this era of rising war and dwindling resources.

Health

Climate change poses a significant hazard to public health. The MENA region inhab-

[33] E.g., between 2005 and 2010, shepherds in northeast Syria lost more than 80% of their livestock due to repeated droughts.

itants' health and well-being are most likely to suffer as a result of increased communicable and non-communicable disease spread caused by direct and indirect impacts of climate change (UNU-INWEH, 2017). Direct impacts consist of increases in extreme weather occurrences, such as floods, storms, drought and heat stress.[34] Whereas indirect impacts involve decreased air quality, food quality, water availability and quality, water-borne pathogens, food shortages, variations in disease vector distribution, and psychological impacts related with migration, frequent exposure to natural calamities, social instability, and loss of livelihood (AFED, 2009; Elasha, 2010; UNDP, 2018; Watts et al., 2015).

Diseases associated with climate change are already becoming increasingly common in the MENA region. Extreme weather events cause death either directly from heat-related maladies or indirectly by exacerbating pre-existing heat-sensitive medical disorders. Rising temperature may amplify the impacts of air quality degradation, such as ground-level ozone, and accelerate the generation of airborne allergens, which can aggravate respiratory problems. Trachoma[35] is endemic in Algeria, Morocco, Libya, Iraq, Egypt, Yemen and Oman, and is more common in drier locations with inadequate sanitation. Salmonella and Campylobacter bacteria, which are also abundant in warmer temperatures, cause increased cases of diarrhoea and are expected to rise. Several formerly declining viral and vector-borne diseases are also making a comeback in the region. Temperature and humidity-related vector-borne diseases[36] are anticipated to propagate, re-appear in formerly endemic areas or arise in new areas and countries. Water scarcity, both in terms of quality and quantity, increases the risk of water-borne infections.[37] Moreover, using wastewater for irrigation (due to water shortages) endangers the health of farmers, their families, and consumers if not adequately treated (Smith et al., 2013; World Bank, 2014; UNU-INWEH, 2017; UN-Habitat, 2019).

Health risks, on the other hand, are not uniform and may be felt variously across the region's numerous geographical areas and demographics. They differ in scope and type according to local environmental factors, socioeconomic situations, and the spectrum of implemented institutional, social, behavioural and technological measures. The most susceptible and vulnerable to climate-related diseases are refugees, Internally Displaced Persons (IDPs), the impoverished, people residing in low-lying lands and informal settlements, and practitioners of certain professions (e.g., construction workers working outdoors under harsh weather conditions). Women who spend a significant amount of time conducting sanitation, water and hygiene-related duties, as well as caring for unwell family members, may be severely impacted. The aggregate impacts on public health and well-being are determined by differing level of exposure to health threats, vulnerability of diverse communities, and their ability to get by or adapt (AFED, 2009; UNU-INWEH, 2017; UN-Habitat, 2019).

[34] According to a 2016 study, climate change may cause temperatures in some areas of the Arabian Gulf to exceed human adaptation (Pal & Eltahir, 2016).

[35] An infectious disease affecting the eyelids.

[36] E.g., malaria, fever, dengue, West Nile virus, Rift Valley fever, etc.

[37] E.g., diarrhea, typhoid, hepatitis, dysentery, giardiasis, bilharzia, leishmaniosis, schistosomiasis, cholera, etc.

Is it because of climate change? Is it due to poverty? Or is it the vulnerability of developing countries in general, and the MENA region in particular, to climate change? It is most likely a combination of these dynamics. A holistic view and a comprehensive assessment of the aforementioned impacts is required to improve decision-making, well-being and public health, and guarantee that adopted policies do not negatively influence the most vulnerable and marginalised communities. Recognising also how climate change may affect adaptation and mitigation efforts to manage and eradicate these diseases is equally crucial to minimising the region's contagious disease burden.

