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# THE INTERPLAY BETWEEN SKILLS-BASED LABOR MOBILITY AND CLIMATE CHANGE IN THE MENA REGION

ADVOCACY PAPER

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# About the Author

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## About Agritecture

Agritecture is an advisory services and technology firm founded in 2014 focused on climate-smart agriculture, particularly urban and controlled environment agriculture (CEA). Agritecture has grown into the world’s leading advisory firm on urban and controlled environment agriculture, working with clients of all types - from entrepreneurs to investors, to technology providers - in more than 40 countries. In recent years,

Agritecture’s service offerings have evolved to meet industry needs beyond farm planning and include strategy, due diligence, market research, and more. We define Agritecture as the art, science, and business of integrating agriculture into the built environment. We’re a global team of interdisciplinary consultants that rely on an ever-expanding dataset and a proven methodology, having completed more than 270 projects to date.



## International Organization for Migration (IOM)

The International Organization for Migration (IOM) is part of the United Nations System as the leading inter-governmental organization promoting since 1951 humane and orderly migration for the benefit of all, with 175 member states and a presence in 171 countries. IOM is an intergovernmental organization in the field of migration dedicated to ensuring the orderly and humane management of migration, promoting international cooperation on migration issues, assisting in the search for practical solutions to migration problems and providing humanitarian assistance to migrants in need, be they refugees, displaced persons or other uprooted people.

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# Objectives and Purpose

This document comprises a literature review focusing on the interplay between skills-based labor mobility and climate change in the MENA region. 38 documents, stemming from academic and institutional sources, were analyzed. The majority of the documents were published post-COVID-19. The objective of this review was three-fold: (1) To define climate change in the MENA region and skill labor mobility partnership (SMPs), (2) to identify climate change initiatives that indicate future labor needs in the MENA region, and (3) to review case studies and successful SMPs either in the MENA region or outside. The ultimate purpose, therefore, is to identify sectors, skills, and infrastructure for mutually beneficial SMPs to help bolster the MENA region's resilience in the face of climate change.

## Defining Climate Change in the MENA Region

The Middle East and North Africa region encompasses 19 countries, representing roughly 6% of the global population. Young people under 30 make up more than 55% of the population in the MENA region, compared to only 36% of the world population (OECD, 2022), and the unemployment rate of young people is estimated at 26%. (World Bank, 2022). The limited mobility in the region is also a concern, with only 4.5% of all students being internationally mobile in 2019, and most of that mobility was one-way (University World News, 2022).

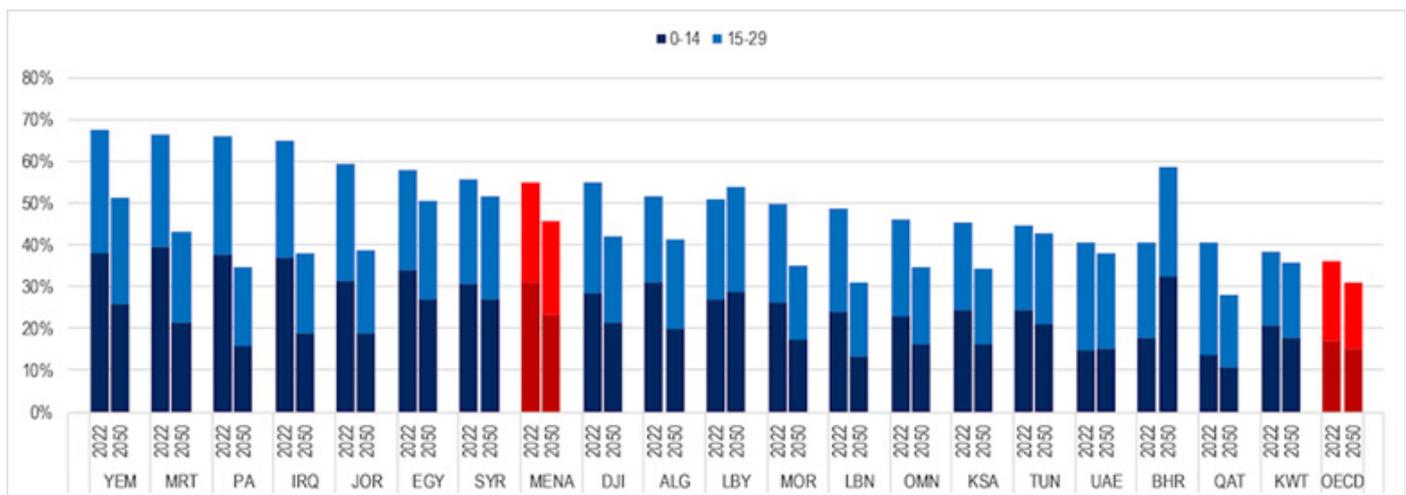


Figure 1: Share of young people as part of the total population, 2022 and 2050 projections<sup>1</sup>

Numerous MENA countries heavily depend on their abundant fossil fuel resources, particularly with 60% and 45% of the world's oil and natural gas reserves, respectively. (World Population Review, 2023). The region's enduring economic model, whether through their direct production and exports or via financial aid and remittances from partners, has played a role in exacerbating climate change by expanding the worldwide carbon footprint. The MENA Region is highly vulnerable to climate change due to its mostly arid and semi-arid climate and high water scarcity, experiencing high temperatures coupled with rapid urbanization and population growth (World Bank, 2022). Water scarcity exacerbated by climate change is significantly affecting food security and agriculture as one of the primary industries in the region. (World Bank, 2022)

