

# **GREEN JOBS AND GREEN ENTREPRENEURS IN THE MENA REGION: CHALLENGES AND OPPORTUNITIES**

Shady El-Sherif

**GREEN JOBS AND GREEN  
ENTREPRENEURS IN THE  
MENA REGION:  
CHALLENGES AND  
OPPORTUNITIES**

Shady El-Sherif

**EuroMeSCo** has become a benchmark for policy-oriented research on issues related to Euro-Mediterranean cooperation, in particular economic development, security and migration. With 116 affiliated think tanks and institutions and about 500 experts from 30 different countries, the network has developed impactful tools for the benefit of its members and a larger community of stakeholders in the Euro-Mediterranean region.

Through a wide range of publications, surveys, events, training activities, audio-visual materials and a strong footprint on social media, the network reaches thousands of experts, think tankers, researchers, policy-makers and civil society and business stakeholders every year. While doing so, EuroMeSCo is strongly engaged in streamlining genuine joint research involving both European and Southern Mediterranean experts, encouraging exchanges between them and ultimately promoting Euro-Mediterranean integration. All the activities share an overall commitment to fostering youth participation and ensuring gender equality in the Euro-Mediterranean experts' community.

**EuroMesCo: Connecting the Dots** is a project co-funded by the European Union (EU) and the European Institute of the Mediterranean (IEMed) that is implemented in the framework of the EuroMeSCo network.

## EUROMESCO PAPERS

Published by the European Institute of the Mediterranean

**Academic Peer Review:** anonymous

### Editing

Jorge Piñera Álvarez

**Design layout** Maurin.studio

**Proofreading** Neil Charlton

**Layout** Núria Esparza

**Print ISSN** 2565-2419

**DL B** 27445-2011

**Digital ISSN** 2565-2427

June 2023



The **European Institute of the Mediterranean** (IEMed), founded in 1989, is a think and do tank specialised in Euro-Mediterranean relations. It provides policy-oriented and evidence-based research underpinned by a genuine Euromed multidimensional and inclusive approach.

The aim of the IEMed, in accordance with the principles of the Euro-Mediterranean Partnership (EMP), the European Neighbourhood Policy (ENP) and the Union for the Mediterranean (UfM), is to stimulate reflection and action that contribute to mutual understanding, exchange and cooperation between the different Mediterranean countries, societies and cultures, and to promote the progressive construction of a space of peace and stability, shared prosperity and dialogue between cultures and civilisations in the Mediterranean.

The IEMed is a consortium comprising the Catalan Government, the Spanish Ministry of Foreign Affairs, European Union and Cooperation, the European Union and Barcelona City Council. It also incorporates civil society through its Board of Trustees and its Advisory Council.

# **Green Jobs and Green Entrepreneurs in the MENA Region: Challenges and Opportunities**

**Shady El-Sherif**

Research and Communication Associate,  
Information and Decision Support Center  
(IDSC) - Egypt

## Introduction

According to the Global Employment Trends for Youth 2022 report by the International Labour Organization (ILO), the Arab States have the highest and fastest-growing unemployment rate among young people aged 15 to 24 worldwide. Youth unemployment in the region peaked at 25.9% in 2021, while the final rate in 2022 is expected to have reached 10% more

than the global average (ILO, 2022). These figures reflect the struggle that young people in the Middle East and North Africa (MENA) region face to find decent jobs, an issue that was further complicated by the post-COVID pandemic effects and the devastating consequences of the Russian-Ukrainian crisis. The following figure shows how Arab youths are lagging behind their fellows around the world when it comes to having good and sustainable jobs.

**Figure 1.** Key labour supply indicators, world and Arab States, 2019-2022 (percentage)

			2019	2020	2021	2022
Youth labour force participation rate	<b>World</b>	<b>Total</b>	<b>41.2</b>	<b>38.6</b>	<b>39.7</b>	<b>40.1</b>
		Total	27.9	27.3	27.6	28.0
	Arab States	Male	45.3	44.5	44.8	45.4
		Female	9.0	8.8	9.0	9.1
		<b>Total</b>	<b>35.7</b>	<b>32.7</b>	<b>33.6</b>	<b>34.1</b>
Youth employment-to-population ratio	<b>World</b>	Total	21.5	20.3	20.5	21.1
		Male	36.4	34.4	34.7	35.6
	Arab States	Female	5.4	5.1	5.1	5.2
		Total	5.4	5.1	5.1	5.2

Note: Youth are defined as those aged 15–24 years. The values in the column for the year 2022 are projections.

Source: ILOSTAT, November 2021.

According to a report by the Organisation for Economic Co-operation and Development (OECD) on the business structures and dynamics of the 16 OECD countries in addition to Brazil and Costa Rica over the period 2001-2015, transformational entrepreneurs' startups – on average 4% of all micro startups – created 22% of new jobs in the Netherlands, and 53% in France (OECD, 2022). Additionally, from the Arab States side, the Egyptian Startup Ecosystem Report for 2021 shows that the Egyptian tech startup ecosystem is a major contributor to employment, with almost 13,000 individuals employed by the 562 startups (ESER, 2021).

It is becoming a priority for leaders today, as part of their global commitment

to achieve the United Nations (UN) Sustainable Development Goals (SDGs), to work on achieving its eighth goal (SDG 8),<sup>1</sup> which calls for promoting “sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.” However, the 2011 revolutions showed leaders in the MENA region that depending solely on macroeconomic development plans for economic growth that mainly focus on enhancing their overall gross domestic product (GDP) will not be satisfying or engaging for their main development engines: their youth. For example, the GDP growth rates in Egypt reached 7.2% in 2007 and 5.1% in 2010, the same as in Syria, while in Libya they reached 11.9% in 2005 and 5% in 2010 (World Bank, 2023). Never-

<sup>1</sup> <https://bit.ly/3HacDTP> (Accessed 17 January 2023).

theless, youth unemployment rates staggered for years and then reached 25% in 2010 in Egypt, 48.8% in Libya, and 20.5% in Syria.<sup>2</sup>

There are microeconomic factors that complement macroeconomic tools and can both boost global economic growth and engage youths in the development of their own societies. Developing human capital, i.e. knowledge, skills and education of the workforce, can prove critical for economic growth; investments in education and training can increase workers' productivity. Innovation, through new products, services and technologies, can also play an important role in boosting economic growth by increasing productivity, creating new industries and improving efficiency. Entrepreneurship can also be an effective driver of growth as new businesses create jobs, increase competition, and foster innovation. Moreover, the concept of entrepreneurship can create a sense of inclusion and empowerment for youths in deciding their countries' futures because all the developmental steps will come from their minds and hands. Additionally, government policies that promote competition, investment and innovation can contribute to economic growth. Policies that increase taxes, regulations or barriers to trade can have the opposite effect.