Economy

Climate change and poor environmental services management practices are wreaking havoc on the region's core economic sectors. In most MENA countries, the value of agriculture's contribution[38] to GDP has fallen over the last two decades. Overall, it declined from 7.4% of GDP in 2001 to 5.4% in 2021 throughout the region (World Bank national accounts data, and Organization for Economic Co-operation and Development (OECD) National Accounts data files, 2022). Unless actions are taken promptly, countries' growth rates might fall by up to 6% of GDP by 2050 as a result of water-related ramifications on agriculture, health and income (World Bank, 2022a).

Climate change is likely to have a substantial influence on the infrastructure of the MENA countries. Transportation infrastructure and water supply systems, for example, are prone to expected rises in the frequency and severity of hot days, hurricanes, SLR, and so on (AFED, 2009).

Tourism, on the other hand, has grown in importance in the MENA world, owing to the region's countries' natural, cultural and historical potential. This sector can be perceived as a major driver and long-term alternative for regional economies, as well as a source of foreign currencies, notably for countries with economies based on non-renewable energy resources or with limited energy resources. However, the tourism sector, like most other economic sectors, is intrinsically exposed to the impacts of climate change (either directly or indirectly). This is due to its tight association with the region's geographical, environmental and cultural aspects. Besides, the sector is one of the most water-intensive in terms of drinking, sanitation and other services. Destinations and preferences may be altered by prospective changes. Extreme weather events, SLR, flooding of coastal areas, coastal erosion, and deterioration of ecological ecosystems will have a significant detrimental influence on the tourism sector, reducing or modifying the tourism season, visitor numbers, and tourism income. These possible disruptions may lead to significant economic losses, particularly for nations whose economies rely heavily on tourism. This is reflected by the MENA region's tourism comfort index, which is anticipated to fall to negligible or negative levels in the future decades (AFED, 2009; UN-Habitat, 2019).

As previously stated, climate change is expected to accelerate the occurrence and spread of epidemics and diseases, putting an extra strain on the MENA region's constantly suffering economies. Additionally, due to food insecurity in the region, it was predicted that US$1 billion would be required to offer immediate aid to individuals who are food insecure, a number that is expected to rise in the future (United Nations and League of Arab States, 2013).

[38] Forestry and fishing are also included in the data.

Climate change and its perceived ramifications will continue to exacerbate socioeconomic gaps and imperil underprivileged communities throughout the region (Wehrey & Fawal, 2022).

Conflicts

Both the direct and indirect impacts of climate change can interplay in driving political instability, social unrest or conflict. Climate change and conflict exist within a vicious cycle in the MENA region, whereby climate risks exacerbate social and economic vulnerabilities, which, in turn, obstruct climate action and effective resource management (Ahmad & Ranade, 2021; Koubi et al., 2020). Climate security risks, including the destruction of infrastructure, high morbidity and mortality rates, decreased productivity, high demand for energy, weakened tourism, increased malnourishment, and migration, threatens stability, peace and economic prosperity in the MENA region (Ahmad & Ranade, 2021; Jedd et al., 2021).

Water has long been identified as a cause of conflict, especially in the water-scarce MENA region. The empirical link between climate-induced water scarcity and conflict or political instability is still contested, but some evidence suggests that droughts could be a major driver of large-scale armed conflict, particularly when fundamental political and socioeconomic factors are compromised, as seen in Syria and Iraq (Feitson & Tubi, 2017; Maia, 2018; Sofuoglu & Ay, 2020). Resource scarcity and inadequate management during the 2007-2010 drought in the Euphrates and Jordan River basins is considered by some scholars a driver of the Syrian Civil War and continues to manifest similarly in conflict hotspots such as Yemen (Gleick, 2014; Feitson & Tubi, 2017).

Natural disasters are also considered triggers of conflict, especially in highly ethnically fractionalised countries (Schleussner et al., 2016). Like droughts, disasters drive conflict through their impacts on infrastructure, livelihoods, and population movements or displacement (Eastin 2015; Detges, 2016; Ghimire & Ferreira, 2016). However, evidence of this in the MENA region remains limited.