Among the 17 MENA countries affected by water risks, 14 are currently grappling with high water stress levels, including the UAE (World Resource Institute, 2023). The region has been consistently described as "the world's most water-stressed". By 2025, an estimated 80 to 90 million individuals in the region are projected to experience various degrees of water stress (Wehrey, 2022). The Middle East and the Arab region are currently

<sup>1</sup> OECD calculations based on United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website.

experiencing a temperature increase that is occurring at nearly double the rate of the global average. (Allan, 2023), and temperatures are expected to rise in the region by at least 4°C by 2050 (Wehrey, 2022). Food insecurity (Chibani, 2022) and crippled economies due to a lack of natural resources and conflict (Wehrey, 2022) also engulf many countries already in the region. They are forecasted to exacerbate greatly without significant climate change adaptation interventions. The World Bank predicts that up to 19 million people will become internal climate migrants in North Africa alone by 2050 without concrete climate action. (IOM, 2023)

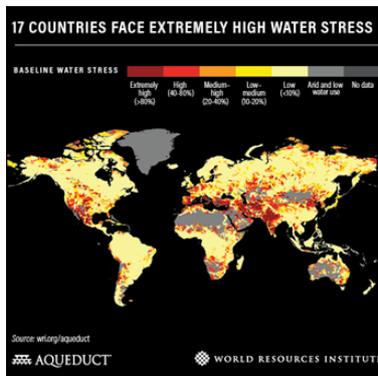


Figure 2: 17 Countries Face Extremely High Water Stress<sup>2</sup>

## Climate Change and MENA Country Initiatives

In the MENA region, several countries are spearheading climate change initiatives that signify a "green transition" while fostering the demand for new job roles and skillsets.

Iraq faces challenges due to political instability and conflict but is actively engaged in climate resiliency efforts, covering mitigation, resource allocation, legal clarification, and water issues. Jordan boasts a comprehensive climate strategy, including an [Economic Modernization Vision](#), a [National Determined Contribution \(NDC\)](#) under the Paris Agreement, a [National Adaptation Plan \(NAP\)](#), a [National Climate Change Policy \(NCCP\)](#), and a [climate change bylaw](#). Additionally, Jordan's [Green Growth National Action Plan](#) focuses on key sectors like water, agriculture, energy, transport, tourism, and waste, while addressing water scarcity and transportation emissions. Lebanon is working on reducing emissions under its Nationally Determined Contribution (NDC) and climate action enablers. The country also runs tree-planting campaigns, pollution cleanups, and educational programs with foreign support including the European Union-funded Tamsall initiative.

.In Libya, initiatives like the [Tamsall project](#) and the [Taqaarib program](#) encourage climate advocacy and environmental action. Saudi Arabia's "[Saudi Green Initiative](#)" promotes environmental protection, energy transition, and economic sustainability. Tunisia is addressing waste management and water resource issues, promoting coordination, resource allocation, and infrastructure improvements.

These initiatives underscore the commitment of MENA countries to tackle climate change, while simultaneously driving the need for new jobs and skill development in areas like renewable energy, sustainable agriculture, water management, and environmental advocacy, paving the way for a greener, more resilient future and sustainable economic growth.

## Mobility, and the Need for Skilled Green Jobs

In recent times, the notion of green employment has gained significant attention from policymakers and researchers. At the European Union policy level, the shift toward green initiatives is viewed as a chance to generate employment opportunities in both established and emerging economic sectors. There is also a growing

2) Image sourced from <https://www.wri.org/insights/highest-water-stressed-countries>

emphasis on retraining and upgrading the skills of the workforce to ensure a fair transition toward both green and digital technologies, a point increasingly highlighted in policy discussions ([Cedefop and ETF Exchange Knowledge, 2021](#), “[Jobs for the Green Transition](#),” 2023, [The European Green Deal](#), n.d.).

Climate change can result in changes to the availability of natural resources, such as water affecting the livelihoods of resource-dependent communities and triggering population displacement. Climate-related weather events such as cyclones and floods can lead to the immediate displacement of people. Migration within the NENA regions can be categorized into various forms, including short-term, seasonal, or circular migration to rural or urban destinations. Additionally, there is longer-term and permanent migration to urban centers or international locations. Another category involves entire households migrating to other rural or urban areas ([FAO, 2023](#)).

For instance, the impact of cyclone Mora on Bangladesh in 2017 resulted in the relocation of approximately 500,000 individuals, who were moved from coastal villages to cyclone shelters. Similarly, in 2020, more than 2 million people were evacuated in anticipation of the powerful cyclone Amphan. There is a common perception that such evacuations typically involve short-term and localized displacements ([FAO, 2023](#)). In contrast, slow-onset climate events like droughts and sea level rise can gradually shape migration decisions ([FAO, 2023](#)). Climate change acts as a risk multiplier, increasing the propensity to migrate and eroding vital resources necessary for migration, trapping vulnerable populations in high-risk areas.

As Figure 3 below conveys, migration decisions are complex and non-linear, influenced by multiple factors, including personal/household characteristics, environmental exposure, and social, political, demographic, and economic factors ([Zickgraf, 2023](#)).