Concerns regarding global challenges go beyond economic growth. There are pressing issues that threaten the existence of humanity and its development in general, most notably climate change. Hence, the United Nations Conference on Trade and Development (UNCTAD) developed a new concept for economic growth, "inclusive growth", defined as

"equal and non-discriminatory opportunities, for everyone, to both participate in the economy and to benefit from economic growth with consideration of environmental sustainability and emphasis on gender equality."<sup>3</sup> With that in mind, this paper mainly focuses on promoting both the concepts of "green jobs" and "entrepreneurship" in general as startups and entrepreneurs can take the lead and push their countries towards sustainability and growth.

## **Green jobs as an inclusive and sustainable solution**

Given the importance and urgency of job creation and climate action to reduce countries' vulnerability to climate change and its negative consequences, green jobs can be considered a solution for both the inclusion of young innovative minds in the development process and halting the negative socioeconomic consequences of climate change. Promoting the transition of national economies to decarbonised "circular" or "green" economies based on reusing, repairing, or recycling, as well as increasing sustainable manufacturing with consumption, is one of the most important steps toward preserving the environment, creating sustainable jobs, and promoting a healthy lifestyle for all humans.

The question as to why countries should promote "green entrepreneurship" should be answered first through the framework of "green jobs" in the broadest sense. One might wonder if there is a certain type of job that is environmentally friendly and provides a decent

<sup>2</sup> The World Bank Data. GDP Growth (Annual %). <https://bit.ly/2YMQALn> (Accessed 20 April 2023).

<sup>3</sup> Stark contrasts in inclusive growth – progress towards equal opportunities needed everywhere. UNCTAD. Available at: <https://bit.ly/43OVd9Z> (Accessed 15 April 2023).

income that would help people – especially youths – to live better. Here the United Nations Environment Programme (UNEP) emphasised that the transition to a green economy should value both nature and people and create decent and adequately paid jobs (UNEP, 2018). That was officially answered in June 2007 when the Director-General of the ILO, Mr Juan Somavia, launched the “Green Jobs Initiative” as a key solution to one of the imminent challenges of the 21st century: delivering social development and decent work for all, along with responding to the major global threat of climate change and accelerating the pace of sustainable development.

We might have heard of “white-collar” jobs, referring to salaried professionals who work in offices and management, “blue-collar” jobs for manual workers in industrial settings, and even “pink-collar” jobs, generally meaning jobs that are typically done by women and common in the service industry. But what is the future of the emerging “green-collar” jobs amid the growing threats of climate change?





Green jobs were defined by the United States (US) Bureau of Labor Statistics (BLS) as “goods or services that preserve natural resources or enhance the environment, or positions in which work functions involve sustaining a company’s establishment through reduced resource use or enhancement of environmental initiatives” (Scruton, 2022, p. 2). Meanwhile, David Thompson of the Sierra Club argues that “green jobs” must obey the following criteria: good jobs; safe, healthy, equitable; traditional occupations; new occupations; community-based; training programmes; and greening the economy (Scruton, 2022, p. 6).

Green jobs have a greater multiplier effect on the economy than conventional employment segments, as they:

- **Help create more jobs.** From a global perspective and according to a working paper by the World Resources Institute that analyses global studies between 2009 and 2020 to compare jobs created from green investments with those in fossil fuels (coal power stations, road construction, and oil and gas production), green investments, on average, create more jobs per \$1 invested than unsustainable investments. For example, investments in mass transit create 1.4 times the number of jobs as road construction, and solar PV creates 1.5 times the number of jobs as fossil fuels. The results are summarised in Figure 2 (WRI, 2021). Additionally, despite the lingering effects of COVID-19 and the growing energy crisis since February 2022, global employment in the renewable energy sector reached 12.7 million by the end of 2022, a 700,000 increase in just 12 months, according to a new report published by the International Renewable Energy Agency (IRENA) in collaboration with the ILO (UN, 2022).
- **Offer higher labour-intensive opportunities** because, for instance, retrofitting a home with energy-efficient technologies or installing solar panels needs more workers and time than installing technologies produced by the fossil fuel industry, which are more recently becoming highly automated.
- **Provide opportunities for employment in rural areas** as there will be no need for youths to travel to the big cities to work; instead, they will use innovative ways and get support from the government to grow their own green businesses, which will also help their communities.



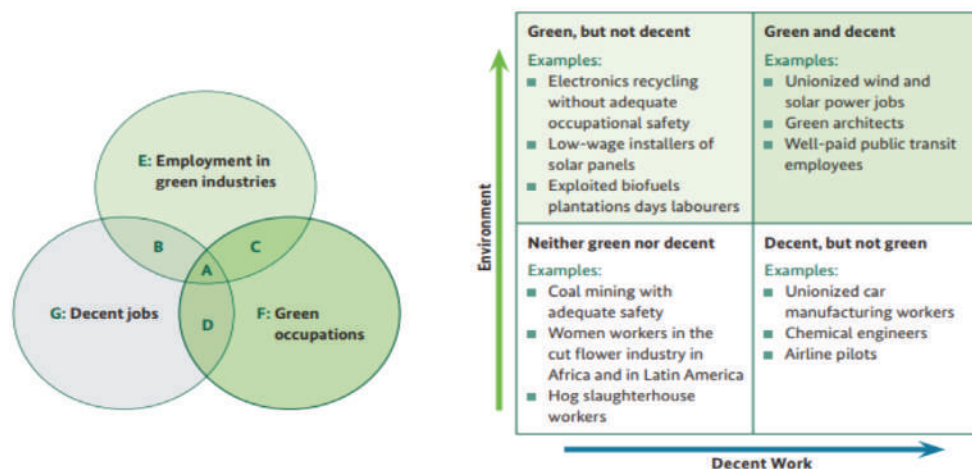
**Figure 2.** Green investments can create more jobs in the short term than unsustainable investments

SECTOR	# COUNTRIES/ REGIONS ACROSS STUDIES	TYPE OF GREEN INVESTMENT	MEDIAN RATIO ACROSS STUDIES	COMPARISON TO UNSUSTAINABLE INVESTMENT
 Energy	7	Building efficiency creates...	2.8	...times as many jobs as fossil fuels per \$1 million
	7	Industrial efficiency creates...	1.8	
	6	Geothermal energy creates...	1.7	
	8	Solar photovoltaic energy creates...	1.5	
	7	Upgrades to existing grids create...	1.5	
	8	Wind energy creates...	1.2	
	7	Hydropower creates...	1.2	
	1	New grids create...	1.1	
	1	Reducing methane emissions creates...	0.8	
	1	Carbon capture, utilization, and storage creates...	0.5	
 Public and non-motorized transport	1	Pedestrian-only infrastructure creates...	1.3	...times as many jobs as road construction per \$1 million
	1	Bicycle-only infrastructure creates...	1.4	
	1	Roads with pedestrian and cycling infrastructure create...	1.1	
	2	Mass transit creates...	1.4	
	2	Railways create...	0.8	
 Vehicles	2	Electric vehicle manufacturing creates...	0.9	...times as many jobs as internal combustion engine vehicle manufacturing per \$1 million
	1	Battery cell manufacturing creates...	1.2	
	1	Electric vehicle charging infrastructure creates...	2.0	
 Nature	1	Ecosystem restoration creates...	3.7	...times as many jobs as oil and gas production per \$1 million

Source: World Resource Institute, October 2021.