Interdependence of climate change and internal displacement

Both the direct and indirect impacts of climate change can interplay in driving political instability, social unrest or conflict

According to the UN Guiding Principles on Internal Displacement, IDPs are "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized state border" (UNHCR, 2022). Climate change and disasters are becoming more of a concern, and it is evident that they are clearly having a significant impact on population mobility and the lives of millions of forcibly displaced people across the world. During the course of 2020, disasters, conflicts and weather-related events caused 40.5 million new internal displacements globally. Of these individuals, 30.7 million were displaced by natural disasters, compared to 9.8 million by violence and conflict. Weather-related disasters accounted for more than 95% of all disaster-related displacement (IDMC, 2021, UNHCR, 2021). More than 59 million people were forcefully displaced in their own country in 2021, exceeding 100 million by 2022, more than three times the level recorded a decade before (UNDP, 2022a; UNDP, 2022b).

According to a new United Nations Development Programme (UNDP) report, climate change will displace millions more people. By 2050, the latter might compel more than 216 million people to flee their homes, abandoning their livelihoods and lifestyles, and relocate to safer locations

According to a new United Nations Development Programme (UNDP) report, climate change will displace millions more people. By 2050, the latter might compel more than 216 million people to flee their homes, abandoning their livelihoods and lifestyles, and relocate to safer locations (World Bank, 2021).

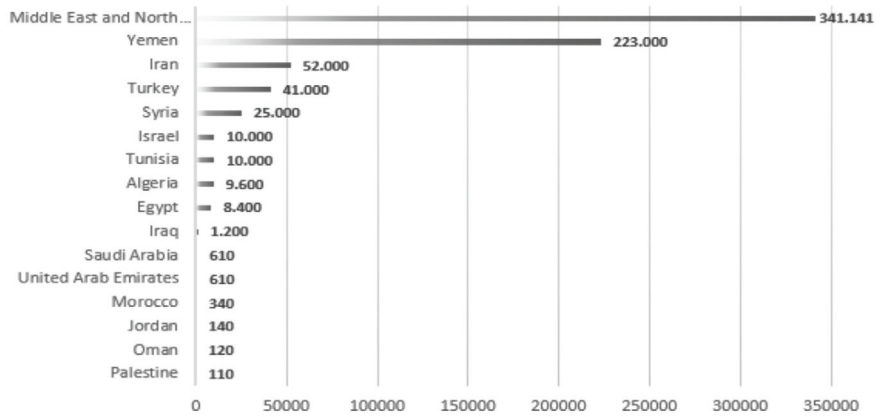
Mobility, being a cornerstone of people's lives, enables income diversification and security. It has long been a feature of traditional cultures in the Middle East and the Sahelian neighbouring lands to the south in its form of pastoral nomadism. For hundreds of years, nomadic tribes and their livestock have been relocating to areas with ample food and water. Additionally, displacement has always served as an adaptive mechanism in the face of climate risks. In the context of climate change, displacement occurs when a population's physical, social, economic or political security deteriorates and no further resources can be deployed to adapt to the changing conditions. Hence, human mobility aims to increase one's physical, social, economic or political security, which might lead to new prospects and resilience. However, because of new vulnerabilities and risks faced en route or at the place of arrival, a betterment in housing conditions is not always accomplished (World Bank, 2014; Wehrey & Fawal, 2022).

The aforementioned impacts of climate change in the MENA region are extensive, and they might exacerbate livelihood opportunities, cause displacement, or make it difficult for individuals and families who have already been displaced to return. Challenges stemming from the increased frequency and intensity of severe weather events[39] alter household and individual movement decisions. Such displacements are projected to grow, and climate change can act as a threat multiplier, escalating current tensions and raising the possibility of violence. The direct impact of climate change on human mobility, on the other hand, differs based on the type and severity of climate events and disasters, along with the resources accessible to the affected population (IOM, 2009). Compounding challenges in many MENA countries such as water scarcity, poor and damaged infrastructure, communicable diseases, and various pre-existing socioeconomic disparities may inevitably lead to bloodshed and conflicts, forcing people to flee to regions with greater climate security and stability. Data collection on disaster displacement is difficult for national, regional and humanitarian aid organisations. This could result in considerable gaps in understanding its magnitude, trends, impacts and timeframe. Despite these limits, MENA data reveals that around 341,000 new disaster displacements occurred in 2020 (Figure 10).