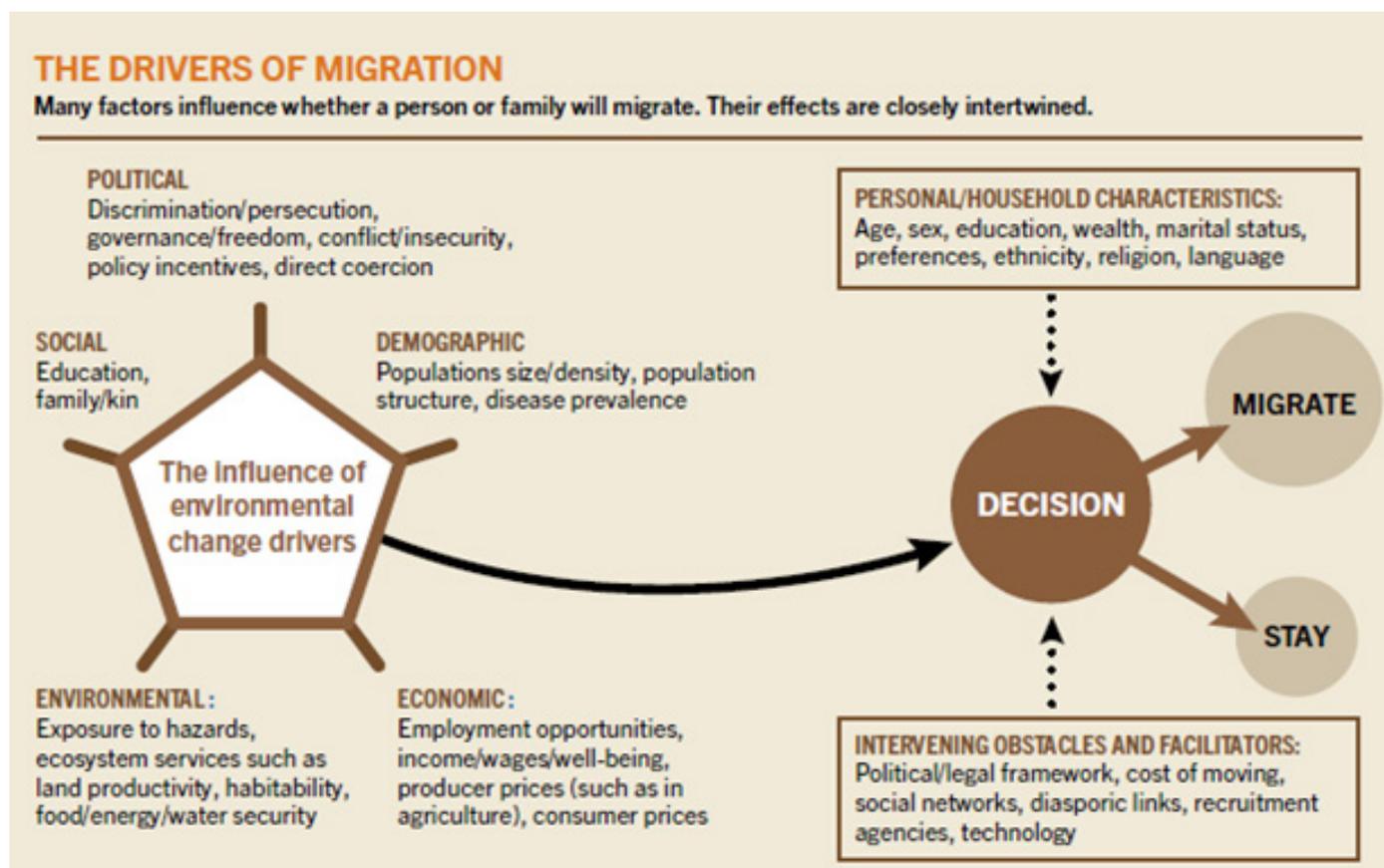


Figure 3: Multiple drivers of migration: the “pentagon” framework,<sup>3</sup>

Migration is not always a last resort solution or failure to adapt locally but can be an integral part of households’

3) Black, R., Bennett, S.R.G., Thomas, S.M. & Beddington, J.R. 2011. Migration as adaptation. *Nature*, 478: 447-449

livelihood, adaptation, and risk-spreading strategies. Climate change interacts with various migration drivers, including existing policies, social and economic challenges, and demographic shifts, influencing the necessity or choice to migrate. In uncommon instances, climate change serves as the sole catalyst for migration, but in the majority of cases, it is a multifaceted factor. Climate change is only one of many risk factors that shape rural livelihoods, and other factors like social, political, economic, and demographic changes also contribute to the need or decision to move<sup>4</sup>.

Climate change migration is closely linked to the growing demand for green jobs<sup>5</sup>. As the impacts of climate change, such as extreme weather events and slow-onset processes, force people to relocate from ecologically vulnerable areas, the need for sustainable employment opportunities in renewable energy, conservation, and eco-friendly sectors becomes increasingly essential. In developed countries, addressing domestic skill shortages in manual fields like solar panel installation and insulation retrofitting is challenging, exacerbated by an aging population and fewer entrants into key sectors. In developing nations, despite rapid population growth, insufficient specialized trainers and inadequate investment in green-skilled workers' training systems are likely to impede the timely scaling up of skills training. To prevent skill bottlenecks hindering the green transition, a combination of green skill training and labor migration may be necessary (Huckstep et al., 2023).