- **Wisely exploit local resources** and minimise the use of machines as well as using environmentally friendly construction technologies and management structures that are not dependent on dense urban supply chains and infrastructure.
- **Help disseminate knowledge and the application of sustainable practices** and thereby lessen the adverse environmental impacts of other sectors while maintaining or even enhancing their economic output.
- **Support a forward-looking industry** that aims to sustain economic growth within environmental boundaries.

It is worth mentioning that most economies today are trying to adapt new policies to secure “decent” jobs for their youths. The ILO has referred to decent jobs as “any type of employment that respects and adopts the four pillars of; the promotion of employment and its establishment at the core of economic and social policy, the extension of social security to all workers and their families, the implementation of core labour standards and the availability of a social dialogue” (Jacob, Bär, & Quitzow, 2015). It is therefore interesting that a report produced by the German Agency for International Development (GIZ) argues that green jobs can be a good example for sustainable “decent” jobs, as shown in Figure 3.

**Figure 3.** The relationship between green jobs and decent jobs

Source: ILO et al., 2012 and UNEP et al., 2008.

Green jobs can indeed be considered “decent jobs”, according to the ILO and GIZ analysis, as they provide workers with:

- **Fair wages:** Green jobs pay fair wages that allow workers to support themselves and their families. This can be achieved and maintained by setting minimum wage standards and collective bargaining, and by ensuring that employers pay a living wage.
- **Safe working conditions:** Green jobs offer safe and healthy working conditions, with proper training and equipment provided to workers. However, workers should be protected from hazards such as exposure to harmful chemicals or extreme temperatures.
- **Benefits:** Green jobs provide workers with benefits such as health insurance, retirement plans and paid leave. These benefits can help ensure workers’ financial security and improve their overall well-being.
- **Opportunities for advancement:** Green jobs offer opportunities for workers to advance their careers and

develop new skills. This can be achieved through training and education programmes, mentoring and apprenticeships.

- **Job security:** Green jobs offer workers job security and stability. This can be achieved by promoting long-term investments in renewable energy and sustainability initiatives, and by ensuring that workers have protections, such as job security agreements and collective bargaining.

By ensuring that green jobs are decent jobs, we can create a more sustainable and just economy that benefits workers, the environment, and society as a whole. There are many examples of decent green jobs, such as:

- **Solar panel installer:** Solar panel installers typically receive fair wages, especially as the industry is growing rapidly. Workers in this field often receive training and benefits, such as health insurance and retirement plans. The work is also relatively safe, with proper safety equipment and procedures in place.

- **Wind turbine technician:** Wind turbine technicians typically receive fair wages and benefits, and are trained in safety procedures and equipment maintenance. The job provides opportunities for career advancement, as technicians can specialise in different types of turbines or move into management roles.
- **Environmental engineer:** Environmental engineers work to design and implement sustainable solutions to environmental problems. They often receive competitive salaries, benefits, and opportunities for career advancement. The job also provides the opportunity to make a positive impact on the environment.
- **Sustainable agriculture worker:** Sustainable agriculture workers grow and harvest crops using methods that prioritise environmental sustainability and workers' safety. They may receive fair wages and benefits, and the work is often safer than traditional agriculture, with less exposure to harmful pesticides and chemicals.
- **Green building contractor:** Green building contractors specialise in constructing buildings using sustainable materials and energy-efficient techniques. They often receive fair wages, and have the opportunity to learn new skills and advance their careers through continuing education and certifications.

The World Bank estimated that the MENA region receives between 22% and 26% of all solar energy on the planet, which could be equivalent to the energy generated from 1 to 2 million barrels of oil per year (IFC, n.d.). There are huge solar power plants being built today by countries in the MENA region, such as the Benban plant

in Aswan, the Mohammad Bin Rashid al-Maktoum Solar Park in Dubai, and the Noor solar power plant in Morocco, which opens the door for multiple green job opportunities and motivates young entrepreneurs to grow their startups to such a large-scale business level.

Youths did not wait for governments to take such sustainable initiatives, and we can find good examples of green entrepreneurial initiatives in the region: in Lebanon, BlinkMyCar provides an app that circumvents water shortages by providing an on-demand car wash service that uses very little water; Eco-dôme in Morocco creates environmentally-friendly domes using a 90% earth and 10% cement mixture at half the cost; Recyclobekia in Egypt aims to revolutionise electronic waste disposal by purchasing or collecting e-waste, refurbishing what is possible locally, and selling the rest to recycling factories abroad; Saphon Energy in Tunisia manufactures bladeless wind turbines that are more efficient and less expensive than traditional models; and Zero Mass Water in Jordan has developed solar panels that extract, condense and purify water from thin air (ClimaSouth, 2017).

If those small promising startups can grow to the level of bigger companies that can accommodate more employees, then we can guarantee decent jobs for youths working in them. Hence, it is now becoming a priority to encourage young people to have their own green jobs by empowering and training them to build innovative and impactful green businesses, and this can be done through empowering green entrepreneurs and climate tech startups in the MENA region. With that in mind, the concept of entrepreneurship is basically defined as “the process of innovation and/or opportunity identification to create new and unique values in the form of products (goods

and/or services) that can satisfy human needs and, thus, can command profit in exchange" (Alam, 2021).

## Green entrepreneurship as a climate youth empowerment action

Building on the aforementioned definition, scholars find that entrepreneurship can have a direct effect on reducing youth unemployment because entrepreneurs create new innovative production lines and ventures, and identify two forms of relationship between entrepreneurship and unemployment: a "refugee" effect, by which unemployment "pushes" more people towards business ownership, and a "Schumpeter" effect, by which increasing rates of entrepreneurship (business ownership) lead to greater levels of employment and economic growth. However, those effects require a long time to become tangible and clear (Thurik, Carree, Van Stel, & Audretsch, 2008).