As climate change causes some phenomena to become more frequent, extreme and long-lasting, internal displacement inside rural areas, particularly to cities, is expected to rise and may become more permanent. Gender parity will suffer as a result of the predominantly male exodus of labour in rural areas. Women will be forced to carry greater responsibilities within local employment and household economy, denying them access to school, among other things (Alam et al., 2015). Besides, women are jeopardised by climate-induced displacement and the consequences of climate events.

[39] E.g., extremely heavy rainfall, desertification, extended droughts, sea-level rise and cyclones, or environmental degradation.

Figure 1. People displaced internally by natural disasters (2020).



Source: Internal Displacement Monitoring Centre (via World Bank)

Women and girls, for instance, are more prone to human trafficking and exploitation in the early aftermath of a drought, flood or famine because of their disrupted local safety nets and unsafe living conditions (UNEP, 2011). SLR and decreasing water availability will also have an impact on the lives of coastal residents involved in tourism and agriculture. Coastal areas in Algeria, Morocco, the Nile Delta and Tunisia are particularly vulnerable and at risk (World Bank, 2021).

To survive, rural residents employ a variety of coping strategies, spanning from borrowing and consuming less to trading livestock and other resources. Moreover, when remittances are insufficient, more household members are obliged to relocate to other places in search of better opportunities. Many obstacles, such as corruption, competition with locals, and restricted employment prospects, make it difficult for urban migrants to find work. Besides, internal displacement is a risk, with many migrants experiencing feelings of inferiority, alienation and difference in their new urban surroundings. Poor housing conditions, increased food and rent prices and the necessity to send remittances back home all put significant strain on urban migrants (Wodon et al., 2014).

What is being done in the MENA region?

The geographical location of the Conference of the States Parties to the UN Framework Convention on Climate Change (COP27) in Sharm el-Sheikh was key in making sure that the financial needs of the MENA region are at the centre of this year's financial COP discussions. But should national, regional and international efforts remain as weak, the vulnerability of the region for most of its countries could suffer from a 5°C increase in annual average temperatures according to recent climate models (ESCWA, 2022).

While some countries' economic conditions allow them to commit to highly ambitious Nationally Determined Contributions (NDCs), other countries like Lebanon and Tunisia, whose economies are collapsing, perceive natural gas exploitation is the answer to overcoming their collapse (Arab Reform Initiative, 2022). Egypt, for example, was urged in May 2022 to submit its decarbonisation plan sooner, although wealthier countries such as Saudi Arabia and the United Arab Emirates (UAE) have already done so. Table illustrates three Arab countries' decarbonisation strategies.

Table 1. MENA countries climate initiatives

Countries	Initiatives
Egypt	The National Climate Change Strategy 2050[1] has been launched ahead of Egypt hosting the 27th session of COP27. The strategy includes adaptation and mitigation programmes in all sectors until 2050, with a total cost estimated at about $113 billion and $211 billion, respectively. The national strategy is designed to aid economic growth while improving climate finance and infrastructure, enhancing research in green technology, and raising awareness to confront climate change, amongst other goals.
Saudi Arabia	In October 2021, the first wave of over 60 programmes and projects that contribute to the overarching targets for the Saudi Green Initiative[2] were announced. The Initiative works on increasing Saudi Arabia's reliance on clean energy, offsetting emissions, and protecting the environment, in line with Vision 2030. It aims to improve quality of life and protect future generations. Its main objectives include: achieving net zero emissions by 2060 and reduce carbon emissions by more than 278 mtpa* by 2030, increasing domestic generation capacity from renewable energy to 50% by 2030, contributing to cut global methane emissions by 30% as part of the Global Methane Pledge by 2030, planting 10 billion trees over the coming decades, and so on.
UAE	The UAE announced the UAE net-zero 2050[3] initiative in October 2021. It is being led by the Ministry of Climate Change and the Environment, which is collaborating with all industries and authorities at different government levels responsible. The initiative aims to achieve net-zero emissions by 2050 by implementing and developing policies, strategies and plans in the following areas: clean energy projects, water desalination, carbon capture and storage (CCS), transportation, agricultural technologies, infrastructure, green hydrogen, and carbon trading.