Green jobs not only offer economic stability but also contribute to mitigating climate change and promoting environmental sustainability (ILO, 2017), making them a crucial component of addressing the challenges posed by climate-induced migration. Green jobs encompass a wide range of sectors, spanning renewable energy, environmental conservation, recycling, waste management, transportation, technology, and many others.



Figure 4: Diversified Green Jobs<sup>6</sup>

Wehrey et al. identify potential labor needs in the MENA region across sectors such as Water and Resource Management, Renewable Energy and Efficiency, Policy and Governance, Sustainable Development, and Environmental and Climate Expertise, encompassing roles from water resource managers to renewable energy professionals, policy analysts, project managers, and environmental advocates. Moreover, according to the UAE's Energy Strategy, there will be created 50,000 new green jobs by 2030.<sup>7</sup> Additionally, over the next five years, the agriculture industry in the UAE aims to offer 20,000 new job opportunities<sup>8</sup> with climate-smart agriculture

4) The IOM Institutional Strategy on Migration, Environment and Climate Change 2021–2030 proposes a comprehensive approach to migration in the context of climate change, environmental degradation, and disasters due to natural hazards, in line with the objectives of the 2030 Agenda on Sustainable Development, the Paris Agreement on Climate Change, and the Global Compact for Safe, Orderly and Regular Migration (IOM Strategy on Migration, Environment and Climate Change 2021... | Environmental Migration Portal, n.d.).

5) see Appendix 1 for Climate Change plans and initiatives of certain MENA countries, as well as potential jobs needed.

6) Image sourced from <https://sustain.org/blog/green-jobs-in-india/>

7) <https://gulfnews.com/business/energy/uaes-updated-energy-strategies-to-create-50000-new-green-jobs-by-2030-says-energy-minister-1.96777384>

8) <https://gulfnews.com/business/markets/uaes-food-sectors-rapid-growth-makes-it-top-job-creator-with-20000-new-positions-1.98618614>



# 1) Countries investing in training their population

Portugal and Ireland have both implemented comprehensive initiatives to bolster their workforce in alignment with green skills development. In 2023, Portugal launched the [Green Skills and Jobs Programme](#), a part of the National Energy and Climate Plan, focusing on reskilling and upskilling employees affected by rising energy costs and addressing unemployment. The program encompasses training courses covering various themes, including energy efficiency, renewable energy, sustainable mobility, and circular economy. Similarly, Ireland's 2019 [The Future Jobs Ireland Initiative](#) concentrates on creating resilient, high-quality jobs and enhancing labor market participation amid current and emerging transitions, with a specific emphasis on the low-carbon economy. Ireland's Green Skills Action Programme, initiated in 2021, reinforces the importance of further education and training (FET) to fortify the economy's resilience in green and digital transitions. Both countries are strategically emphasizing in-house training to equip their labor force with the necessary skills for the evolving job market.

# 2) Recruitment from foreign countries

[Triple Win Programme – Recruiting nurses from abroad sustainably](#), Germany's Triple Win Model

Germany's Triple Win Model is a structured program designed to facilitate the exchange of nursing professionals between Germany, Bosnia and Herzegovina, the Philippines, Tunisia, Indonesia, and Kerala (India), with a particular emphasis on maintaining high-quality healthcare services. This comprehensive model includes multiple integral components. The program employs a meticulous recruitment and pre-employment process, which includes rigorous monitoring to ensure the qualifications of participating nurses meet high standards. The recruitment process unfolds in four steps: recruitment and selection of candidates, language courses and orientation training, professional preparation, and finally, the offering of job vacancies to preselected candidates.

To mitigate potential brain drain, the program strategically selects partner countries that possess a surplus of well-trained nurses. This approach aims to prevent the unintended loss of skilled professionals from these countries. Furthermore, the success of the program is underpinned by its robust support for candidates. This includes training, pre-departure preparation, and comprehensive integration support. The program also focuses on having participants' qualifications recognized in Germany.

# 3) Training programs and/or internships in developed countries

Several initiatives showcase countries synergizing to offer international internships, training, and experience to a small number of graduates and students, emphasizing short-term engagements that highlight overall interaction and contribute to migration initiatives. [MOBILISE](#), funded by the Migration Partnership Facility (MPF), spans four years from 2023 to 2027, focusing on circular talent development for climate-smart agriculture. In collaboration with the Netherlands, Tunisia, Egypt, and Ethiopia, MOBILISE aims to train 120 participants through a three-month internship and training program in the Netherlands, addressing workforce needs in the horticultural industry. Similarly, the "Pilot project for business mobility between Belgium and Senegal ([PEM-WECCO](#))", organized by MPF and executed by Enabel and the Belgian Immigration Office fosters knowledge exchange between Belgian and Senegalese companies over a 30-months (October 2021 - March 2024). This circular mobility scheme supports short-term migration opportunities, emphasizing cross-country partnerships and post-return activities for business development. Another initiative, implemented by IOM, focused on enhancing Tunisian youth employability through vocational apprenticeships and professional internships in Belgian companies. Executed from March 2018 to August 2019, this project provided 30 Tunisian young graduates with practical experience in Belgium, showcasing the collaboration between the countries to bridge skill gaps and encourage international

employment opportunities.