Given the importance of climate action to reduce countries' vulnerability to climate change and its negative economic and social consequences, boosting green entrepreneurship may result in both including young innovative minds in the development process and halting the negative consequences of climate change in the economic and social sectors. Different terms can be used instead of green entrepreneurship, such as sustainable entrepreneurship, which is related to sustainable development and the attainment of the SDGs, and "eco-preneurs", who identify environmental innovations and their market opportunity, and then successfully implement these innovations, resulting in new products or services (Gerlach, 2003).

The World Bank explicitly mentioned in 2014 that "youth entrepreneurship can play an important role in ... reducing youth unemployment" (World Bank, 2014, p. 77), which makes the issue of supporting young green entrepreneurs a solution for both youth unemployment and environmental degradation. However, according to World Bank Group Entrepreneurship Survey (WBGES) data, entrepreneurship density is very low in most MENA countries. The report notes that business density across regions and income groups shows that in high-income countries, on average, four new companies per 1,000 working age people (15-65 years old) register their entry into the formal market. In MENA countries only 0.63 new companies register, compared to an average of 6 in Qatar and 3 in Kuwait, making them the countries with the highest business density. (Sullivan, Rey, & Mendez, 2023, pp. 8-9).

Hence, there are some challenges in promoting green entrepreneurship in the region, such as:

- **Limited access to funding:** Access to funding is a major challenge for green entrepreneurs in the MENA region (EUCOR, 2021, pp. 11-13). This might be explained by the fact that many investors are hesitant to invest in green projects due to the perceived high risk and uncertainty associated with these ventures, and because of the region's long history of heavy dependence on oil and businesses that benefit greatly from it.
- **Lack of supportive policy frameworks:** The MENA region has limited supportive policy and regulatory frameworks for green entrepreneurship (Pastorelli, Costantini, & Serrano, 2022, pp. 7-8). This makes it challenging for green

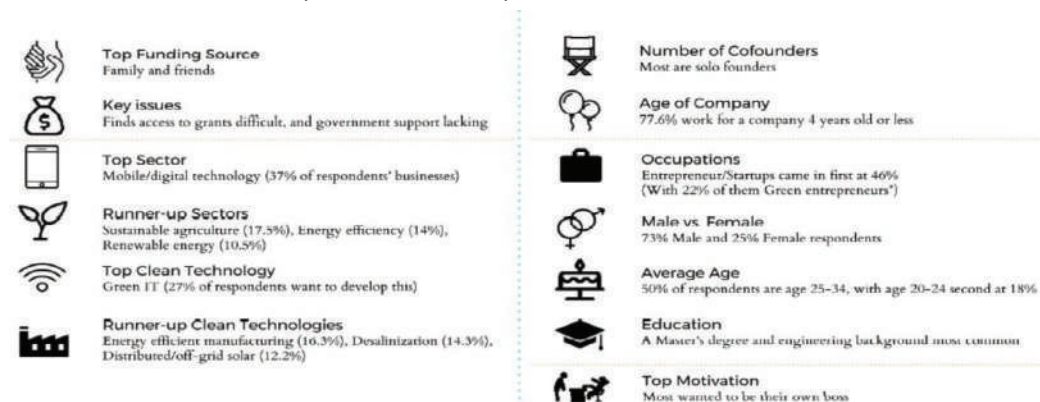
entrepreneurs to navigate the regulatory environment, secure permits, and access subsidies and incentives.

- **Limited awareness and education:** There is a lack of awareness and education in terms of entrepreneurship in general and green practices in the MENA region in particular (Mehtep, 2014, p. 125). This limits the pool of potential entrepreneurs and makes it challenging for them to promote their green initiatives.
- **Political instability and conflict:** Political instability and conflict in the region

create an unstable business environment that makes it difficult for green entrepreneurs to thrive. This includes limited access to markets, disruption of supply chains, and an unpredictable regulatory environment.

Taking an example from the region, a study conducted by the World Bank in 2017 on the entrepreneurial landscape in Morocco found that most Moroccan entrepreneurs work in the digital technology and sustainable agriculture sectors. They are mostly men who struggle to get the government support and funds to grow their business, as shown in Figure 4 (World Bank, 2017).

**Figure 4.** Morocco's entrepreneurial landscape (2017)



Source: The World Bank, 2017.

Figure 4 shows that the top funding source for entrepreneurs in Morocco is still family and friends and not the government or foreign investors. It also shows that the leading sector for entrepreneurs is technology, while climate tech initiatives are still lagging behind, even though 27% of survey respondents expressed their willingness to develop new green information technology (IT) projects. It is also crucial to mention that most of the people surveyed were master's degrees holders – mostly in the engineering field –, which indicates how much untapped potential still exists in such a promising country in the region.

Other figures from the region reflect the huge tendency among its youth to join entrepreneurship and grow their own businesses. According to recent data from the Global Entrepreneurship Monitor (GEM) on the entrepreneurial behaviour and attitudes of adults in the MENA region, Figures 5 and 6 show that young people in the region see entrepreneurship as a good career and promising opportunity to start a firm in the area where they live. They also believe that they have the skills and knowledge required to start a business, which is ahead of almost all regional averages.

**Figure 5.** Societal values about entrepreneurship in the MENA countries, with global comparisons, GEM 2016

	Entrepreneurship as a good career choice (% of adult population)	High status to successful entrepreneurs (% of adult population)	Media attention for entrepreneurship (% of adult population)
Egypt	83.4*	87.1	62.1
Iran	52.4	80.5	57.9
Jordan	73.5	82.3	74.7
Morocco	79.3	58.7	60.7
Qatar	71.2	80.4	66.7
Saudi Arabia	81.3	78.7	75.9
Tunisia (2015)	71.1	72.1	48.3
UAE	75.1	82.3	83.8
<b>Average (MENA)</b>	<b>73.4</b>	<b>77.8</b>	<b>66.3</b>

Regional averages			
Africa	70.2	79.3	67.2
Asia & Oceania	62.5	68.5	66.2
Latin America & Caribbean	65.3	64.6	62.7
Europe	57.5	66.7	54.8
North America	64.6	74.0	72.5

Source: GEM, 2021.