*million tonnes per annum

[1] https://www.eeaa.gov.eg/portals/0/eeaaReports/N-CC/EgyptNSCC-2050-Summary-En.pdf

[2] https://www.vision2030.gov.sa/

[3]https://u.ae/en/information-and-services/environment-and-energy/climate-change/theuaesresponsetoclimatechange

Investing an average of 1.4% of GDP annually may reduce emissions in developing countries by up to 70% by 2050 and enhance resilience

The region as a whole, on the other hand, has to do more. This entails bringing governments, public institutions and enterprises, and civil society together to secure specific commitments, inclusive cooperation and systemic strategies (Lienard, 2022). According to the WB, investing an average of 1.4% of GDP annually may reduce emissions in developing countries by up to 70% by 2050 and enhance resilience (World Bank, 2022b). Additionally, the private sector cannot ignore its involvement in these initiatives. It is responsible for assisting the region in reaching net zero emissions and improving its ability to prepare for and respond to climate change risks and shocks. Recent research was undertaken, involving over 200 enterprises[40] in the region, many of which are taking steps to cut emissions, promote low-carbon technology, and expand renewable energy sources. Findings showed that

[40] E.g., Majid Al Futtaim, Etihad, ADNOC, Saudi Aramco, Agility, ACWA Power, and SABIC.

over half of the organisations polled have begun reporting on Environmental, Social and Governance (ESG). However, only 12% have declared their intention to achieve net zero emissions, and only 6% have outlined a strategy for doing so. There is also a lack of transparent and consistent disclosure policies, science-based target setting, and reduction roadmaps (Kairuz, 2022).

These findings only come to highlight the importance of financing in any climate-related initiative. Often, the Ministries of Energy, Environment, Transportation and Agriculture are frequently held accountable for climate change action or inaction. There is one critical ministry lacking in the accountability for climate change within country systems, the Ministry of Finance. The latter is key because it channels resources into climate action. They are in charge of budget planning and implementation, as well as promoting incentives and policy reforms and supporting green public investments, among other responsibilities.

Towards climate resilience: adaptive policies and actions

Climate change is a human crisis, causing displacement and making life more difficult for those who have already been forced to displace. Many people live in climate change "hotspots," where they lack the resources to cope with an increasingly harsh environment. IDPs, meanwhile, are rarely in the news. This concealed crisis is likely a result of inadequacies in development assistance. Hence, bold national, regional and global measures and cooperation are required to enhance resilience and reduce the vulnerability of the region's populations and environmental and economic sectors to future threats posed by climate change and economic shocks.

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Key stakeholders

The following lists the many institutions and actors who are directly or indirectly responsible for mitigating or adapting to climate change:

- **Government institutions:** both legislative and executive bodies, regional and local authorities, ministries concerned with the environment, water, agriculture, economy, social affairs, etc.;
- **Regional organisations and political and economic unions:** such as the Arab League, Gulf Cooperation Council (GCC), etc.;
- **Civil society organizations (CSOs) and local non-governmental organizations (NGOs):** such as Climate Action Network Arab World (CAN-Arab World), Emirates Environmental Group, Clean Energy Business Council (CEBC), Greenpeace, etc.;
- **International governmental organizations (IGOs[41]) and international non-governmental organizations (INGOs);**
- **Agricultural cooperatives, syndicates, private sector associations.**

Policy recommendations

Decisions made now will shape the economies and societies of the countries in the region for decades. A variety of economic,

[41] United Nations Environmental Programme (UNEP), United Nations Framework Convention on Climate Change (UNFCCC), Intergovernmental Panel on Climate Change (IPCC), World Meteorological Organization. (WMO), Global Green Growth Institute (GGGI), Organization of the Petroleum Exporting Countries (OPEC), Islamic Development Bank (IDB), Global Environment Facility (GEF), etc.

social and environmental policies are required to compensate for losses and protect the vulnerable:

Aligning environmental and economic objectives. This requires linking environmental goals with economic policies through the coordination between ministries of economy, finance and environment, and other relevant ministries (OECD, 2015). Incorporating green solutions into recovery policies and plans can help ensure the resilience of socioeconomic outcomes to future risks posed by climate change and economic shocks (UNDP, 2022).