## 4) Skilled Mobility Partnerships

In this section, the author's primary objective was to scrutinize case studies of successful Skilled Mobility Partnerships (SMPs) and discern the distinguishing features that set them apart from other forms of partnerships involving skilled labor and migration. By examining these case studies, the author aimed to illuminate the qualities and mechanisms of SMPs, ultimately providing insights into why they stand out as superior models compared to alternative partnership structures.

SMPs are considered superior types of partnerships because they focus on skills development, mobility, and the mutual benefit of countries of origin and destination. They are rooted in the Sustainable Development Goals (SDGs). SMPs offer an innovative tool that is centered around workers' skills formation and development while placing special emphasis on multi-stakeholder collaboration

Skilled Mobility Partnerships (SMPs) are pivotal for bridging the connection between climate-induced migration and green jobs by fostering collaboration between countries. These partnerships not only enable skilled workers to contribute to sustainable employment opportunities in response to climate-related displacement but also address labor shortages in specific sectors and countries. It is essential to emphasize that SMPs, as illustrated in Figure 6, should prioritize investing in the creation of a skilled workforce in the Country of Origin (CoO) before facilitating the mobility of that skilled workforce. The emphasis is on cultivating green skills in both countries involved. SMPs aim to provide workers with opportunities to acquire new skills and experiences while meeting the labor demands of specific sectors (IOM, n.d.). SMPs typically include the following five components:

1. Formalized state cooperation
2. Multi-stakeholder involvement
3. Training
4. Skills recognition
5. Migration/mobility

IOM has outlined eight fundamental prerequisites that need to be fulfilled for the effective implementation and long-term sustainability of Skills Mobility Partnerships.

1. Long- and mid-term planning
2. Multi-stakeholder approach & policy coherence
3. Data for evidence-based policy
4. Local development and job creation
5. Skills classification and recognition at a national level and beyond
6. Address the social aspects of employment and mobility
7. Incorporate migration considerations
8. Cost reduction and sharing

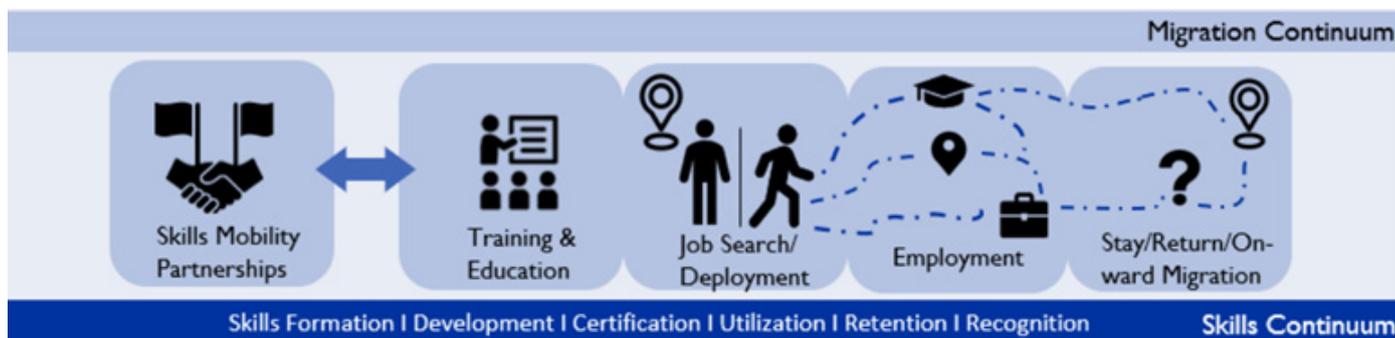


Figure 6: Skills Mobility Partnerships (IOM)

While the author discovered some Skills Mobility Partnerships (SMPs) involving joint training programs in the French plastic industry with its Tunisian counterpart, an investment by Italian development cooperation in an Egyptian tourism school through IOM, and ongoing SMPs in the construction and mechatronics sectors between Tunisia and Italy, as well as Morocco and Italy respectively, the limited availability of publicly accessible information on the internet underscores the need for additional details to comprehensively enhance insights into these initiatives. Those case studies are explored briefly below and will be explored further in the final draft assuming more information on their efficacy and application to the MENA region can be discovered.

The following section details the programming and efficacy of certain SMP case studies as a key priority of this paper to demonstrate them as a superior solution to the green jobs needed to adapt to climate change in the MENA region.

## Education and training for Egyptian youth in Fayoum Governorate

To counter the escalating trend of Egyptian youth engaging in irregular migration to European countries, the Government of Egypt (GoE), in collaboration with the Government of Italy, initiated a joint project. This endeavor was financially supported by the Italian Ministry of Labour and Social Policies and executed by the International Organization for Migration (IOM) in partnership with the Egyptian Ministry of Education (MoE), the National Council for Childhood and Motherhood (NCCM), and the Italian Tourism School E. Cornaro of Iesolo, Venice.<sup>12</sup>

Over three years, the project successfully trained 60 teachers in Egypt and abroad. It facilitated internships and traineeships for 115 students in prominent tourist destinations along the Red Sea in 2013. Additionally, the initiative provided training for 200 jobseekers in collaboration with the Egyptian Tourism Federation, resulting in 30 individuals gaining employment.<sup>13</sup>

Furthermore, through an awareness campaign, 91% of students and 89% of parents among the 600 campaign participants demonstrated an increased understanding of the significance of education and training as positive alternatives to irregular migration. Finally, the project has also established a database

for international job matching which includes the use of international occupation standard classifications (ISCO) to enhance employer understanding of candidate skills.