**Figure 6.** Entrepreneurial perceptions and competencies in the MENA countries, with global comparisons, GEM 2016

	Perceived opportunities	Perceived capabilities	Know a start-up entrepreneur*	Fear of failure
Egypt	53.5**	46.4	18.9	27.6
Iran	34.4	59.3	50.6	43.8
Jordan	30.5	48.4	30.6	44.3
Lebanon	59.6	68.0	66.8	22.5
Morocco	45.0	56.1	43.6	32.9
Qatar	48.4	50.6	30.2	35.4
Saudi Arabia	81.5	70.7	71.7	39.4
Tunisia (2015)	48.8	59.9	48.9	40.3
UAE	25.8	55.2	61.7	54.4
<b>Average (MENA)</b>	<b>47.5</b>	<b>57.2</b>	<b>47.0</b>	<b>37.8</b>

Regional averages				
Africa	53.6	63.5	51.9	24.0
Asia & Oceania	40.1	40.7	41.7	40.1
Latin America & Caribbean	46.8	64.3	40.9	27.5
Europe	36.7	44.0	33.7	39.4
North America	58.1	54.6	33.5	36.2

Source: GEM, 2021.

Putting things into the real context, the World Economic Forum (WEF) mentioned that the MENA region is among the parts of the world most vulnerable to the effects of climate change as it is warming at twice the global average and is expected to be as much as 4°C warmer by 2050 (WEF, 2022). Therefore, green entrepreneurship should be one of the main priorities for policy-makers when formulating new policies for job creation in the medium and long term.

During the Fifth Global Entrepreneurship Summit in Marrakech in 2014, His Highness King Mohamed VI said that “in order to overcome the pessimism that has plagued our continent, our governments should instil self-confidence in our young people so that they can believe in their ability to learn and to become entrepreneurs. To this end, we need to nurture positive examples and turn success stories into models to emulate” (Morocco World News, 2014).

## What future for green startups?

### Promising initiatives

Building on the Moroccan King's promise, in December 2020 the Moroccan Ministry of the Economy, Finance and Administration launched a national portal to support entrepreneurship in the kingdom called “Almoukawala”, bringing together all the public support for entrepreneurs (The Moroccan Ministry of Economy and Finance, 2020). The Moroccan finance bill signed in November 2021 allocated \$331 million to entrepreneurship initiatives with the goal of creating 250,000 jobs within two years (The Moroccan Ministry of Economy and Finance, 2020).

Moreover, on 7 April 2022 the Moroccan government announced the launch of the applications for the “Forsa” support programme for entrepreneurs to finance and train 10,000 entrepreneurs by providing up to MAD 100,000 (\$10,000) at zero interest rates. Entrepreneurs benefiting from the programme have a maximum of 10 years to pay back loans, and it is open to Moroccans residing in the North African country or abroad aged between 18 and 35 (Rahhou, 2022).

In the same context, green social entrepreneurs in Egypt, the United Arab Emirates (UAE) and throughout the MENA region have been developing practical and regionalised solutions to real-world climate problems. Sustainable agriculture and food waste reduction are among the solutions, along with renewable energy, circularity, recycling technologies, and sustainable e-commerce platforms. Those entrepreneurs also raise environmental awareness by promoting sustainable practices.

Climate technology (Climate-tech) is like clean tech, a term used to refer to the business sector that encompasses all environmentally friendly businesses from carbon capture to electric airplanes, and it has been a slow-growing sector across the MENA region. Climate tech, on the other hand, was a bright spot in the US, Europe and beyond in 2022. In the first half of 2022, climate tech startups raised a record \$26.8 billion globally, despite a general slowdown in venture funding. A few local startups mostly focused on agricultural innovations have recently received significant funding, and after the UN Climate Change Conference of the Parties (COP27) in Sharm Al-Shaikh in Egypt in 2022, many other green startups are in the process of obtaining new funds from international organisations and governments as part of their pledges to enhance climate mitigation initiatives to start working on innovative

green projects. In other words, while the MENA climate tech space is still in its infancy when compared to fintech or e-commerce, the time also appears to be right for MENA's climate tech startups to flourish (Wendel, 2022). According to the PwC State of Climate Tech report 2022, \$6 billion has been invested in climate tech startups in the Middle East since 2013, and \$1.6 billion of that was invested in the first half of 2022 alone (PwC, 2022).

### Challenges facing entrepreneurs in the region

There is a lack of literature on promoting green entrepreneurship and climate tech in the MENA region. Some insight may be found in Eberhard Witte's work on the barriers that innovative entrepreneurs might face. He classified them into two types: barriers of willingness and barriers of capacity. Barriers of willingness are caused

by executives who lack commitment to the innovation process and instead strive to maintain the status quo; while barriers of capacity are caused by the lack of tools and ability to establish a new innovative initiative (Gerlach, 2003).

A report provided by experts to the GEM from selected Arab States in the MENA region (namely Egypt, Algeria, Tunisia, Morocco, Jordan, Libya, Qatar, Kuwait, Iran, and the UAE), with most data collected on entrepreneurial framework conditions in 2016, shows the main obstacles facing the entrepreneurial ecosystems in most countries in the region, presented in Figure 7. The average scores can vary between 1 point, which represents a highly insufficient condition, and 5 points, which represents a highly sufficient condition. In the figure, countries are ordered from worst to best average score for each factor, highlighting above average scores (3 points).

**Figure 6.** The most recent average scores on each key entrepreneurial framework condition, at national level, for the sample of 14 Arab countries participating in GEM studies

Financing for entrepreneurs													
IR	LI	MO	SY	EG	SA	JO	PS	TU	UA	KW	QA	LE	AL
1.75	2.14	2.18	2.24	2.34	2.39	2.44	2.52	2.58	2.66	2.67	2.67	3.05	3.42
Governmental policies: Priority and support of entrepreneurship													
KW	IR	LI	SY	LE	JO	EG	PS	TU	SA	MO	AL	QA	UA
1.90	2.00	2.01	2.05	2.08	2.13	2.17	2.24	2.38	2.41	2.55	3.19	3.25	3.51
Taxes and bureaucracy													
IR	TU	EG	SY	JO	LE	PS	KW	SA	MO	AL	LI	QA	UA
1.62	1.67	1.96	1.97	2.10	2.34	2.43	2.45	2.48	2.52	2.56	2.63	2.84	3.30
Governmental programmes													
IR	SY	LI	PS	KW	EG	SA	TU	JO	MO	LE	AL	QA	UA
1.36	1.66	1.75	1.86	1.93	2.02	2.12	2.18	2.22	2.22	2.35	2.75	3.23	3.34
Entrepreneurial education and training at school level													
TU	EG	MO	LI	SA	IR	JO	KW	SY	PS	AL	LE	UA	QA
1.15	1.20	1.33	1.41	1.44	1.46	1.47	1.52	1.56	1.69	2.45	2.61	2.68	2.70
Entrepreneurial education and training at post-school level													
EG	IR	JO	TU	SY	SA	LI	MO	PS	KW	UA	LE	AL	QA
1.82	1.83	1.85	2.01	2.21	2.26	2.30	2.41	2.44	2.57	2.84	3.11	3.16	3.46
Research and development transfer													
EG	TU	MO	IR	SY	LI	SA	KW	JO	PS	LE	UA	QA	AL
1.68	1.69	1.71	1.81	1.82	1.83	1.85	2.09	2.28	2.30	2.41	2.55	2.62	2.88
Commercial and professional infrastructure													
IR	EG	SA	MO	JO	AL	LI	SY	KW	PS	QA	LE	UA	TU
1.85	2.31	2.37	2.84	2.86	2.86	2.91	2.97	3.06	3.07	3.08	3.20	3.29	3.49
Internal market dynamics													
QA	LE	MO	SA	IR	EG	SY	JO	PS	LI	UA	KW	AL	TU
2.65	2.65	2.74	2.90	3.00	3.05	3.08	3.11	3.13	3.20	3.44	3.89	4.00	4.17

Source: Faghieh & Zali, 2018.