Stakeholder engagement and participation of all key parties. This can be achieved through various means, including:

- Multi-stakeholder platforms that bring together government, civil society, private sector actors and marginalised groups can be established to facilitate collaboration and consultation on climate adaptation and mitigation initiatives;
- Consultations and public hearings can be organised to provide an opportunity for people who have experienced climatic extreme events and displacement to share their experiences and perspectives on climate change adaptation and mitigation;
- Capacity-building programmes can be developed to empower stakeholders to engage effectively in the planning and implementation of climate change adaptation and mitigation initiatives;
- Awareness-raising campaigns can be developed to educate stakeholders about climate change and the impacts it is having on their communities;
- Strategies should be developed to ensure that women, youths and people with disabilities are included in decision-making processes related to climate change adaptation and mitigation. This can involve the development of targeted programmes and initiatives that address their specific needs and priorities, and accessible communication materials and the provision of additional support to enable their full participation.

Overall, stakeholder engagement and participation of all key parties is crucial for effective climate change adaptation and mitigation, and efforts should be made to ensure that all groups are included in decision-making processes.

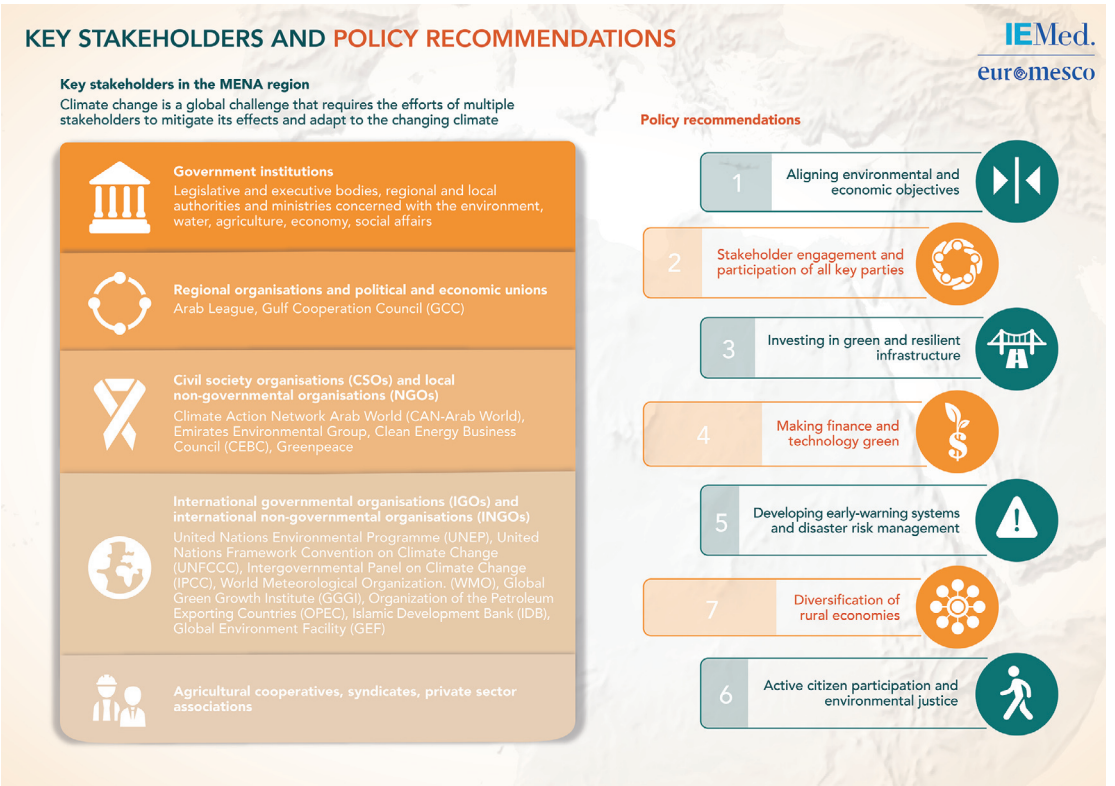
Investing in green and resilient infrastructure. Investing in green infrastructure helps cities and towns prosper, reduces negative environmental impacts, and raises people's well-being. Green investment opportunities abound in a variety of sectors, including green buildings, transportation, waste management (waste-to-energy), and water supply and sanitation (wastewater treatment). Green infrastructure practices and strategies can aid communities in preparing for and managing the effects of climate change. For instance, flooding can be controlled using infiltration-based practices, preparing for drought by soaking up water where it falls, planting trees, and constructing green roofs can help reduce the heat effect, minimising building energy consumption by lowering indoor temperatures and shading building surfaces, among others.