At long last, the Fayoum Society is gearing up to embark on a new initiative titled "Providing Positive Life Alternatives to Egyptian Youth (PLAY)." This project focuses on Migration and Economic/Community Development (CD) and will be implemented by the International Organization for Migration (IOM).

12) International Organisation for Migration, Education and Training for Egyptian youth in Fayoum Governorate FACTS & FIGURES, Egypt

13) International Organisation for Migration, Education and training for Egyptian youth in Fayoum Governorate: Activities to promote regular migration and positive alternatives, Egypt

# Towards a Holistic Approach to Labour Migration Governance and Labour Mobility in North Africa (THAMM)

This project is a sub-regional initiative funded by the European Union through the "Emergency Trust Fund for Stability and Addressing the Root Causes of Irregular Migration and Displaced Persons in Africa," as well as by the German Federal Ministry for Development (BMZ). Its implementation is divided into two distinct contracts—one involving the International Labour Organization (ILO) and the International Organization for Migration (IOM), funded by the European Union, and another involving the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), funded by both the EU and BMZ.<sup>14</sup>

The geographical scope of implementation covers Egypt, Morocco, and Tunisia and the Programme provides backing for experimental mobility initiatives conducted by GIZ, ENABEL, and OFII.<sup>15</sup>

## THAMM OFII

The THAMM OFII program is exclusively applicable to Tunisia and was developed in collaboration between the OFII and the Tunisian National Employment Agency (ANETI). The primary goal of this program is to enhance circular occupational mobility between Tunisia and France, as well as other European countries expressing interest.

Circular migration, in this context, denotes the prospect for individuals engaged in migration processes to spend a defined period in both Europe and Tunisia without any irreversible commitments.

Expectations from the THAMM OFII program include four specific objectives:

1. Promoting Concrete Circular Migration Programs: Such as seasonal contracts and "young professional" contracts.
2. Enhancing Attractiveness within Tunisian Territory for Expatriate Skills: Anticipating the return of skilled individuals.
3. Strengthening Cooperation between Tunisian and European Administrations: Especially in areas with job shortages, facilitating the connection between demand and supply.
4. Improving Employment Opportunities for Qualified Tunisians: Both within Tunisia and on the international labor markets.

Approximately 1500 Tunisians are expected to directly benefit from THAMM OFII, with half integrating into the European labor market and the other half significantly improving their employability abroad. The overarching objective is to enhance channels for occupational migration for graduates of higher education and vocational training, as well as job seekers registered with the National Agency for Employment and Self-Employment (ANETI).

Promoting legal channels for occupational migration sends a positive message to Tunisian youth, encouraging them to undertake projects constructively and develop transferable skills, rather than considering uncertain migratory routes.<sup>16</sup>

14) [https://www.ilo.org/africa/technical-cooperation/WCMS\\_741974/lang--en/index.htm](https://www.ilo.org/africa/technical-cooperation/WCMS_741974/lang--en/index.htm)

15) <https://mena.iom.int/news/thamm-programme-opened-its-second-regional-conference-mobility-schemes-between-north-african-and-european-countries>

16) <https://www.ofii.fr/en/thamm-ofii-4-years-to-improve-occupational-mobility-between-tunisia-and-european-countries/>

# THAMM+ (start in January 2024)

The overarching objective is to enhance employability and promote mutually beneficial legal migration and labor mobility for potential migrant workers from Morocco and Tunisia to Italy. The Action, drawing on a comprehensive approach to labor migration governance and leveraging the International Organization for Migration's (IOM) expertise in North Africa, is conceived as a trans-regional program with the goal of enhancing workforce skills in selected sectors in Tunisia and Morocco. The objective is to facilitate the mobility of the newly skilled workforce between targeted North African countries and Italy, addressing labor market shortages identified collaboratively by Moroccan and Tunisian authorities and Italian regions. Concurrently, the project aims to strengthen protection mechanisms for migrant workers across the migration cycle, whether they are departing the region or seeking employment there. The identified priority sectors result from joint efforts among Italy, Tunisia, and Morocco, aligning with global and regional policy frameworks. Spanning 36 months and involving Italy, Morocco, and Tunisia, the Action is designed to contribute to the Sustainable Development Goals, the Global Compact for Safe, Orderly, and Regular Migration, the African Union Migration Policy Framework Plan of Action 2018-2030, and the European Union New Pact on Migration and Asylum, thus supporting the Joint vision for 2030 established at the EU-AU Summit in February 2022.