Based on this data, the conditions for which most countries were not even close to the average (3 points) are mainly considered barriers of capacity based on Witte's classification, and can be summarised as follows:

- Lack of entrepreneurial education
- Lack of unified policies
- Low level of connection between entrepreneurs
- Insufficient funding (mainly at the early stages)

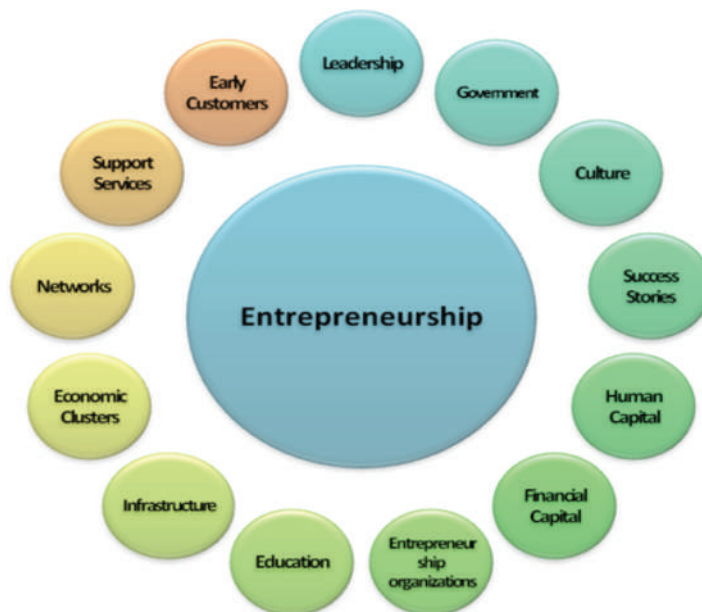
### Towards an inclusive ecosystem in the MENA region

The entrepreneurial ecosystem can be identified as “the combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups

and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures” (Spigel, 2017, p. 50). Moreover, the term “entrepreneurial” can also refer to the micro, small and medium-sized enterprises (MSMEs) that are usually at the initial or scaling stages.

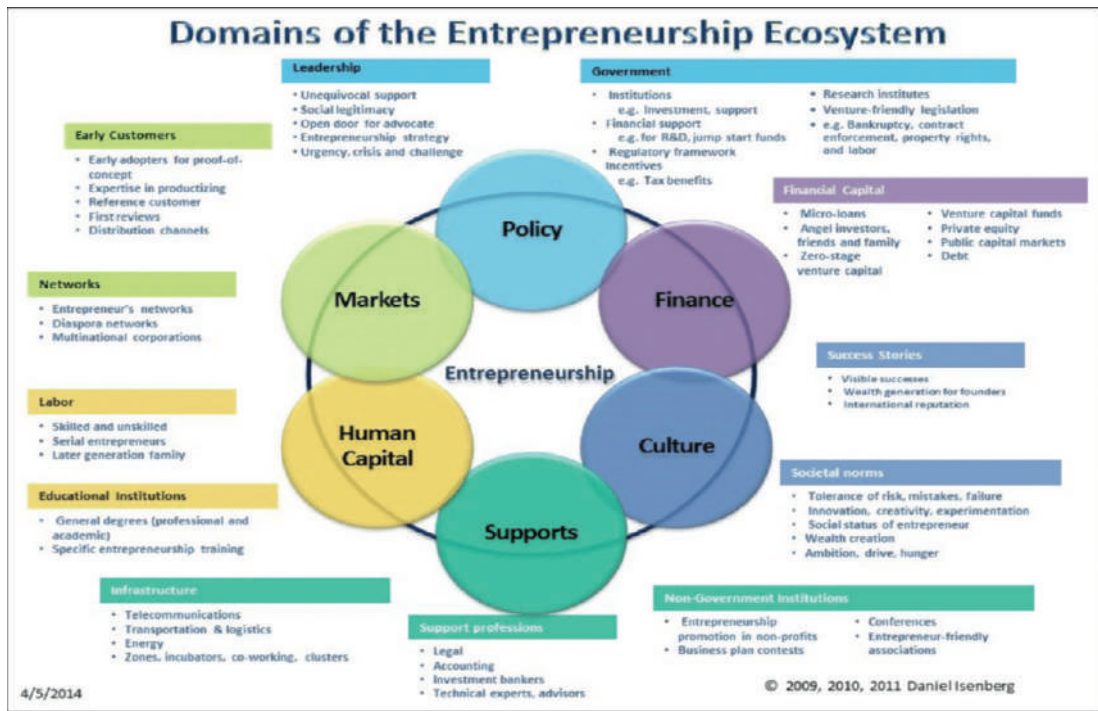
Professor Daniel Isenberg at Babson College identified the main stakeholders of entrepreneurship in any country as the government, private companies, social leaders, education institutions, and other important entities and individuals who work together in maintaining a healthy entrepreneurship ecosystem that promotes innovation and engages young people in the economic development process of their countries. The following figures illustrate Isenberg's vision of the ideal entrepreneurship ecosystem, although each country adopts it according to its local features and circumstances (Faghih & Zali, 2018, pp. 29-30).