Making finance and technology green. Green financing could be favoured by changing the countries legal frameworks, developing public financial incentives, increasing green financing from the public, private and not-for-profit sectors, and expanding the use of green bonds and loans, etc. In addition, fostering investment in and use of new and

green technologies (use of renewable energy, water and energy saving devices, sustainable agricultural practices, reducing greenhouse gas [GHG] emissions, etc.) is cross-cutting and necessary for progress toward sustainability.

Developing early-warning systems and disaster risk management. These are critical for efficient short-term disaster preparation and response, corresponding to the earliest stages of human mobility. They enable business, labour and relevant authorities to be prepared and respond quickly, preventing human, environmental, and economic losses (ILO, 2022). The responsibility for disaster risk management can be shared between the central government and subnational entities, depending on the context and legal framework of each country. In the MENA region, several regional and international organisations have established frameworks and provisions for disaster risk management, including the United Nations Office for Disaster Risk Reduction (UNDRR) and the Arab Strategy for Disaster Risk Reduction (ASDRR). National governments are also responsible for developing and implementing their own disaster risk management plans, which should involve collaboration with relevant stakeholders, including communities, CSOs and private sector actors. Early-warning systems are an essential component of disaster risk management, as they enable timely and effective responses to potential disasters. These systems can include various types of monitoring and alert systems, such as weather monitoring, earthquake early warning systems, and flood warning systems. Governments should invest in the development and maintenance of such systems, as well as in the training of relevant authorities and response teams, to ensure that they can respond effectively to disasters and minimise their impact on human lives, the environment and the economy.

Diversification of rural economies. Both within agriculture and non-agricultural sectors, rural economic diversification has a great potential to reduce poverty and diversify income, strengthen coping strategies in the face of environmental changes, and improve rural households' food and livelihood security (FAO, 2014; ILO, 2019). However, several barriers must be addressed, including limited access to finance, inadequate infrastructure, and weak institutions. Hence, achieving rural economic diversification in the MENA region requires a multi-faceted approach that addresses several challenges, including: 1) improving access to education and training to build human capital and increase the skills and knowledge of rural populations; 2) improving connectivity, particularly through the adoption of digital technologies, can facilitate access to markets, information and services, and enable the development of new sources of income; 3) investing in physical and digital infrastructure, including rural roads, water supply, electricity, and internet connectivity; 4) promoting market-oriented agriculture and non-farm enterprises to create employment opportunities and increase incomes; 5) encouraging private sector development, including through policies that reduce bureaucratic barriers to starting and growing businesses; 6) supporting rural innovation and entrepreneurship, including through the creation of business incubators and accelerators; 7) encouraging the use of sustainable agricultural practices to improve productivity and resilience to environmental changes; 8) enhancing



access to finance, particularly for small and medium-sized enterprises (SMEs) in rural areas; 9) building the capacity of local institutions to support rural economic development. By pursuing these strategies, the MENA region can tap into the potential of rural economic diversification to reduce poverty, increase food and livelihood security, and build resilience to environmental and economic shocks.