## Enhancing Tunisian Youth Employability through Professional Internships in Belgian Companies

The project, implemented by the International Organization for Migration (IOM) from March 2018 to December 2019, aimed to address Tunisia's high unemployment rates, particularly among young graduates, which contributed to internal instability and irregular migration to the EU. Recognizing the potential for reinforcing regular migration channels to contribute to Tunisia's development, Belgium collaborated with IOM to promote youth employability in Tunisia. The project facilitated short-term employment assignments for young graduates in Belgium, offering them practical opportunities to enhance their skills and improve their job prospects or entrepreneurial ventures upon their return to Tunisia.<sup>17</sup>

In the initial phase, the project involved outreach to the private sector in both Belgium and Tunisia, establishing contacts with stakeholders, identifying companies, and collecting internship notices. A recruitment campaign was then launched in Tunisia, in collaboration with the local public employment agency ANETI. Internship placements were confirmed by Belgian companies in 2018 and continued throughout the first half of 2019. IOM organized a training on soft skills for interns based on feedback from participating companies. By August 2019, all interns had completed their placements and returned to Tunisia. In the follow-up phase, IOM engaged Tunisian companies interested in hiring returnees and provided additional support to interns seeking job opportunities or launching entrepreneurial activities.

The impact assessment conducted between January and February 2020 revealed that out of the 31 Tunisian graduates who participated, 24 were employed in Tunisia, two pursued further studies, three found employment abroad, and two were dismissed by their host companies. The project received positive evaluations from most host companies, with many expressing openness to participating in similar initiatives in the future. The initiative not only enhanced the professional skills of Tunisian graduates but also fostered better understanding and collaboration between Belgian and Tunisian companies, contributing to positive economic development for both nations. Notably, four host companies expressed their intention to open branches in Tunisia, further bolstering economic ties between the two countries.

17) International Organization For Migration, "Enhancing Tunisian youth employability through professional internships in Belgian companies", [https://belgium.iom.int/sites/g/files/tmzbd11286/files/documents/Factsheet%20Enhancing%20Tunisian%20Youth%20Employability\\_EN.pdf](https://belgium.iom.int/sites/g/files/tmzbd11286/files/documents/Factsheet%20Enhancing%20Tunisian%20Youth%20Employability_EN.pdf)

# Lessons Learned from the Case Studies

The first three case studies reveal critical findings in the context of skilled labor partnerships. Directly hiring from foreign countries may have adverse effects on the migrants' home country, potentially causing skill shortages. Also, localized training initiatives often lack appeal to migrant talent and skills seeking better opportunities elsewhere. Lastly, short-term internships and training programs, targeting a limited number of individuals who are already trained or graduates, often yield insignificant impact. In the face of the MENA regions skilled labor gaps related to green jobs, the standard model of migration and training will likely not be a sufficient long-term solution. With the significant number of youth and unemployment in the region, a better model for green jobs development and migration is needed.

In contrast, Skills Mobility Partnerships (SMPs) emerge as a superior scheme, despite their complexity in form due to the multilateral agreements necessary. These partnerships not only enhance the skills of a large number of individuals with skills in the Country of Origin but also provide them with the option to migrate, offering benefits and promoting a secure mechanism for comprehensive skill development. The case study of the SMP between Egypt and Italy exemplifies how databases for international job matching to enhance employer understanding of candidate skills can work on the SMPs. Essentially, SMPs distinguish themselves as a secure training method that effectively meets the requirements of both the countries of origin and destination, while also showing respect for migrants.

## Conclusions

In conclusion, the intersection of skills-based labor mobility and climate change in the MENA region presents complex challenges and opportunities. Climate change poses significant risks, including water scarcity, rising temperatures, and food insecurity, while labor mobility remains vital due to political instability and economic challenges. These challenges are likely to be exacerbated over the coming decades without significant intervention and new models for migration and green jobs development.

Skills Mobility Partnerships (SMPs) offer a promising strategy to address labor market needs and climate adaptation, but they require multilateral cooperation, comprehensive policies, and social protection mechanisms. To navigate this interplay effectively, the MENA region must not only encourage green job creation, improve labor market mobility, and protect migrant workers but also focus on targeted agreements that benefit CoO and CoD. Through a collaborative effort especially between higher-income MENA nations and lower-income nations, a holistic benefit to green jobs development and climate resilience is possible within the region itself. For example, Egypt has an abundance of agricultural talent that with some upskilling could reasonably migrate through an SMP with the UAE to work in the ever-growing number and scale of tech-enabled agriculture projects there.

More investment and collaboration on SMPs for green jobs in the MENA region is clearly needed. One way to accelerate this would be for MENA countries to survey their green jobs skilled labor gaps and share that data amongst each other to develop data-driven SMPs and foster more proven case studies that encourage other MENA nations to participate in SMPs. Through this first action, skills development and migration could be more targeted towards the climate adaptation needs of the region. With the standard model of training and migration, the benefits are linear and some regions will be able to adapt, while others (often the most vulnerable) are left behind. In contrast, SMPs, while more complex in their structure, present an opportunity to elevate the entire MENA region through green skills development.

Climate Initiative and Actions information derived from Wehrey, 2023. Possible labor needs as speculated by authors.