**Figure 8.** Entrepreneurship stakeholders



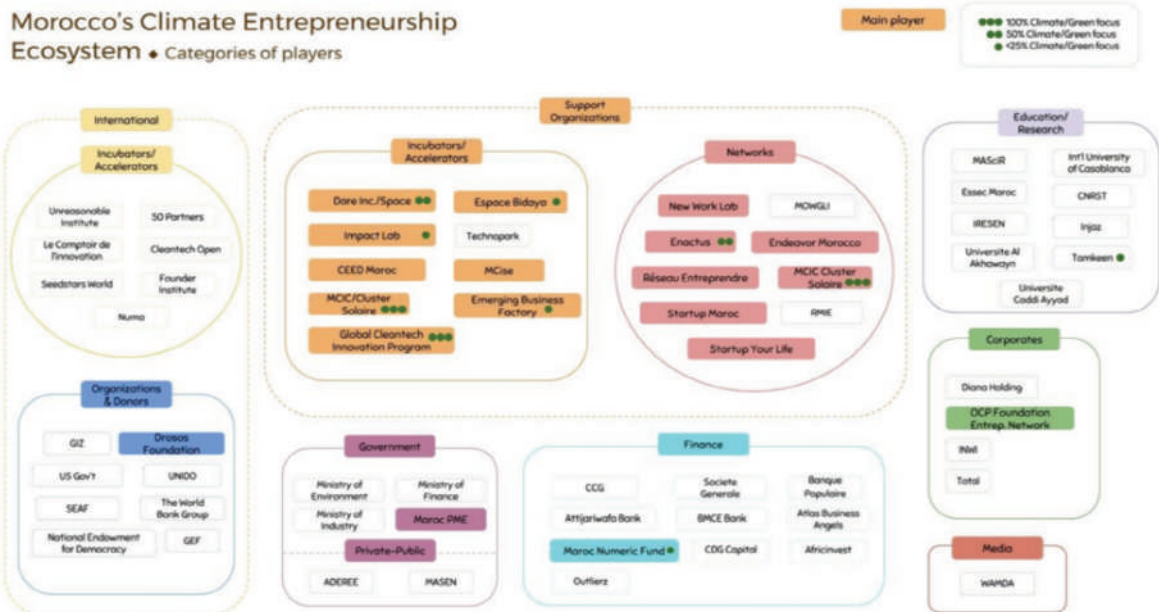
Source: Faghih & Zali, 2018.

Figure 9. Entrepreneurship ecosystem mechanism



Source: Faghih & Zali, 2018.

Figure 10. Moroccan climate entrepreneurship ecosystem



Source: World Bank, 2017.

Building a well-connected supportive ecosystem is undoubtedly a key factor in promoting green entrepreneurship in the region. In this paper, we aim to provide an overview of those ecosystems that need more support and offer great po-

tential for socioeconomic growth and how to empower youths to be on top of such ecosystems. The following figures give an optimistic view of the Moroccan and Egyptian climate entrepreneurship ecosystems.

**Figure 11.** Green entrepreneurship ecosystem map of Egypt



Source: SwitchMed, 2021.

## Policy recommendations

One of the key issues that most MENA countries suffer from when it comes to promoting entrepreneurship in general is the lack of entrepreneurial education, as shown in figure 7. According to the OECD report on entrepreneurship in education, it is seen as a major engine for economic growth and job creation, as well as a potential tool to empower people and organisations to create social value for the public good (Lackeus, 2015, p. 17). Hence, improving students' entrepreneurial skills (e.g., green and business management skills) through a practical activity (learning-by-doing) methodology that would complement theoretical learning in enhancing young people's innovation mindsets, would be an important step.

Moreover, rigid bureaucracy is blocking any creative initiatives from flourishing and,

therefore, simplifying the process for registering a business, safeguarding intellectual property rights and enforcing contracts are some ways in which governments can establish a beneficial legal framework for entrepreneurs. The US serves as an illustration of this, with its patent system providing entrepreneurs with the ability to secure their ideas and innovations. Moreover, the country's legal system facilitates the formation of Limited Liability Companies (LLCs) and corporations (Paradis, 2023).

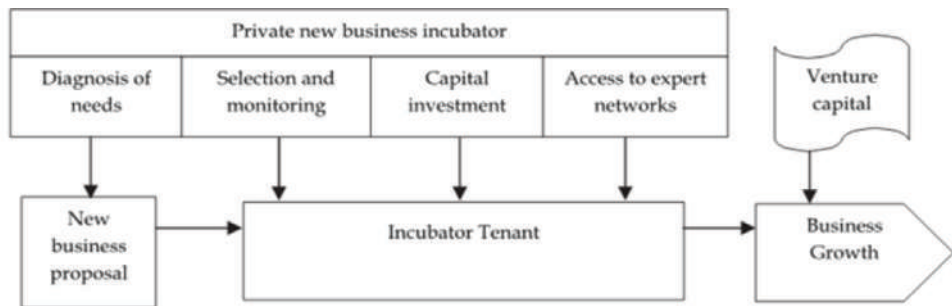
Another crucial step towards empowering young entrepreneurs to develop their sustainable initiatives and grow in the formal markets is to provide incentives for the private sector to team-up with the government in promoting entrepreneurship in general, and green jobs in particular (offering green incentives). This can mean reducing taxes on companies that fund and support green startups until they start to earn a certain

amount of income to be able to operate separately. Green bonds were also a new funding tool offered by governments to mobilise investors who are keen on putting their money into sustainable green projects to accelerate green transitioning.

Additionally, this paper sheds light on the importance of incubators, which are projects or organisations designed to help startup businesses to grow and succeed by providing free or low-cost workspace, work-

ing facilities (internet, phone lines, etc.), mentorship, expertise, access to investors and, in some cases, working capital in the form of a loan. They are more of an intensive training or a college programme that startups have to apply and be accepted for, and then follow a schedule in order to meet benchmarks set by the incubator. They will be incubated for a specified period, typically one to two years, following Campbell, Kendrick and Samuelson's incubation model from 1985, as shown in Figure 12.

**Figure 12.** Campbell, Kendrick & Samuelson's incubation model (1985)



Source: Campbell, Kendrick, & Samuelson, 1985.

Finally, and based on the previously mentioned incubation model, governments should support the hybrid version of business incubators for green startups to establish well-organised, focused and well-

monitored initiatives that would be easier to be tracked for progress in fighting climate change. The hybrid version can be distinguished from incubators, angel investors, and accelerators, as explained in Figure 13.

**Figure 13.** The difference between business incubators and accelerators

	Incubators	Angel investors	Accelerators	Hybrid
Duration	1 to 5 years	Ongoing	3 to 6 months	3 months to 2 years
Cohorts	No	No	Yes	No
Business model	Rent; non-profit	Investment	Investment; can also be non-profit	Investment; can also be non-profit
Selection	Non-competitive	Competitive, ongoing	Competitive, cyclical	Competitive, ongoing
Venture stage	Early or late	Early	Early	Early
Education	Ad hoc, human resources, legal	None	Seminars	Various incubator and accelerator practices
Mentorship	Minimal, tactical	As needed by investor	Intense, by self and others	Staff expert support, some mentoring
Venture location	On-site	Off-site	On-site	On-site

Source: Howdo website.