Inclusive disaster recovery. Stimulus and targeted policies designed to achieve economic and environmental goals must place a strong emphasis on the creation of long-term, high-quality jobs. A recovery that does not leave anyone behind necessitates the implementation of social protection systems and skills enhancement measures (skills training) to mitigate the potentially harsh effects on the most affected sectors and individuals (ILO, 2018).

Justice and environmental citizenship. This entails increasing citizen access to information and participation in decision-making, as well as increasing access to justice and accountability in cases where corruption, abuse of power, and violations of due process have a negative impact on the economy, society and the environment (UNDP, 2022). Governments in the MENA region should promote transparency and access to information by increasing public access to environmental knowledge and data, and facilitating participatory approaches in decision-making. This can be done with effective government communication, and through public consultations, hearings and similar mechanisms that allow citizens to provide feedback and input on proposed policies and projects. Citizens should have access to legal resources and the ability to seek justice when their environ-

mental rights are violated. This can be achieved through the reinforcement or establishment of independent judicial systems and the provision of legal aid to those who cannot afford it. Oversight, accountability and mechanisms for monitoring and reporting on environmental governance practices should be reinforced. This can include the establishment of independent environmental regulatory bodies and the requirement for environmental impact assessments for major projects. Mainly, promoting justice and environmental citizenship in the MENA region is crucial for ensuring that citizens have a voice in decisions that impact their environment, society and economy. It is important for governments to work towards creating an enabling environment that promotes transparency, participation, accountability, and environmental education and awareness.

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List of acronyms and abbreviations

AFED	Arab Forum for Environment and Development
AMIF	Asylum, Migration and Integration Fund
AQIM	al-Qaida in the Islamic Maghreb
AU	African Union
CAPMAS	Central Agency for Public Mobilization and Statistics
CDC	Centers for Disease Control and Prevention
CLICIM	Climate Change Induced Migration
COP	Conference of the Parties
COP16	Climate Change Conference of the Parties 16
COP27	Conference of the States Parties to the UN Framework Convention on Climate Change
CSOs	Civil Society Organizations
DHS	Demographic and Health Survey
DRMKC	Disaster Risk Management Knowledge Centre
DTR	Diurnal Temperature Range
EC	European Commission
EACH-FOR	Egyptian Association for Change and Freedom of Rights
ESG	Environmental, Social, and Governance
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
EUTF	EU Emergency Trust Fund for Africa
EVI	Enhanced Vegetation Index
FAO	Food and Agriculture Organization
GCC	Gulf Cooperation Council
GHG	Greenhouse Gas
GIA	Groupe Islamique Armé
GSPC	Salafist Group for Preaching and Combat
Guiding Principles	The Guiding Principles on Internal Displacement
ILO	International Labour Organization
IDMC	Internal Displacement Monitoring Centre
IDPs	Internally Displaced Persons
IFRC	International Federation of Red Cross and Red Crescent Societies
IGO	International Governmental Organization
ILMPS	Integrated Labor Market Panel Surveys
INGO	International Non-Governmental Organization
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IPCCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
KCMD	Knowledge Centre on Migration and Demography
LMPS	Labor Market Panel Surveys
LOGIT	Logistic regression
MENA	Middle East and North Africa
MFF	Multiannual Financial Framework
MOE	Ministry of Environment
NDCs	Nationally Determined Contributions

NDICI-GE	Neighbourhood, Development and International Cooperation Instrument – Global Europe
NGOs	Non-Governmental Organizations
NSIA	National Strategy for Immigration and Asylum
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PDD	Platform on Disaster Displacement
SLR	Sea Level Rise
THAM	Temporary and Circular Migration Management
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNU-INWEH	United Nations University Institute for Water, Environment and Health
WB	World Bank
WIS	Warning and Information Systems

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