Country	Climate Initiatives and Actions	Possible Labor Needs
Egypt	Implementation of climate resiliency initiatives, including a National Adaptation Plan, with a focus on water management, sustainable agriculture, and renewable energy projects. Support from international organizations like the United Nations Development Programme.	Water resource managers, sustainable agriculture experts, renewable energy professionals.
Iran	National Climate Change Adaptation Plan with measures like water management, afforestation, soil conservation, and renewable energy promotion. Investments in climate research and technology transfers.	Environmental scientists, soil conservation experts, renewable energy specialists.
Iraq	Climate resiliency efforts challenged by political instability and conflict. Local actors work on mitigation, financial resource allocation, legal authorities clarification, and addressing water shortages and quality issues.	Conflict resolution specialists, legal experts, water resource engineers.
Jordan	- Economic Modernisation Vision: Includes a "Green Economy" and "Sustainable Resources" as growth drivers.	Skilled labor in green technologies and sustainable resource management.
Jordan	National Determined Contribution (NDC): Jordan's policy under the Paris Agreement on Climate Change, setting targets to reduce greenhouse gas emissions and improve resource management, energy efficiency, and renewable energy use. The 2021 update includes a 31% reduction target by 2030.	Renewable energy experts, resource management professionals, policy analysts.
Jordan	National Adaptation Plan (NAP): A programmatic approach addressing climate change impacts on key sectors in Jordan, including water, agriculture, health, tourism, ecosystems, coastal areas, and socioeconomic conditions.	Water resource managers, agricultural experts, healthcare specialists, tourism planners.

Country	Climate Initiatives and Actions	Possible Labor Needs
Jordan	National Climate Change Policy (NCCP): Jordan's policy framework for climate change, with a goal to achieve carbon neutrality at a macroeconomic level by 2050.	Climate policy analysts, sustainability experts, carbon neutrality specialists.
Jordan	Climate change bylaw: Legislation passed in 2019 in Jordan to engage all partners and define roles and responsibilities of different ministries in addressing climate change.	Legal experts, policy advisors, administrative professionals.
Jordan	National Green Growth Plan: Issued in 2017, focusing on six key sectors: water, agriculture, energy, transport, tourism, and waste, with sustainability in mind.	Green technology specialists, agricultural experts, and energy efficiency professionals.
Jordan	Green Growth National Action Plan: A follow-up plan to the National Green Growth Plan, issued in 2021, with further actions and strategies for sustainable growth.	Sustainable development experts, project managers, and environmental scientists.
Jordan	Water scarcity: Jordan's efforts to address water shortages, including improvements in irrigation systems and reducing water evaporation.	Water resource engineers, irrigation experts, conservation specialists.
Jordan	Transport sector: Strategies to reduce the transport sector's 28% contribution to the country's greenhouse gas emissions, including the National Transport Strategy (2016-2030).	Transportation planners, infrastructure engineers, sustainability consultants.
Lebanon	Interministerial committee: Established in 2017 to address climate change, but more coordination is needed.	Coordination specialists, climate policy experts, and government administrators.
Lebanon	Nationally Determined Contribution (NDC): Aims to reduce emissions by 20% by 2030.	Professionals in emission reduction technologies and carbon accounting.

Country	Climate Initiatives and Actions	Possible Labor Needs
Lebanon	Climate action enablers: Improved governance, fiscal reform, partnerships, research and development, gender inclusion, and monitoring and transparency..	Governance experts, fiscal analysts, researchers, and gender-inclusion advocates.
Lebanon	Tree-planting campaigns, pollution cleanup drives, education programs on recycling and water use, and workshops on infrastructural improvements. Assistance from foreign governments and organizations, including the European Union-funded Tamsall initiative.	Environmental experts, educators, project coordinators.
Libya	Tamsall initiative: European Union-funded project promoting climate advocacy and environmental activism among youth groups and town governments in Libya.	Environmental activists, youth engagement specialists, project managers.
Libya	Taqarib program: USAID program in Libya working with municipalities to improve services, including greening components such as reforestation and installing solar panels on streetlights.	Environmental specialists, technical experts, project coordinators.
Libya	Initiatives by municipal authorities and civil society groups, including tree-planting campaigns, pollution cleanup drives, and education programs on recycling and water use. Foreign support from organizations like the European Union-funded Tamsall initiative and the U.S. Agency for International Development's Taqarib program.	Environmental specialists, project coordinators, governance and policy experts.
Libya	Challenges include armed groups, poor governance, and lack of central authority. Need for action on decarbonization, renewable energy, and meeting international obligations.	Conflict resolution specialists, governance experts, decarbonization professionals.

Country	Climate Initiatives and Actions	Possible Labor Needs
Saudi Arabia.	Saudi Green Initiative: A plan to promote environmental protection, energy transition, and economic sustainability, including planting 10 billion trees, reducing carbon emissions, and improving air quality..	Forestry experts, environmental engineers, and air quality improvement specialists.
Saudi Arabia	Resilience project in Dammam: Engages local communities and civil society organizations in urban planning to mitigate climate change impacts.	Urban planners, community engagement specialists, and civil society organizers.
Saudi Arabia	Vision 2030 plan for economic diversification and reducing dependence on oil. Commitments under the Paris Agreement, renewable energy targets, and investments in desalination and water conservation.	Energy experts, desalination specialists, economic diversification professionals.
Tunisia	Waste management: Addressing challenges in waste management, including coordination, resource allocation, and federal support, through civil society and municipal efforts.	Waste management specialists, municipal coordinators, environmental advocates.
Tunisia	Water availability and quality: Addressing the uneven distribution of water resources, regional inequalities, and the impact of climate change, while improving water infrastructure and federal support.	Water resource engineers, infrastructure developers, environmental scientists.

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