## References

- IKHTIAR ALAM, S.M. (2021). Definition, Meaning, and Necessary Characteristics of Entrepreneurship. Available at: <https://bit.ly/3Dk1QoN>
- CAMPBELL, C., KENDRICK, R. & SAMUELSON, D. (1985). Stalking the Latent Entrepreneur. *Economic Development Review*, Vol. 3, No. 2.
- Startups going green in MENA region.* (2017). CLIMASOUTH. Available at: <https://bit.ly/3JkwO41>
- The Egyptian Startup Ecosystem Report 2021.* (2021). DISRUPT AFRICA. Available at: <https://bit.ly/3LofLgM>
- SIDLO, K. (2021). Innovation ecosystems and start-ups in the Mediterranean as a means of recovering from the COVID-19 crisis. *European Committee of the Regions*. Available at: <https://bit.ly/3nwJyft>
- FAGHIH, N., & ZALI, M. (2018). *Entrepreneurship Ecosystem in the Middle East and North Africa (MENA): Dynamics in Trends, Policy and Business Environment*. Springer International Publishing.
- GERLACH, A. (2003). Sustainable Entrepreneurship and Innovation. *University of Lueneburg*. Available at: <https://andersabrahamsson.typepad.com/sustainable%20entrepreneurship%20and%20innovation.pdf>
- GEM 2017 Middle East and North Africa Report.* Global Entrepreneurship Monitor (GEM). (2017). Available at: <https://bit.ly/3WGI9j5>
- The Potential of Renewable Energy in MENA. IFC Knowledge Series in MENA.* (n.d) International Financial Corporation. Available at: <https://bit.ly/3nvLg0w>
- Global Employment Trends for Youth 2022: The Arab States.* (2022). International Labour Organization. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/documents/briefingnote/wcms\\_853324.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/briefingnote/wcms_853324.pdf)
- JACOB, K., BÄR, H., & QUITZOW, R. (2015). Green Jobs: Impacts of a Green Economy on Employment. *German Development Agency (GIZ)*. Available at: <https://bit.ly/3XGrGLT>
- LACKÉUS, M. (2015). Entrepreneurship in Education. *Organization for Economic Co-operation and Development (OECD)*. Available at: <https://bit.ly/2APRD3F>
- MEHTAP, S. (2014). An EU Arab Partnership to Foster Entrepreneurship Education in the Middle East: The ASPIRE Program. *IACSIT Press, Vol. 81*. Available at: <https://bit.ly/3nqrTpG>
- King Mohammed VI' Message to the 5th Global Entrepreneurship Summit.* (201, Nov. 20). Morocco World News. Available at: <https://bit.ly/3L3RDzq>

O'SULLIVAN, A., REY, M. E. & MENDEZ, J. G. (2011). Opportunities and Challenges in the MENA Region. The Arab world competitiveness report, 2011-2012. *Organization for Economic Cooperation and Development*. Available at: <http://www.oecd.org/mena/49036903.pdf>

*DynEmp: Measuring job creation by start-ups and young firms.* (2020). Organization for Economic Cooperation and Development. Available at: <https://bit.ly/3XJTKxW>

PARADIS, M. (2023, Feb. 14). *7 ways governments can foster entrepreneurship.* World Economic Forum (WEF). Available at: <https://bit.ly/3AR1Nzd>

PASTORELLI, G., COSTANTINI, A. & SERRANO, S. (2022). Social and green economies in the Mena region: through sustainability, public policies and SDGs. CIRIEC Working Papers 2203 - CIRIEC - Université de Liège. Available at: <https://bit.ly/3VCuhXe>

*PwC Middle East recognises the region as a potential pioneer in accelerating success on the climate change agenda.* (2022, Dec, 15). PricewaterhouseCoopers. Available at: <https://pwc.to/3WKpUbg>

RAHHOU, J. (2022, Apr. 9). 'Forsa': Morocco Launches New Program to Support Young Entrepreneurs. *Morocco World News*, Available at: <https://bit.ly/3ynR7ay>

SCRUTON, A. (2022). What Exactly is a Green Job? Silverhill Institute of Environmental *Research and Conversation*. Available at: <https://bit.ly/3fQHKto>

SPIGEL, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice*, 41(1). University of Edinburgh.

*SwitchMed Green Entrepreneurship.* (2018, Winter Edition). SwitchMed Magazine, Available at: <https://bit.ly/3EGxte3>

ALBARRACÍN, J., IBÁÑEZ, A. (2019). *Roadmap for Scaling Up Green Entrepreneurship - Egypt.* SwitchMed. Available at: <https://bit.ly/3Dk6oLT>

*Morocco launches its National Portal to Support Entrepreneurship "AlMoukawala".* (2017). Ministry of Economy and Finance, Government of Morocco. Available at: <https://bit.ly/3EqXm18>

THURIK, R. A., CARREE, M. A., VAN STEL, A. & AUDRETSCH, D. B. (2008). Does Self-employment Reduce Unemployment. *Journal of Business Venturing*. Available at: <https://bit.ly/3qrfWq>

*Renewable energy jobs rise by 700,000 in a year, to nearly 13 million.* (2022, Sept., 22). United Nations. Available at: <https://bit.ly/3Y3oyd2>

*Green Jobs: Towards Sustainable Work in a Low-Carbon World.* (2008). United Nations Environment Programme. Available at: <https://bit.ly/3jazMh0>

WENDEL, S. (2022, Dec, 5). Middle East climate tech startups to be hot investment in 2023, but market still lags. *Al-Monitor*. Available at: <https://bit.ly/3kOc36L>

*Igniting Climate Entrepreneurship in Morocco*. (2017). World Bank. Available at: <https://bit.ly/3ys5pa2>

*Tunisia: Breaking the Barriers to Youth Inclusion*. (2014). World Bank. Available at: [https://www.worldbank.org/content/dam/Worldbank/document/MNA/tunisia/breaking\\_the\\_barriers\\_to\\_youth\\_inclusion\\_eng.pdf](https://www.worldbank.org/content/dam/Worldbank/document/MNA/tunisia/breaking_the_barriers_to_youth_inclusion_eng.pdf)

GOODMAN, K. (2022). *The Middle East is gearing up to combat climate change – its private sector can lead the way*. World Economic Forum. Available at: <https://bit.ly/3jap5uS>

JAEGER, J. et al. (2021). *The Green Jobs Advantage: How Climate-friendly Investments Are Better Job Creators*. World Resources Institute. Available at: <https://bit.ly/3XTgcVc>

# eur@mesco

Paper

